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PROCEEDINGS

The 4th National and International Research Conference 2021
(NIRC IV 2021)

"University & Community Engagement with the King's Philosophy for Sustainable Local Development"

7th January 2021

Buriram Rajabhat University

Proceedings : 4th National and International Research Conference 2021 : NIRC IV 2021

"University & Community Engagement with the King's Philosophy for Sustainable Local Development"

Edition 1 : 2021

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The 4th National and International Research Conference 2021
NIRC IV 2021

Message from President of Buriram Rajabhat University

The main important roles of Buriram Rajabhat University (BRU) are to develop local communities and to produce quality undergraduates, and graduates both Master's and Doctoral degrees, and also to develop local communities to follow His Majesty King Rama X's policy. In addition, another BRU role is to produce and publicize research of lecturers and students. This commitment has been made continuously in order to acquire the academic accomplishment with high efficiency.

In the fourth academic national and international conference 2021, under the theme, "University & Community Engagement with the King's Philosophy for Sustainable Local Development", this is to very well fulfill the lecturers', researchers' and students' research works to publicize their own paper. For this great event, Graduate School is assigned to hold the academic conference cooperating with Faculty of Humanities and Social Sciences, Faculty of Education, Faculty of Agricultural Technology, Faculty of Science, Faculty of Industrial Technology, Faculty of Management Sciences, Faculty of Nursing, Office of International Relation Affairs, and Institute of Research and Development. Besides, we are supported by Office of the Ministry of Higher Education, Science, Research and Innovation, Knowledge Network Institute of Thailand, Council of the Graduate Studies Administrators of Thailand, and the educational institutes both in Thailand and foreign countries which are academic networks with BRU.

On behalf of Buriram Rajabhat University, I would like to welcome eminent persons, lecturers, researchers, students and participants from Thailand and foreign countries to NIRC IV 2021. My special thanks go to a keynote speaker, Prof. Dr. Kriangsak Charoenwongsak, peer reviewers, commentators and working staff to help this great event successful. It is highly hoped that the conference will be useful for all participants and those who are interested.

(Associate Professor Malinee Chutopama)
Acting President
Buriram Rajabhat University

4th National and International Research Conference 2021 : NIRC IV 2021

"University & Community Engagement with the King's Philosophy for Sustainable Local Development"

Date: 7th January 2021

Venue: Buriram Rajabhat University, Buriram Province, Thailand

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Rationale

Buriram Rajabhat University, a higher education institute for developing the local area, has missions to produce graduates, to manage education quality in accordance with academic and professional standard, and to build knowledge from research works, innovation and creative works to develop the local area. To achieve these missions, Buriram Rajabhat University, therefore holding the 4th National and International Research Conference 2021: NIRC IV 2021 on 7th January 2021 at Buriram Rajabhat University, Muang District, Buriram Province. The conference title is on "University & Community Engagement with the King's Philosophy for Sustainable Local Development" This conference gives an opportunity to organizations, researchers, scholars and those interested both in Thailand and foreign countries to present their research works, and to have a look at creative works and innovations obtained from these works. In addition, they will have the opportunity to join the academic seminars, share opinions, publicize the research works and exchange experience as well. The conference objectives are as follows:

1. To give an opportunity to lecturers, researchers, students of Rajabhat University and other educational institutes both in Thailand and foreign countries by presenting their quality research works and sharing experiences developing of Thai education.

2. To publicize the research works, creative and innovative works of lecturers, personnel, students and researchers of Rajabhat University and other educational institutes both in Thailand and foreign countries.

3. To promote learning activities through the development of quality and standard research works, creative and innovative works of lecturers, personnel, students and researchers of Rajabhat University and other educational institutes both in Thailand and foreign countries in order to utilize these works for sustainably developing the local area, community, society and nation.

4. To link the quality research works of Thailand and foreign countries to the target users in academic aspect, policy, social issues and community both in Thailand and foreign countries.

Types of the Conference

1. Academic Conference

1.1 Keynote address by national and international scholars

1.2 Oral and poster presentation of national and international research in the following aspects:

1. Education
2. Humanities and Social Sciences
3. Science and Technology
4. Agriculture, Animal Science, and Fishery
5. Health Science
6. Management and Tourism
7. Arts and Designs
8. Creative works and Innovation
9. Community Research
10. Area-based Research

2. Publication

Online Proceedings are conducted and research works are published in academic journals of Buriram Rajabhat University and journals in other institutes.

1. Academic journals of Buriram Rajabhat University
   - 1.1 Humanities and Social Journal (TCI 2)
   - 1.2 BRU Academic Journal (TCI 2)
   - 1.3 BRU Research and Development Journal (TCI 2)
   - 1.4 BRU Graduate Studies Journal
   - 1.5 Management Sciences Journal
   - 1.6 Science and Technology Journal
   - 1.7 Music and Culture Journal
   - 1.8 Journal of English Language and Linguistics

2. Journals from other institutes
    2.1 LEARN journal: Language Education and Acquisition Research Network (TCI 1, ACI, SCOPUS), Thammasat University
    2.2 Education Journal, Mahasarakham University (TCI 2)
    2.3 Humanities Sciences Journal (TCI 1) Faculty of Humanities, Kasetsat University
    2.4 Research Journal, Phranakhon Rajabhat , Faculty of Humanities and Social Sciences
3. Foreign Journals
    3.1 Asian Journal of English Studies (UGC), India
    3.2 An International Journal of Contemporary Issues (UGC) India
    3.3 Journal Pendidikan IPA Indonesia (Indonesian Journal of Science Education) (Google Scholar, DOAJ, EBSCO, ACI, SCOPUS)
    3.4 Tadris: Journal Keguruan dan Ilmu Tarbiyah (Tadris: Journal of Education and Teacher Training) (DOAJ, EBSCO)

Date and Venue

On 7th January 2021 at Buriram Rajabhat University, Muang District, Buriram Province. Opening ceremony, Keynote address, and Discussion forum are conducted at Witcha Attasat Meeting Hall, and Featured speech is conducted at Bhudharaksa Meeting Room, the 3rd floor of building 15, room 150701, room 1507401-2 and Graduate School Meeting Room (9th floor) The research work presentation is divided into two types as follows:

1. Oral presentation at room 150701, 150703/1, 150703/2, 150704/1 and 150704/2 (7th floor) room 150901, 150902, 150903, 150904 and Graduate School Meeting Room (9th floor)
2. Poster presentation at Bhudharaksa Meeting Room, (3rd floor at building 15)

Schedule

No.	Activities	Date
1.	Publicize the project	1 June 2020 - 1 January 2021
2.	Submission of full paper 2020	15 June 2020 - 15 November
3.	Announcement for full paper acceptance	30 November 2020
4.	Registration for participants 2020	15 June 2020 - 30 November

5.	Oral presenters (both national and international) submit file (PDF)	20 December 2020
6.	Attach poster	6 January 2021
7.	Academic Conference	7 January 2021
8.	Submission of full paper suggested by peer reviewers or commentators	17 January 2021
9.	Publicize full paper research works in Online Proceedings	7 February 2021

Conference Promoting Organizations

Office of the Ministry of Higher Education, Science, Research and Innovation, Knowledge Network Institute of Thailand, Council of the Graduate Studies Administrators of Thailand, Council of Deans of Faculty of Humanities and Social Sciences in Rajabhat University, and Higher Education institutes from foreign countries which have done MOU with Buriram Rajabhat University namely;

1. Niagara University, U.S.A.
2. Akdeniz University, Turkey
3. Hue University of Foreign Languages, Vietnam
4. Shagrao Normal University, Taiwan
5. Kathmandu University, Nepal
6. Royal University of Phnom Penh, Cambodia
7. National Pingtung University, Taiwan
8. Institute of Advanced Studies in English, India
9. Mandalay University of Distance Education, Mynmar
10. Savannakhet Teacher Training Collage, Laos PDR
11. Guangxi University for Nationalities, The People's Republic of China
12. University of Northern Philippines, Philippines

Co-host Institutes

1. Faculty of Social and Environment, NIDA
2. Faculty of Arts and Faculty of Business Administration, Krirk University
3. Faculty of Social Sciences, Kasetsat University
4. Faculty of Humanities and Social Sciences, Khonkaen University
5. Faculty of Social Sciences, Naresuan University

6. Faculty of Humanities and Social Sciences, Faculty of Education, Burapha University
7. Faculty of Political and Social Sciences, Phayao University
8. Faculty of Humanities and Social Sciences Rajanakharin Rajabhat University
9. Faculty of Humanities and Social Sciences, Ramphaiphannee Rajabhat University
10. Faculty of Social Sciences, Srinakharinwirot University
11. Faculty of Education, Silpakorn University
12. Faculty of Humanities and Social Sciences, Songkhlanakharin University, Pattani Campus
13. Faculty of Humanities and Social Sciences, Srisaket Rajabhat University

Expected Outcomes

1. Lecturers, researchers, students and those interested join the conference at least 200 people, and gain knowledge utilized in developing research, academic works and life quality. Also, there will be cooperation among Rajabhat University and Educational networks both in Thailand and foreign countries.

2. The research works, creative and innovative products can be utilized to develop the country.

3. The quality research works can be publicized in proceedings, academic journals of Buriram Rajabhat University approved by BRU Council, and other journals from Thailand and foreign countries.

Conference Organizers

Graduate School, Faculty of Humanities and Social Sciences, Faculty of Education, Faculty of Agricultural Technology, Faculty of Science, Faculty of Industrial Technology, Faculty of Management Sciences, Faculty of Nursing, Office of International Relation Affairs, and Institute of Research and Development of Buriram Rajabhat University.

Application

Applicants who want to present their research works can apply at NIRC2021.bru.ac.th from 15th June 2020 until 15th November 2020. The individuals who want to join but do not present research works can apply from 15th June 2020 until 30th November 2020.

Registration

Participants must pay the registration fee based on the following rates:

1. International Conference
   - 5,000 Baht for Thai presenters
   - 200 USD for foreign presenters
   - 50 USD for all participants both Thai and foreigners who don't want to present the research works
2. National Conference
   - 3,000 Baht for research works presentation
   - 1,000 Baht for participants who don't want to present the research works

N.B.: The article conducted by more than one person is allowed to register only one person. Co-researchers or followers register as participants. Then keep receipt to refund the meeting documents, food/drinks coupon on 7th January 2021 in front of Witcha Attasat Meeting Hall. In case of being absent for presenting or not being allowed to present the research works, the applicants will get no refund as the fee is paid for the peer reviewers.

3. Methods for Registration Payments

3.1 Pay by cash with the application form to Khun Prakai Sirisamran, Office of Graduate School, (8th floor, Building 15) Buriram Rajabhat University, 439 Jira Road, Muang District, Buriram Province, 31000

3.2 Electronic Bank Transfer

Name of Account: National and International Academic Conference, Buriram Rajabhat University (Saving)

Bank: Bank of Ayudhya (Thailand)

Account Number: 427-1-27172-3

Swift Code: AYUDTHBK

Address: Bank of Ayudhya, Branch: Buriram Rajabhat University, 439 Jira Road, Muang District, Buriram Province, 31000

N.B.: Send a copy of transferring receipt to Email: nirc2021@bru.ac.th after money has been transferred

Preparation of Research Article Manuscript

It is recommended to study the preparation of research article manuscript at the website: nirc2021@bru.ac.th . The presenters must strictly follow the form of writing articles.

How to Present the Research Works

1. Types of presentation:

1.1 Oral presentation

The oral presentation must be presented using PowerPoint. Twelve minutes are allotted per one title, and 3 minutes for answering questions. The presenters must submit PowerPoint file as in PDF to nirc2021@bru.ac.th within 20th December 2020.

1.2 Poster presentation

The presenters must attach their posters on the boards provided and be ready to present according to the schedule at Buddharaksa Meeting Room, 3rd floor, Building 15, Buriram Rajabhat University on 7th January 2021 at 01.00 p.m.-04.30 p.m. The language used to present is Thai or English for national presentation, but only English will be allowed for international presentation.

N.B.: If the presenter wants extra space to display the research works, please inform the organizer before 10th December 2020.

Announcement of Selected Presenters

The selected presenters will be acknowledged on 30th November 2020. The selected presenters must correct articles according to the peer reviewers' suggestions, then submit the correct full paper to proceeding editorial staff within 17th January 2021.

N.B.: The correct full paper will be collected as online proceedings and can be accessed from Google Scholar. The papers will be published in academic journals of Buriram Rajabhat University or foreign journals if it is approved as an excellent one. Publishing in academic journals must follow each journal's regulations, and also the researcher must present the paper by him/herself following the schedule. The published research works would be partial fulfillment of education according to the announcement of the Office of Higher Education Committee.

Selection of Research Works

The appointed committee of Buriram Rajabhat University reserve the right and follow the university announcement relevant to the criteria for selecting research and academic articles to publicize and publish in the 4th National and International Research Conference

2021, and the university order on the appointment of Proceedings Editorial Staff in the 4th National and International Research Conference 2021. The followings are the committee's consideration:

1. Selection of groups and type of presentation;
2. Selection of research works published in academic journals or proceedings;
3. Disqualification paper presentation as in the following cases:
   3.1 Abstract, research article and posters which do not comply with the required form and peer reviewers' suggestions;
   3.2 The delaying registration and payment and/or incomplete registration and payment; and
4. The committee's consideration is considered final.

Contact for Further Information

Contact for further information at http://nirc2021@bru.ac.th and facebook : Graduate School, Buriram Rajabhat University, or contact:

Office of Graduate School, Tel. 044-611-221ext 7401,7402 or 086-468 1656 (Khun Prakai Sirisamran)

Asst.Prof.Dr.Chookiat Jarat 088-5822771
Asst. Prof.Dr. Warit Kitthanarut 093-9354255
Asst.Prof.Dr. Sairung Sornsupap 083-4552699
Arjarn Pallapa Lertcharoenwanit 082-4469547
Khun Napawan Janpanich 093-1069947

Project Evaluation

1. Evaluated from the amount of research work presenters, the selected articles, and participants
2. Use satisfactory questionnaires (Google form) from participants

Reporting the Results of the Project

1. Dean of Graduate School reports the results of the project after it has finished to the Board of Graduate School, the Board of Graduate Studies, the Board of University Administrators, and BRU Academic Council.
2. The president or representative reports the results to BRU Council.

3. Dean of Graduate School reports the results to Office of the Ministry of Higher Education, Science, Research and Innovation, and all institutes both in Thailand and foreign countries which join the conference.

4th National and International Research Conference 2021 : NIRC IV 2021

"University & Community Engagement with the King's Philosophy for Sustainable Local Development"

and

5th National Academic Conference

"Citizen Engagement : Citizen Power for Sustainable Local Development"

Date: January 7th, 2021

The 4th National and International Research Conference (NIRCIV2021)

7th January 2021

Venue: Buriram Rajabhat University, Buriram Province, Thailand

Virtual Online Conference

TIME	ACTIVITIES
08.30 - 09.00 a.m.	Presenters and participants attend a live broadcast of the opening ceremony via *BRU TV* YouTube channel using the link: https://www.youtube.com/channel/UCDr3_YnwsUDgwvzUsW0cnuA?fbclid=IwAR3oDY8Jgp7vXzFpFwg8YEm-oEftms7BJpmgZcoEpz4IvqVY6NjXqoGSJ_k
09.00 – 09.30 a.m.	Opening ceremony by Associate Professor Malinee Chutopama, Acting President of Buriram Rajabhat University. Reported speech delivered by Assistant Professor Dr. Naruemon Somkuna, Dean of Graduate School (in Thai) and Assistant Professor Dr. Akkarapon Nuemaihom, Dean of Faculty of Humanities and Social Sciences (in English)
From 09.30 a.m. onward	National and International poster and oral presentations via ***the assigned Google Meet link*** according to order and time. Each presentation room is operated by a host and commentators. The order of presentation and time can be adjusted accordingly.

N.B.: The schedule is subject to change as appropriate.

The 4th National and International Research Conference 2021: NIRC IV 2021

Oral Presentation Session

Room 1 (8th Floor, Building 15) : Science and Technology

Commentators: รศ.ดร. จรัส สว่างทัพ (มหาวิทยาลัยราชภัฏบุรีรัมย์) Associate Professor Dr. Jarus Sawangtub from Buriram Rajabhat University

รศ.ดร. สมพร ดวนใหญ่ (นักวิชาการอิสระ) Associate Professor Dr. Somporn Duanyai, the independent scholar

Google Meet Link: https://meet.google.com/psu-tjgh-vjz

No	Code	Name	Topic	Organization	Time
1	SC-O-01	Khin Myint Aye Naing Naing Latt	A Geographical Analysis on Ranking of Major Crops in Myinmu Township, Sagaing Region of Myanmar	Monywa University, Myanmar	10.00-10.15 a.m.
2	SC-O-02	Khin Myint Aye Naing Naing Latt	An Analysis on Temperature and Rainfall Condition of Monywa in Sagaing Region, Myanmar	Monywa University, Myanmar	10.15-10.30 a.m.
3	SC-O-03	Win Myaing Phyu Phyu Kyaw	Agricultural Land Use and Cropping Patterns of Salingyi Township, Sagaing Region in Myanmar	Sittway University, Myanmar Monywa University, Myanmar	10.30 -10.45 a.m.
4	SC-O-04	Mya Thet Mon	Structural Elucidation of a Pure Antimicrobial Active Organic Compound from Magnolia grandiflora L.	Sagaing University of Education, Myanmar	10.45-11.00 a.m.
5	SC-O-05	Nwe Nwe Hninn	Valuable Fatty Acids Found in Some Plants: Mandalay Region of Myanmar	Lashio University, Myanmar	11.00-11.15 a.m.
6	SC-O-06	Sumeth Piayura spiayura@gmail.com 0879156718	Effects of Chitosan and Pepper Essential Oil on Physicochemical and Microbiological Qualities of Chicken Sausage During Chilled Storage	Sakon Nakhon Rajabhat University	11.15-11.30 a.m.
7	SC-O-07	Patcharin Kangkha patcharin.k@rmutsv.ac.th	Perspectives towards Thai Education Policy Underlining the Thailand 20-Year National Strategy Plan	Rajamangala University of Technology Srivijaya	11.30-11.45 a.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Oral Presentation Session

Room 2 (8th Floor, Building 15) : Humanities and Social Sciences (1)

Commentators: ผศ.ดร.สุรชัย ปิยานุกูล (มหาวิทยาลัยราชภัฏบุรีรัมย์) Assistant Professor Dr. Surachai Piyanukul from Buriram Rajabhat University

Prof. Dr. Himadri Sekhar Roy (Shahjalal University of Science and Technology (SUST), Bangladesh)

Google Meet Link: https://meet.google.com/ymt-idpu-wnd

No	Code	Name	Topic	Organization	Time
1	HU-O-12	Dr. Himadri Sekhar Roy	Early Feminists of Europe and Bengal-Mary Wollstonecraft and Rokeya Sakhawat Hossain-A Comparative Study	Shahjalal University of Science and Technology (SUST), Bangladesh	10.00-10.15 a.m.
2	HU-O-01	Win Myaing Phyu Phyu Kyaw	Pattern of Levels in Rural Developments: A Case Study of Salingyi Township in Sagaing Region of Myanmar	Sittway University, Myanmar Monywa University, Myanmar	10.15-10.30 a.m.
3	HU-O-02	Naing Naing Latt Khin Myint Aye	A Comparative Study of Economic Attractions between Indawgyi Lake and Inlay Lake in Myanmar	Monywa University, Myanmar	10.30 -10.45 a.m.
4	HU-O-03	Naing Naing Latt Khin Myint Aye Nwe Nwe Win	A Geographical Assessment of Quality of Life in Rural Area: A Case Study of Lezin Village, Sagaing Region in Myanmar	Monywa University, Myanmar	10.45-11.00 a.m.
5	HU-O-05	Khin Mar Mar Khin Thet Thet Aung Wint Khin Sandar Chit	The Impact of Leadership Dimensions on Student Outcomes: University Context of Myanmar	Panglong University, Myanmar Monywa University, Myanmar	11.00-11.15 a.m.
6	HU-O-06	Mai Shal Ni Kaw Wilai Phiwma	Email Communication within Commercial Organizations in Myanmar	Pakokku University, Myanmar Loei Rajabhat University, Thailand	11.15-11.30 a.m.
7	HU-O-16	Theint Theint Tun Wilai Phiwma	Motivational Strategies Used by EFL Teachers in Myanmar	Kyaukse University Loei Rajabhat University	11.30-11.45 a.m.
8	HU-O-17	Aye Aye Mar Mai Shal Ni Kaw Mary	Perceptions of English Specialization Students and Teachers at Undergraduate Level on Classroom Assessment Practices in Myanmar	Mohnyin University Taunggyi University, Mohnyin University,	11.45-12.00 p.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Oral Presentation Session

Suwichalai Room, 8th Floor, Building 15 : Humanities and Social Sciences (2)

Commentators: ผศ.ดร. นวมินทร์ ประชานันท์ (มหาวิทยาลัยราชภัฏบุรีรัมย์) Assistant Professor Dr. Nawamin Prachanant from Buriram Rajabhat University

Professor Dr. Irom Gambhir Singh (Manipur University, India)

Google Meet Link: https://meet.google.com/kxt-xaxn-tsx

No	Code	Name	Topic	Organization	Time
1	HU-O-09	Kris Phattaraphakin sookpom@yahoo.com 081-2553785	The Study on Needs and Mistakes of Usage of English for Communication in the Cultural Heritage Spots in Dhonburi District of Bangkok	Dhonburi Rajabhat University	10.00-10.15 a.m.
2	HU-O-10	Wiratchani Wisetram Shetheone9@hotmail.com 0944745197	Employee Engagement in Healthcare : The Case of Medical Assistants at Buriram Hospital	Buriram Rajabhat University	10.15-10.30 a.m.
3	HU-O-11	Prayong Jandaeng yongsaid@hotmail.com	Social Contexts Towards the Strength of Maeka Sub-District, Mueang District, Phayao Province	University of Phayao	10.30 -10.45 a.m.
4	HU-O-13	Naviya Chutopama naviyachu@gmail.com	An Analysis of Pragmatics in a Movie : A Case Study of Illocutionary Acts in *Aquaman*	Buriram Rajabhat University	10.45-11.00 a.m.
5	HU-O-14	Phimphach Warasiwaphong peal_pinna@hotmail.com	An Analysis of Strategies in Translation Isan Verse into English: A Case Study of Isan Folktale *Phadaeng Nang Ai*	Buriram Rajabhat University	11.00-11.15 a.m.
6	ED-O-09	Mai Shal Ni Kaw Rita Thapa	Common Experiences of Postgraduate Research: Myanmar Student Perspectives	Taunggyi University, Myanmar Tokyo City University	11.15-11.30 a.m.
7	ED-O-10	Wint Khin Sandar Chit Thein Tan Tika Ram Pokharel	Capacity and Competence of Supervisors: Better Quality of Graduates and Post-graduates in Myanmar Context	Monywa University Magway University Tokyo City University	11.30-11.45 a.m.
8	HU-O-15	Saw Lu Lu Tun	Students' View on Teachers' Approaches to Teaching Literature in Myanmar University Context	Monywa University	11.45-12.00 p.m.
9	HU-O-18	Chitsanucha Chokwarakul wangjunkaix1999@gmail.com	COVID-19 : The World Disaster	Chaiyaphum Rajabhat University	12.00-12.15 p.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Oral Presentation Session

Wiwatthanalai Room, 8th Floor, Building 15 : Education (1)

Commentators: ผศ.ดร.ชูเกียรติ จารัตน์ (มหาวิทยาลัยราชภัฏบุรีรัมย์) Assistant Professor Dr. Chookiat Jarat from Buriram Rajabhat University

Professor Ni Ni Hlaing (Mandalay University of Distance Education (MUDE), Myanmar)

Google Meet Link: https://meet.google.com/pzs-qcju-qwp

No	Code	Name	Topic	Organization	Time
1	ED-O-11	Myint Myint Khine Mya Thet Mon Thin Myat New Yumi Nakamoto Shrestha Mishan	Student Attitudes toward Chemistry Lessons to Enhance Teaching at Undergraduate Level in Myanmar	East Yangon University Sagaing University of Education Kalay University Hyogo University of Teacher Education, Tokyo City University	10.00-10.15 a.m.
2	ED-O-12	Thein Tan May Myat Khine Tika Ram Pokharel	Perceptions of Master's Students on Quality of Research and Performance of Research Supervisors at Myanmar Universities	Magway University Kyaukse University Tokyo City University	10.15-10.30 a.m.
3	ED-O-13	Thein Tan Htun Win Myint Myint Khine Rita Thapa	Increasing Students' Research Interests through Research-Based Learning as a University-wide Approach	Magway University Hinthada University East Yangon University	10.30 -10.45 a.m.
4	ED-O-02	Ohnmar Win May Thae Su Jasmine Kong-Yan Tang	Challenges Faced by Teachers of English as a Foreign Language in Myanmar Universities	Pakokku University Monywa University SUNY Geneseo, USA	10.45-11.00 a.m.
5	ED-O-03	Tin Moe Yi	English as a Lingua Franca Used by Myanmar Teachers in the Classroom	Mandalay University	11.00-11.15 a.m.
6	ED-O-04	Ni Ni Hlaing	Preparing the Teachers to Meet the Challenges of a Changing World	Ministry of Education, Myanmar	11.15-11.30 a.m.
7	ED-O-05	Khin Thet Thet Aung Thet Soe Oocha Chao	Perceptions on English Language Teaching and Learning: University Context in Myanmar and Thailand	Monywa University Myitkyina University Buriram Rajabhat University	11.30-11.45 a.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Oral Presentation Session

Pratchayalai Room, 8th Floor, Building 15 : Education (2)

Commentators: รศ.ดร. อัญชลี วรรณรักษ์ (มหาวิทยาลัยเทคโนโลยีสุรนารี) Associate Professor Dr. Anchalee Wannaruk from Suranaree University of Technology
ผศ.ดร. จงรักษ์ เลี้ยงพานิชย์ (มหาวิทยาลัยขอนแก่น) Assistant Professor Dr. Chongrak Liangpanich from Khonkaen University

Google Meet Link: https://meet.google.com/edy-epcv-mha

No	Code	Name	Topic	Organization	Time
1	ED-O-06	Khin Thet Thet Aung	Myanmar Context: Challenges of Implementing Critical Thinking in the EFL Classroom	Monywa University	10.00-10.15 a.m.
2	ED-O-07	Aung Zaw Htoo Su Su Kyi Aung Thet Soe Wilai Phiwma	Self-reported Foreign Language Anxiety and Test Anxiety of University Students: Myanmar Context	Myitkyina University Loei Rajabhat University, Thailand	10.15-10.30 a.m.
3	ED-O-14	Ohnmar Win Mai Shal Ni Kaw Wilai Phiwma	English Listening Comprehension Problems as Perceived by Undergraduate Students of Pakokku University in Myanmar	Pakokku University Loei Rajabhat University	10.30 -10.45 a.m.
4	ED-O-15	Nilar Win, Tun Win, Aung Thet Soe Jasmine Kong-Yan Tang	University Teachers' Views on Engaging Students with Poetry through Dramatic Play	Myitkyina University, Hinthada University, Mandalar Degree College, SUNY Geneseo, USA	10.45-11.00 a.m.
5	ED-O-18	May Thet Htun Thin Thin Win Wilai Phiwma	Students' Low Participation in English Language Classroom	Monywa University Loei Rajabhat University	11.00-11.15 a.m.
6	ED-O-19	Nilar Win Aung Thet Soe Aung Zaw Htoo	Teaching Professionals' Opinions and Views on Attending Academic Conferences: Myanmar Context	Myitkyina University	11.15-11.30 a.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Oral Presentation Session

Room 3 (8th Floor, Building 15) : Education (3)

Commentators: รศ.ดร. ประกาศิต สิทธิ์ธิติกุล (มหาวิทยาลัยธรรมศาสตร์) Associate Professor Dr. Pragasit Sitthitikul from Thammasat University

Professor Dr. Ted Yu-Chung Liu (National Pingtung University (NPTU), Taiwan)

Google Meet Link: https://meet.google.com/sag-tukw-jkd

No	Code	Name	Topic	Organization	Time
1	ED-O-20	May Thae Su Ohnmar Win, Liwen Liu	Constraints Faced by Teachers of English as a Foreign Language in Myanmar Universities	Monywa University, Pakokku University, Chung Hua University	10.00-10.15 a.m.
2	ED-O-21	May Thae Su Chaw Ei Su Hnin Yi Mon Aung Chien-Kuo Li	An Exploration of ICT on Self-Regulated Learning for EFL Learners in Myanmar	Monywa University Taungoo Computer University Shih Chien University	10.15-10.30 a.m.
3	ED-O-23	Htun Win, Mary Nilar Win, Liwen Liu	Students' and English Teachers' Perceptions towards the Contribution of Short Stories to Acquire Language Skills and Communicative Competence	Hinthada University, Mohnyin University, Myitkyina University Chung Hua University	10.30 -10.45 a.m.
4	ED-O-24	Hnin Yi Mon Aung Aye Aye Mu Jasmine Kong-Yan Tang	English Language Teachers' Attitude and Readiness in Implementing 21st Century Learning	Monywa University East Yangon University SUNY Geneseo, USA	10.45-11.00 a.m.
5	ED-O-25	Aung Thet Soe Nilar Win, Liwen Liu	Culture in Language Teaching and Barriers to Teaching Culture in Foreign Language Classroom: Myanmar Context	Mandalar University Myitkyina University Chung Hua University	11.00-11.15 a.m.
6	ED-O-29	Sirigarn Dischanapong sirigarn.dis@bru.ac.th 0872446732	A Study of Academic Administration for Educational Opportunity Expansion Schools under Buriram Primary Educational Service Area Offices	Buriram Rajabhat University	11.15-11.30 a.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Oral Presentation Session

Computer Room, 8th Floor, Building 15 : Education (4)

Commentators: ผศ.ดร.อัครพนท์ เนื้อไม้หอม (มหาวิทยาลัยราชภัฏบุรีรัมย์) Assistant Professor Dr. Akkarapon Nuemaihom from Buriram Rajabhat University

Prof. Dr. R. Michael Smith (Niagara University, USA)

Google Meet Link: https://meet.google.com/hby-tmyz-apm

No	Code	Name	Topic	Organization	Time
1	ED-O-30	Sangwan Ngamnual sangwan.2527na@gmail.com 0801525686	Quality Management System for World-class Standard Primary School in Buriram Primary Education Service Area office	Buriram Rajabhat University	10.00-10.15 a.m.
2	ED-O-31	Sawong Swetwatna Noppadol Chanayothin Warissara Chanayothin Suppak Visanvetchakij svisanvetchakij@gmail.com 081 903 3395	The Process Securitization : The Valuation of Mortgage-Backed Securities	Patumthani University	10.15-10.30 a.m.
3	ED-O-32	Bualoy Chanpaka bualoych@gmail.com 0894012764	Perception of Chemistry Topics toward the Role of Chemical Terms in Authentic Contexts	Buriram Rajabhat University	10.30 -10.45 a.m.
4	ED-O-33	Jidchayaput Thipun Iq-million@hotmail.com	States and Desirable Expectation on Academic Administration of Small-sized Schools under Buriram Educational Service Area Offices	Buriram Rajabhat University	10.45-11.00 a.m.
5	ED-O-34	Watchara Marangsri Watcharama2371@gmail.com 0885945471	A Synthesis Study of the School Academic Administration Components under the Primary Educational Service Area Offices in Buriram Province	Buriram Rajabhat University	11.00-11.15 a.m.
6	ED-O-40	Prof. Dr. R. Michael Smith	Integrating SDG 4 and 17: An International Ph.D. Program Model	Niagara University	11.15-11.30 a.m.
7	ED-O-42	Le Thi Thanh Hoa ltthoa@hueuni.edu.vn	Multimodality and EFL Teaching	Hue University	11.30-11.45 a.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Oral Presentation Session

Sueksitalai Room, 8th Floor, Building 15 : Education (5)

Commentators: ผศ.ดร.คำภีรภาพ อินทะนู (มหาวิทยาลัยราชภัฏบุรีรัมย์) Assistant Professor Dr. Kampeeraphab Intanoo from Buriram Rajabhat University

Dr. Ashok R. Thorat (Institute of Advanced Studies in English, India)

Google Meet Link: https://meet.google.com/sxq-wkkv-ksf

No	Code	Name	Topic	Organization	Time
1	ED-O-35	Aniwat Kaewjomnong anthonythai8@hotmail.com 0973617499	The Prediction of the Factors Influencing the Selection to Further Study in Graduate Studies in Government Universities in the Lower Southern Region of Thailand: A Case Study of Universities in Muang district, Songkhla, Thailand	Thaksin University	10.00-10.15 a.m.
2	ED-O-36	Nottakrit Vantamay aj_nottakrit@hotmail.com 0635151456	The Effectiveness of Community-Based Social Marketing on Promoting Self-Protective Behaviors from PM2.5 among Thai Youths	Kasetsart University	10.15-10.30 a.m.
3	ED-O-37	Chanankorn Boonjad Boonjad.Chanankorn@gmail.com	The Internal Quality Assurance Administration of Extension Schools under Roi-Et Primary Educational Service Area Offices : Components Synthesis	Buriram Rajabhat University	10.30 -10.45 a.m.
4	ED-O-38	Sakuna Bunrotram	Characteristics of Primary Professional Teachers in Buriram Province	Buriram Rajabhat University	10.45-11.00 a.m.
5	ED-O-39	Treetippayanipa Sodsri 610112955002@bru.ac.th 0918329961	Needs Assessment on Academic Management of Medium Secondary Schools under the Office of the Basic Education Commission	Buriram Rajabhat University	11.00-11.15 a.m.
6	ED-O-41	Bun Vathanathon bunvathanathon@gmail.com	Using Story-telling to Improve Speaking Abilities of Cambodian Grade 11 Students in Anlogvil High School, Cambodia	Buriram Rajabhat University	11.15-11.30 a.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Poster Presentation Session

Google Meet Link: https://meet.google.com/dss-hfng-fhr

Commentator: รศ.ดร.สิทธิศักดิ์ คำผา (มหาวิทยาลัยราชภัฏมหาสารคาม) Associate Professor Dr. SittisaK Khampa from MahasaraKam

Moderator: นางสาวสุพิวรรณ เนื่องสา Technician: นางสาวสุวิษา บุราณ

No	Code	Name	Topic	Organization	Time
2	SC-P-01	Phatchada Nochit phatchada@tint.or.th 037 392 901	Stable Carbon Isotopes and Water Use Efficiency among Four Thai Color Rice Cultivars	Thailand Institute of Nuclear Technology (Public Organization)	10.15 – 10.30 a.m.
3	SC-P-02	Wutthikrai Kulsawat wutthikrai@tint.or.th 037 392 901	Comparative Study of Three Purification Methods for Thorium Analysis in Soil Using Alpha Spectrometry	Thailand Institute of Nuclear Technology (Public Organization) Rajamangala University of Technology Thanyaburi	10.30 – 10.45 a.m.
4	SC-P-03	Luksanaporn Krungkraipetch luksanaporn@buu.ac.th 0810004845	Impacts of Problematic Social Media Use on Sleep Quality and Life Satisfaction among Undergraduates, One University, Eastern Part, Thailand; cross-section study	Burapha University	10.45 – 11.00 a.m.
5	SC-P-04	Nutcha Suriwong 60030188@go.buu.ac.th 0649936496	Preparation and Characterization of Silk Fibroin Film from White Silk Cocoons	Burapha University	11.00 – 11.15 a.m.
6	SC-P-05	Panadda Tansupo Pirom Suwannasom panaddanew@hotmail.com 080-4001572	Preparation of Activated Carbon from Cassava Root by NaOH Activation for Methylene Blue Removal	Rajabhat Maha Sarakham University	11.15 - 11.30 a.m.

The 4th National and International Research Conference 2021: NIRC IV 2021

Poster Presentation Session

Google Meet Link: https://meet.google.com/dss-hfng-fhr

Commentator: รศ.ดร.สิทธิศักดิ์ คำผา (มหาวิทยาลัยราชภัฏมหาสารคาม) Associate Professor Dr. SittisaK Khampa from MahasaraKam

Moderator: นางสาวสุพิวรรณ เนื่องสา Technician: นางสาวสุวิษา บุราณ

No	Code	Name	Topic	Organization	Time
7	SC-P-06	Sarawadee Thaksame Supranee Kaewpirom 60030199@go.buu.ac.th 0623977798	Investigation of Chemical, Physical and Optical Properties of Biodegradable Film from Yellow Thai Silk Cocoons	Burapha University	11.30 - 11.45 a.m.
8	SC-P-07	Ekkasit Somkuna hs4ghn@gmail.com	Utilization of Yeast Fermented Coconut Meal as Feedstuff for Leung Hang Kwarw Indigenour Chickens	Buriram Agricultural and Technology College	11.45 – 12.00 p.m.
9	SC-P-08	Korakot Kwiankhokkruad Narumon Somkuna nanjamin@yahoo.com Narumon.sk@bru.ac.th	Evaluation of Chemical Composition of Fermented Coconut Meal by Yeast Fermentation Process	Buriram Rajabhat University	12.00 – 12.15 p.m.
10	SC-P-09	Pirom Suwannason pirom.su@rmu.ac.th 0892757096	Ethanol Production from Bagasse Waste by Chemical Pretreatments Followed by Bioreactor using *Saccharomyces Cerevisiae*	Rajabhat Maha Sarakham University	12.15 – 12.30 p.m.
11	SC-P-10	Patcharaporn Ruamwong pch.ruamwong@gmail.com	Infection of Dengue Virus Serotype-2 Triggers Albumin Reduction and Inflammation in Human Hepatocyte-Like Cells (hHLCs)	Mahidol University	12.30 – 12.45 p.m.
12	SC-P-11	Wijitra Thongpunchung kaewpiro@buu.ac.th 038 103 066	The Preliminary Study on Preparation and Characterization of Antimicrobial Biodegradable Film from Carboxymethyl Cellulose	Burapha University	12.45 – 01.00 p.m.

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Science and Technology

(Oral Presentation)

A Geographical Analysis on Ranking of Major Crops in Myinmu Township, Sagaing Region of Myanmar

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Abstract

Myinmu Township, one of the southernmost township of Sagaing Region is situated in the Dry Zone of Central Myanmar. Myinmu Township is located between the latitudes of 21° 50' north and 20° 10' north and between the longitudes of 95°22' east and 95°43' east. The township has about an area of 300 square miles. The township is about 18 miles wide in the east-west direction and about 38 miles long in the north-south direction. Myinmu Township is constituted of 10 wards and 48 village tracts. The shape of the township is roughly a compact rectangular shape. Myinmu Township is bounded by Sagaing Township on the east, Ngazun Township on the southeast, Myaung Township on the south, Chaung U and Monywa Townships on the west and Ayadaw Township on the north. The eastern boundary is demarcated along the Mu River and has a length of about 16 miles. In the southeastern part, the Ayeyarwady River serves as a natural boundary between Myinmu and Ngazun Townships. It is about 10 miles long. The boundaries between Myinmu and Myaung, Chaung U, and Ayadaw are 28 miles, 12 miles and 18 miles long respectively. Two main natural drainage systems are found in Myinmu Township: the Ayeyarwady and Mu rivers. There are six river water pumping irrigation sites. They are Myitpauk, Satppankon, Kyweyaik, Letkanbin, Cheyadaw and Pyawywa. The remaining irrigated and irrigable area is on ¼ of the total township area. The main purpose of the study is to find out the changes in ranking crops production and the living standard of people in Myinmu Township. The present research highlights the suitable site to use for regional agriculture and the planning for development of study area.

Keywords : Ranking Crops, Myinmu, Myanmar

1. Introduction

Major economic activities; agriculture industry, trade are performed in Myanmar in large extent. Agriculture is considered as the back bone of national economy which supports industry and trade of Myanmar to a great extent the eastern and the southern of the portion of the Myinmu

Township is the fertile plain region for agricultural development. This is the major agricultural production region that supplies paddy, pulses and oil seed need in Myinmu Township. Irrigation is one of the major inputs of agriculture which plays an important role in its development. It provides an opportunity for the increase in quantity of agricultural production. Therefore tube well and river pumping irrigation is in variable component for agricultural development. Myinmu water development policies are concerned with the exploitation of groundwater for irrigation purposes in the Myinmu Township are supplied by Ayeyarwady and Mu River with limited water availability during the dry season. Irrigation brings changes in socio-economic status such as education and intensity of crop. Farmers us improved variety of crops. In the areal distribution of sown area under various crops in the early part of 1999s there were over 3 million acres in Sagaing Region. (U Hla Tun Aung, 2003)

Myinmu Township, one of the southernmost township of Sagaing Region is situated in the Dry Zone of Central Myanmar. Myinmu Township is located between the latitudes of 21° 50' north and 20° 10' north and between the longitudes of 95°22' east and 95°43' east.

The township has about an area of 300 square miles. The township is about 18 miles wide in the east-west direction and about 38 miles long in the north-south direction. Myinmu Township is constituted of 52 village tracts. The shape of the township is roughly a compact rectangular shape.

Myinmu Township is bounded by Sagaing Township on the east, Ngazun Township on the southeast, Myaung Township on the south, Chaung U and Monywa Townships on the west and Ayadaw Township on the north. The eastern boundary is demarcated along the Mu River and has a length of about 16 miles. In the southeastern part, the Ayeyarwady River serves as a natural boundary between Myinmu and Ngazun Townships. It is about 10 miles long. The boundaries between Myinmu and Myaung, Chaung U, and Ayadaw are 28 miles, 12 miles and 18 miles long respectively. Some part of the boundaries between Muyinmu and Myaung, Chaung U, Monywa and Ayadaw Townships are demarcated along the courses of streams and lines of ridge crests. The boundary with Monywa has a length of six miles, of which five miles is formed by the Thitwinsu or Htanpinsu chaung. (Figure 1)

2. Research Objective

This research composed of two objectives

2.1 To analyse the spatial distribution of major crops pattern in the study area

2.2 To investigate the ranking of crop in the study area

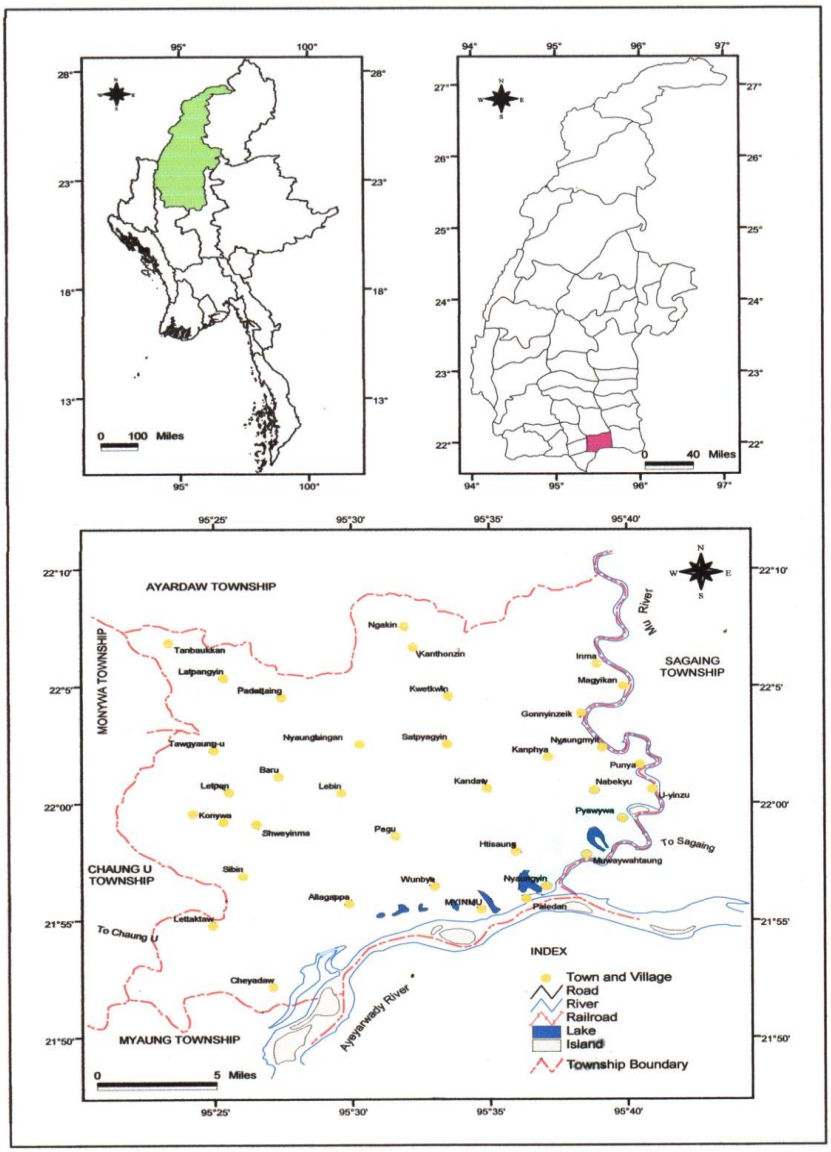

Figure 1 Location of Myinmu Township

Source: Agricultural Land Management and Statistics, Myinmu Township (2019)

3. Research Methodology

3.1 Sample

Regarding the ranking of crops, all of primary data on agricultural crops were taken with seven village tracts by the researcher and used.

3.2 Research Instruments

Research instruments consist of two groups: one includes mathematical method and statistics another does quantitative method.

3.3 Data Collection

This study is based on the analysis of primary data collected from field observations, interviews, questionnaires and informal talks. Secondary data is based on from Methodology and Hydrology Department General Administration Department, Agricultural Land Management and Statistics, Agricultural and Irrigation Department, Water Resource Utilization Department in Myinmu Township. The data bases on are processed and assessed by quantitative and statistics method which are used for the analysis of the study area.

3.4 Data Analysis

First, data were processed into necessary forms. Sufficiency of each crop by every township included in the township was calculated by using locally produced amount and necessary amount. Based on the results from the calculation, relevant map was produced. Inflows and Outflows of the agricultural products were calculated and analyzed.

3.4.1 General Land Use in Myinmu Township

In Myinmu Township, among the four types of agricultural land, *Ya* land acreage of about 125,000 acres, *Le* land acreage of about 27,000 acres, *Kaing Kyun* land about 3,000 acres and *Garden* land acreage of about 20 acres is included. It can be seen that *Ya* land (69.47) percent of the total agricultural land are the most in acreage. It is wider area than the total of the reaming types. *Le* land (14.67) percent of the total agricultural land acreage are the second most. *Kaing Kyun* land (1.97) percent and *Garden* land (0.02) percent are included. The major agricultural land is *Ya* land. Figure (2).

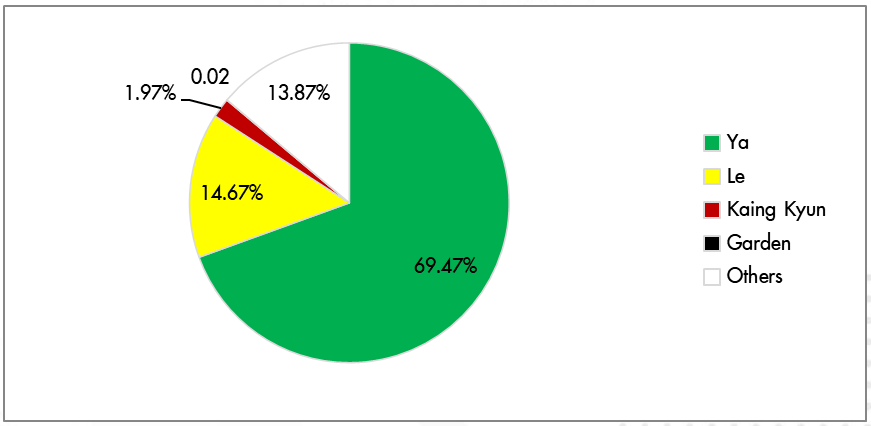

Figure 2 General Land Use of Myinmu Township

Source: Agricultural Land Management and Statistics, Myinmu Township (2019)

3.4.2 Major Crops in Myinmu Township

The study area lies in the Dry Zone. Therefore, the climatic conditions, the relief features, soils and the irrigation facilities determine the agricultural patterns. Major crops, the government had laid down the plan economy and the associated planned crops growing system.

As market oriented policy was laid down by the Government, trading of pulses can be carried out up to the border markets especially the India. According to 2018-2019 data, crops are cultivated in Myinmu Township. These major crops are paddy, corn, sesamum, ground nut, sunflower, pigeon pea, green gram and cotton. See in Figure (3).

Paddy accounts for 2.93% of the total sown acreage of Myinmu Township. Summer paddy is grown in April and it is harvested in July. Monsoon paddy is grown in July and it is harvested in October.

Corn cultivation account for 0.77% with 598 acres. Corn in usually sown in the mid-rainy season from July to August and the crop is harvested in October to December.

Sesamum is the most cultivated crop in (2018-2019). Sesamum accounts for 14.28% of total sown acreage. Early sesamum is grown in monsoon season. Late sesamum is grown in winter season. Early sesamum is generally sown with the first rains on light soils and harvested in late August or September. For the late sesamum, it is sown only loamy soils and harvested in late November or December.

Groundnut cultivation accounts for 14.45% of the total sown acres in the Myinmu Township. Groundnut is grown during the early rain period from May to July and it is harvested from September to October.

Sunflower accounts for 6.54% of total sown acreage of Myinmu Township. Sunflower is grown in June and July and it is harvested in September and October. During the late period sunflower is grown in October to November and is harvested from January and March.

Pigeon pea is the second most important crop with 8.59% after the sesamum in Myinmu Township. Pigeon pea can be cultivated on different kinds of soil. It is usually cultivated in the early and middle of the rainy season. It is grown in July and August and it is harvested from January and March.

Green gram is cultivated accounts for 4.78% of total sown acreage in Myinmu Township. Green gram is grown on Ya land during the early rain period and mid rain period. They are gr4own on loamy sand soils and loamy soils or alluvial soils. They are sown from the middle of September to the middle of December and is harvested from the middle of January to the middle of April.

Black gram is also cultivated in Myinmu Township, accounting for 0.61% of the total sown acreage. Black gram is grown from the middle of September to the middle of December and are harvested from the middle of January to the middle of April.

Cotton is the only one of the industrial crop production fibre it is grown on Ya land and on well drained land in rainy season and in winter. Cotton cultivation accounting for 5.11% of total sown acreage in Myinmu Township. Cotton is grown in May and July and it is picked in October and November. (Pyone Thiri Wai, 2016)

In the areal distribution of sown area under major crops in the 2018-2019, there were over 65900 acres in circle seven, about 60000 acres in circle one, about 50000 acres in circle two, about 4000 acres in circle three, four and five, about 30000 acres in circle six in Myinmu Township. For the year 2018-2019, crops cultivation by circles of Myinmu Township is shown by comparative circles with sector method see Table (1) and Figure (3) and (4).

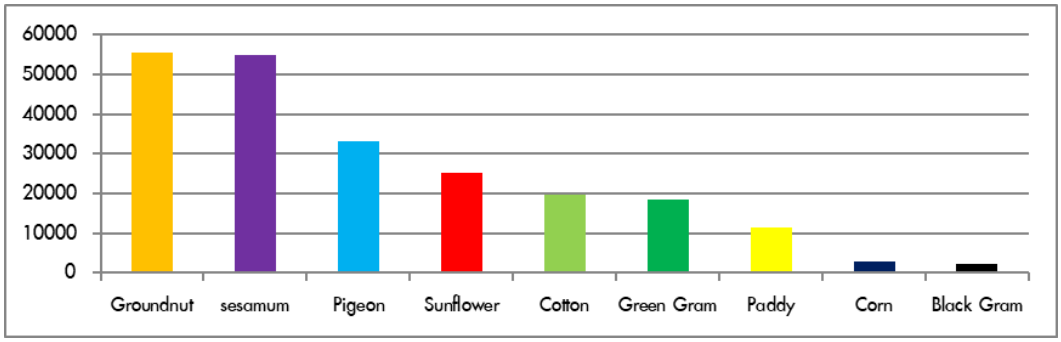

Figure 3 Major Crops in Myinmu Township

Source: Agricultural Land Management and Statistics, Myinmu Township (2019)

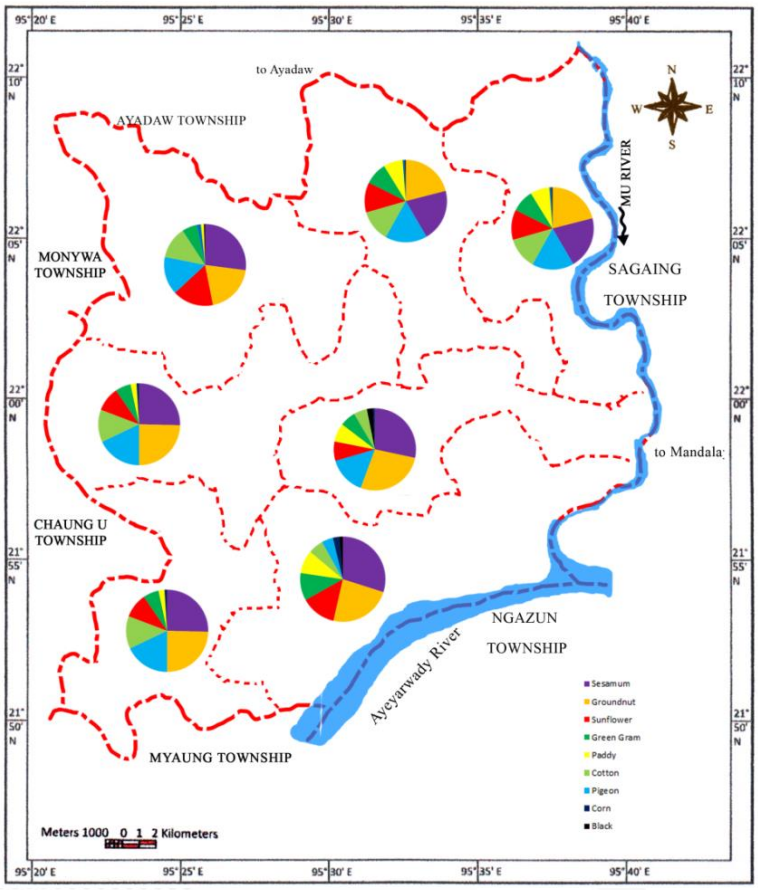

Figure 4 Major Crops Cultivated Area by Circle in Myinmu Township

Source: Agricultural Land Management and Statistics, Myinmu Township (2019)

Table 1 Circle in Myinmu Township

Circle 1	Circle 2	Circle 3	Circle 4
Letpankyin	Nagakin	Shwekyaungkan	Kantaw
Garu	Hteinkan	Mumandalay	Peku
Thamantaw	Khwekhwin	Inma	Nabekyu
Padattaing	Satpyakyin	Gonnyinseik	Pyawywa
Nyaungpinkan	Kanphya	Nyaungmyit	Thabyetha
Tawchaung U		Ponnya	
		Magyikan	

Circle 5	Circle 6	Circle 7
Petaung	Twingyi	Sappankon
Letpan	Sipin	Kyweyaik
Konywa	Gwepintaw	Kyawmin
Shweyinmar	Bomingyikin	Alakappa
Santinkin	Lethtoktaw	Myinmu(East)
Menaw	Magyisu	Myinmu(West)
Pyinsakon	Kalabyan	Myinmu(North)
Yonka	Cheyadaw	Muwaywahtaung
		Nyaungyin
		Paledan
		Htisaung
		Wunpyi

Source: Agricultural Land Management and Statistics, Myinmu Township (2019)

3.4.3 Ranking of Major Crops in Myinmu Township

The Cropping pattern of a region may be determined on the basic of area strength of individual crop. The first, second and third ranking crops of an area unit may be called as the dominant crops of that area. Ranking method can be studied by descriptive and quantitative importance in each component unit. The crop with the largest percentage share of the total cropped area forms the first ranking crops. The crop with next largest share becomes the second ranking crop. The calculation has been made up to third ranking crops. See Table (2) Figure (5), (6), (7)

First Ranking crops: Groundnut is the dominant crops in 27 village tracts. During 2018-2019, Sesamum, Piegon pea, Sunflower and Green gram also rank in same village tracts. Among them, Sesamum was given the second ranking crops in 15 village tracts. Due to the

availability of sufficient supply, water, the cropping patterns of first rank have differed from one village tract to another. Piegon pea was 6 village tracts.

By the first ranking crops of Groundnut cultivation, 27 village tracts are included. These village tracts are 8 village tracts in the river pumping irrigated area 15.69% and 13 village tracts in the tube well irrigated area 25.49%. For the Sesamum cultivated was found 15 village tracts, 5 village tracts in the river pumping irrigation area and 4 village tracts in the tube well irrigated areas.

Second Ranking of Crops: Five crops are found as second ranking in the study area. Sesamum is leading in second ranking crops in 20 village tracts. Other second ranking crops are Groundnut, Green gram, Sunflower and Paddy. Second Ranking crops, there was found in 36 village tracts. There were located 22 village tracts in the tube well irrigated areas. Fourteen village tracts are also placed in river pumping irrigated areas.

Third Ranking of Crops: The crops which are given as third ranking are found to be Piegon pea, Sesamum, Sunflower, Groundnut, Green gram and Paddy. Of the third ranking crops, the most important crop is Piegon Pea. There are 16 village tracts of the crops is sown mainly. Under the category of third ranking crops pulses are the most important crops. These crops are grown throughout the study area because these crops need less amount of water.

Table 2 Ranking Crop by Village Tracts in Myinmu Township (2018-2019)

No	Village Tracts	Crops in Rank			No	Village Tracts	Crops in Rank		
		First	Second	Third			First	Second	Third
1	Letpankyin	Se (19.95)	Pi (9.62)	Gr (9.42)	27	Shweyinmar	Gr (18.41)	Se (15.95)	Pi (13.77)
2	Garu	Gr (14.29)	Co (10.38)	Se (5.55)	28	Santinkin	Gr (17.37)	Se (15.87)	Pi (13.10)
3	Thamantaw	Gr (10.98)	Se (9.68)	Su (8.64)	29	Menaw	Gr (20.78)	Se (15.97)	Gg (7.20)
4	Padattaing	Se (18.11)	Gr (9.94)	Pi (9.17)	30	Pyinsakon	Pi (12.97)	Se (12.30)	Gr (10.93)
5	Nyaungpinkan	Se (16.96)	Gr (10.66)	Su (10.50)	31	Yonka	Se (16.41)	Gr (15.32)	Pi (13.74)
6	Tawchaung U	Su (13.83)	Se (12.37)	Gr (10.36)	32	Twingyi	Gr (29.32)	Pi (13.72)	Se (9.73
7	Nagakin	Gr (14.38)	Se (13.23)	Pi (8.50)	33	Sipin	Gr (25.49)	Pi (11.91)	Se (10.37)
8	Hteinkan	Gr (16.45)	Se (12.11)	Pi (9.62)	34	Gwepintaw	Pi (18.54)	Gr (17.02)	Se (16.74)
9	Khwekhwin	Se (15.59)	Gr (10.65)	Pi (8.52)	35	Bomingyikin	Pi (20.53)	Gr (16.71)	Se (12.80)
10	Satpyakyin	Pi (11.57)	Gr (10.48)	Se (8.7)	36	Lethtoktaw	Pi (33.19)	Gr (19.18)	Se (12.41)

Table 2 (Continue)

No	Village Tracts	Crops in Rank			No	Village Tracts	Crops in Rank		
		First	Second	Third			First	Second	Third
11	Kanphya	Pi (13.02)	Gr (10.55)	Se (10.01)	37	Magyisu	Gr (31.64)	Pi (28.59)	Se (11.62)
12	Shwekyaungkan	Gr (14.66)	Se (14.52)	Su (12.67)	38	Kalabyan	Gr (27.99)	Se (20.77)	Pi (14.29)
13	Mumandalay	Gr (16.50)	Se (10.41)	Pa (8.46)	39	Cheyadaw	Gr (15.73)	Su (12.78)	Se (9.56)
14	Inma	Gr (21.95)	Se (11.65)	Gg (6.6)	40	Sappankon	Gr (14.08)	Pa (9.96)	Se (5.26)
15	Gonnyinseik	Gr (20.87)	Se (13.38)	Pi (11.73)	41	Kyweyaik	Gr (16.83)	Se (6.07)	Su (4.96)
16	Nyaungmyit	Gr (16.19)	Gg (15.39)	Pi (14.74)	42	Kyawmin	Gr (8.55)	Se (7.10)	Co (4.50)
17	Ponnya	Gg (52.25)	Gr (13.62)	Se (9.32)	43	Alakappa	Se (20.02)	Su (8.37)	Gr (7.34)
18	Magyikan	Gr (14.81)	Gg (12.60)	Se (7.84)	44	Myinmu (East)	Se (38.16)	Pi (16.99)	Su (9.33)
19	Kantaw	Se (24.41)	Gr (21.24)	Pi (14.27)	45	Myinmu (West)	Se (22.09)	Pi (15.43)	Gg (11.78)
20	Peku	Gr (19.47)	Se (18.70)	Pi (9.91)	46	Myinmu (North)	Se (11.97)	Gg (8.73)	Gr (7.61)
21	Nabekyu	Gr (17.90)	Gg (11.71)	Se (11.31)	47	Muwaywahtaung	Se (14.59)	Gr (12.40)	Pi (4.70)
22	Pyawywa	Se (14.53)	Gr (12.80)	Gg (7.88)	48	Nyaungyin	Gr (11.46)	Se (8.70)	Su (4.08)
23	Thabyetha	Se (15.61)	Su (10.78)	Pi (10.14)	49	Paledan	Gg (18.37)	Se (17.69)	Pa (4.08)
24	Petaung	Se (28.38)	Gr (14.04)	Pi (10.80)	50	Htisaung	Gr (12.38)	Se (8.82)	Su (6.25)
25	Letpan	Gr (18.60)	Pi (13.65)	Se (11.65)	51	Wunpyi	Se (10.65)	Gr (8.04)	Pa (6.35)
26	Konywa	Gr (18.43)	Se (13.64)	Pi (13.13)		Total	Gr (14.45)	Se (14.28)	Pi (8.59)

Source: Agricultural Land Management and Statistics, Myinmu Township (2019)

Pa - Paddy Se - Sesamum Gr - Groundnut
Pi - Pigeon Pea Su - Sunflower Gg - Green gram
Co - Cotton

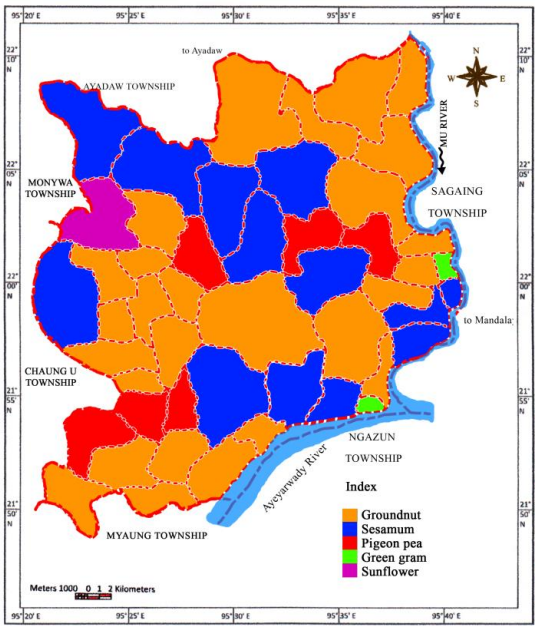

Figure 5 First Ranking Crops in Myinmu Township (2018-2019)

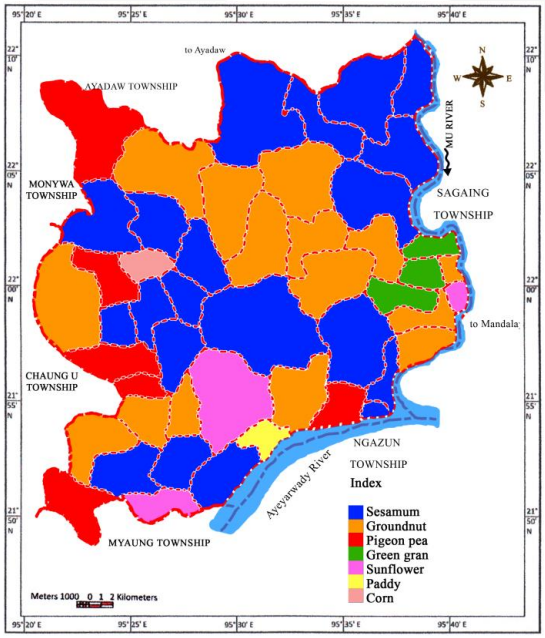

Figure 6 Second Ranking Crops in Myinmu Township (2018-2019)

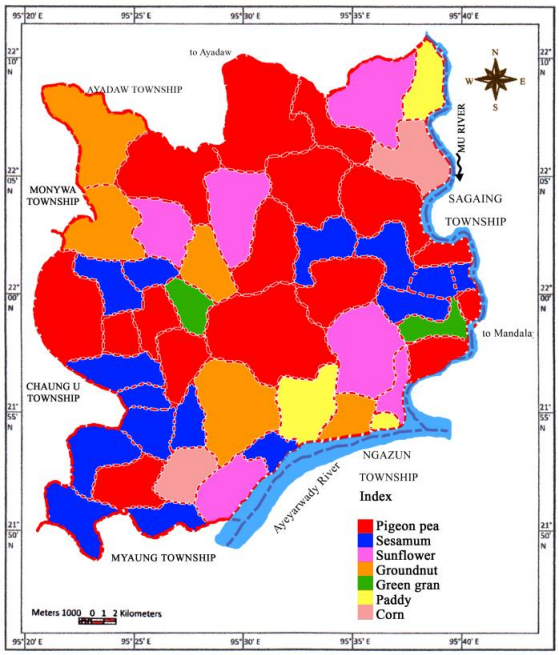

Figure 7 Third Ranking Crops in Myinmu Township (2018-2019)

Source: Based on Table 2

4. Research Result

First Ranking crops: Groundnut is the dominant crops in 27 village tracts in the study area. During 2018-2019, Sesamum, Piegon pea, Sunflower and Green gram also rank in same village tracts. Among them, Sesamum was given the second ranking crops in 15 village tracts. Due to the availability of sufficient supply, water, the cropping patterns of first rank have differed from one village tract to another. Piegon pea was village tracts.

Second Ranking of Crops: Five crops are found as second ranking in the study area. Sesamum is leading in second ranking crops in 20 village tracts. Other second ranking crops are Groundnut, Green gram, Sunflower and Paddy. Second Ranking crops, there was found in 36 village tracts.

Third Ranking of Crops: The crops which are given as third ranking are found to be Piegon pea, Sesamum, Sunflower, Groundnut, Green gram and Paddy. Of the third ranking crops, the most important crop is Piegon Pea. There are 16 village tracts of the crops is sown mainly. Under the category of third ranking crops pulses are the most important crops. These crops are grown throughout the study area because these crops need less amount of water.

5. Discussion

Irrigation is one of the important factors that influence upon agricultural development, particularly on the production of crops, the availability of water, the management of water storage, the systematic water supply. Regarding this, the result that the yield and the acreage vary with different climate, soil condition, relief features and water resources. It was found that the availability of water varies with the spatial distribution of river pumping sites and tube wells and artesian wells. Therefore, water management should be undertaken to collect adequate amount of water during the irrigation season. Moreover ground water should be widely used for irrigation must be repaired to get adequate water supply for irrigation works in Myinmu Township. The co-operation between farmers and agricultural and irrigation departments are needed to be taken the systematic sharing of irrigation water. Suitable cropping pattern should be promoted for the high production of crops under irrigation system as far as it can. The present research highlights the suitable site to use for regional agriculture and the planning for development of study area.

6. Conclusion

Myinmu Township, one of the southernmost township of Sagaing Region is situated in the Dry Zone of Central Myanmar. Two main natural drainage systems are found in Myinmu Township: the Ayeyarwady and Mu rivers. The Ayeyarwady serves as the principal water resource for agriculture and for transportation purposes. The Mu River mainly is used for agriculture.

First Ranking crops: Groundnut is the dominant crops in 27 village tracts in the study area. During 2018-2019, Sesamum, Piegon pea, Sunflower and Green gram also rank in same village tracts. Among them, Sesamum was given the second ranking crops in 15 village tracts. Due to the availability of sufficient supply, water, the cropping patterns of first rank have differed from one village tract to another. Piegon pea was 6 village tracts.

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7. Recommendation

The following are some recommendations based on the research results.

7.1 Irrigation is one of the important factors that influence upon agricultural development, particularly on the production of crops, the availability of water, the management of water storage, the systematic water supply.

7.2 The co-operation between farmers and agricultural and irrigation departments are needed to be taken the systematic sharing of irrigation water. Suitable cropping pattern should be promoted for the high production of crops under irrigation system as far as it can.

8. References

Hla Tun Aung, U (2003); *Myanmar: The Study of Processes and Patterns*, National Center for Human Resource Development, Ministry of Education, Myanmar.

Mg Mg Aye, U (2000); *Research Methodology in Geographic Science*, Department of Geography, Dangon University, Yangon.

Singh, J and Dhillon, S.S (2004); *Agricultural Geography, 3rd edition*, Tata McGraw-Hill Co. Ltd, India.

Mya Kay Khaing (2019); *Role of Irrigation in Crop Cultivation and Production: A Comparative Study of River Pumping and Tube Well Irrigation in Myinmu Township*

Phone Thiri Wai (2016); *Geographical Analysis of Pattern, Prospect and Problems of Agriculture in Kani Township.*

An Analysis on Temperature and Rainfall Condition of Monywa in Sagaing Region, Myanmar

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Abstract

Monywa is the capital of Monywa District and Sagaing Region in Central Myanmar. The town is located on the east bank of the Chindwin River, 38 miles north of the Ayeyarwady-Chindwin River Confluence (Burma Gazetteer, 1913). Main aim of this research is to examine the trends of temperature and rainfall, two elements of climate, of Monywa by using regression, line graphs and 25-year running means, based on the 1986~2019 meteorological data of the town. According to the results, it is found that annual mean temperature of the town is 81.69°F and annual rainfall is 28.94 inches. The trends indicate that generally annual mean temperature of the town goes on at an increase rate of 0.04°F per year and does annual rainfall at an increase rate of 0.11 inch per year. Although it is so, the average maximum temperatures of the hottest months such as April and May are found to have been declining at an annual decrease rate of 0.10 °F. The results of this research show that the temperature trends will continue at these rates in coming decade.

Keywords : Temperature, Rainfall, Line Graph, Linear Regression Method, Monywa, Myanmar

1. Introduction

Monywa, the study area, is the capital of Monywa Township, Monywa District and Sagaing Region in Central Myanmar (see in Figure 1). It is located on the eastern bank of the Chindwin River and lies between latitudes 22° 4' 15" North and 22° 15' 10"North and between longitudes 95° 3' 10"East and 95° 11' 52" East. As it is at the junction of motor-roads in the northwestern part of Central Myanmar, the Chindwin waterway, railway and airway, the town is busy with trading and growing rapidly.

This physical condition appears to control and affect the local temperature and precipitation. Monywa lying in the Dry Zone of Central Myanmar, overall climatic condition of the town generally may be same as those of the towns located in the zone but periodical

conditions may vary from one region to another (Hlat Tun Aung, 2003). In this study mean annual temperature and annual rainfall conditions are emphasized.

2. Research Objectives

This research composed of three objectives:

2.1 To examine the change of climate type during the 1986~2019 years

2.2 To observe and analyze the annual mean temperature and annual rainfall

2.3 To predict the temperature and rainfall by using trend lines

3. Research Methodology

3.1 Information

Secondary data on this study are obtained mainly from the Hydrology and Meteorology Department of Monywa.

3.2 Research Instruments

In this study processed data are examined and analyzed by using graphical method, 25-year running mean method and regression trend lines

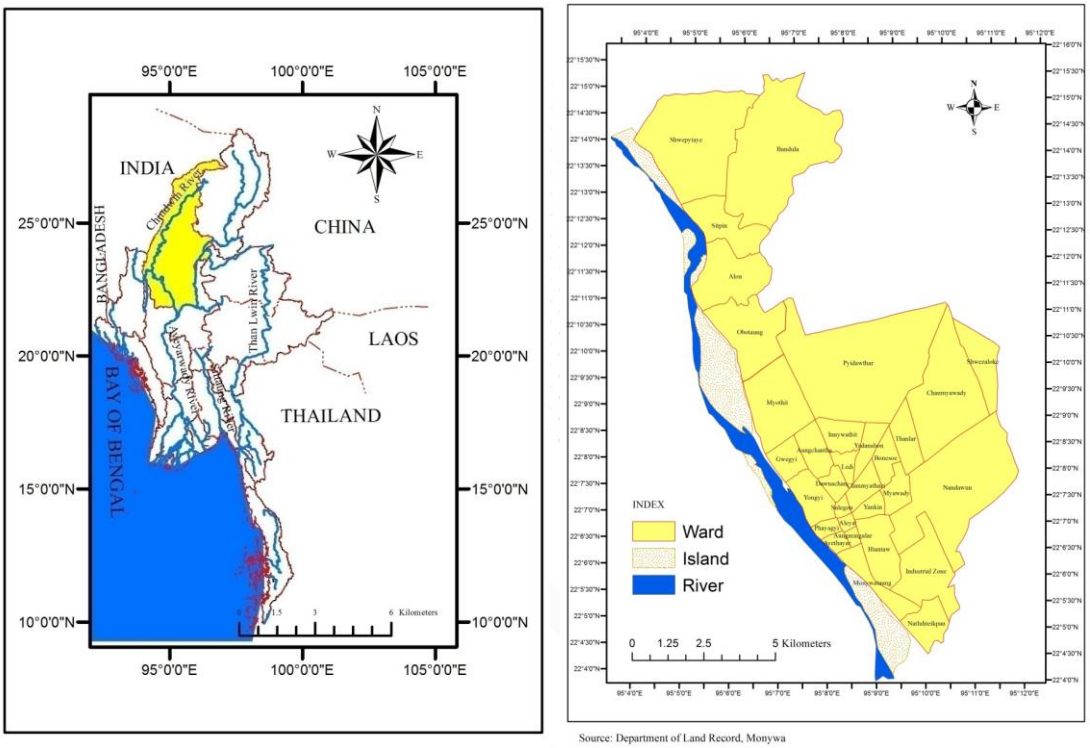

Figure1 Location of Monywa (2019)

Source: Agricultural Land Management and Statistics, Monywa (2019)

3.3 Data Collection

Secondary data on this study are obtained mainly from the Hydrology and Meteorology Department of Monywa. Then by using deductive approach and inductive approaches, based on the analysis, the results are interpreted and the conclusion is drawn, followed by prediction of temperature and annual rainfall conditions of Monywa.

3.4 Data Analysis

Climate plays an important role in health of urban residents. Monywa lies in the hot Dry Zone of Central Myanmar. As it is bounded by the Chindwin River on the west, and irrigated fields on the east and north, people living nearby have to suffer heat with sweatiness in summer and in hot days. Lying inland about 430 miles north far from the sea and in the tropics, the town is hot in summer. Like other parts of Myanmar, there are three seasons in Monywa; summer (Mid March to Mid May), rainy season (Mid May to October), and winter (November to Mid March). Climate elements of the town are described below based on the 34-year (1986-2019) data collected from the Meteorology and Hydrology Department, Monywa.

4. Results

4.1 Temperature

Lying in the Dry Zone of Central Myanmar and far from the sea, Monywa is always hot and particularly suffers intense heat in April and May. According to the data, temperatures of the town are 94.27°F in average monthly maximum temperature, 81.76°F in average mean monthly temperature and 69.23°F in average monthly minimum temperature. Therefore the annual range of temperature is 25.04°F (Figure.2). Its monthly temperature exceeds 70°F. In April and May day temperatures usually rise more than 100°F. It is hottest in April with temperatures of 103.49°F, 87.73°F, and71.96°F whereas the coldest month is January with 85.25°F, 70.27°F, and 55.29°F in maximum, mean, and minimum, respectively. Temperature usually rises starting from Mid-March and reaches in maximum in April and early May. It decreases a little, starting from the last week of May due to incoming monsoon. During the rainy season (Mid-May to October), prevailing rains reduce intense heat and hence monthly mean temperatures range from 77.14°F to 87.66°F. It begins to fall considerably at the beginning of November due to cold winds incoming from north and reaches its maximum in January with a mean monthly temperature of 70.27°F. In nights of winter season (November to February), especially in those of January temperature lowers down occasionally up to below 50.09°F but in days it rises to more than 90°F. Since then, the temperature rises slightly. Staring from the end of February, the rise is implicit and it becomes hotter distinctively.

4.2 Rainfall

Monywa gets an annual rainfall of 28.94 inches, mostly from southwest monsoon induced from the Bay of Bengal. 90.29 per cent of the total rain occurs in rainy months (May to October) and the remaining 9.71% in the November-April period. The town gets rain mostly in September with 23.57 % (6.86 inches) of annual rainfall and second mostly in October with 18.11% (5.24 inches). Generally 28.7% rain is found in May, June and July and 59.26% (17.15 inches) in August, September, and October. According to the 1986-2019 data, the heaviest rain occurred in 2010 with 45.35 inches and the smallest amount of rain in 2008 with a total rainfall of 14.83 inches (Table-1). In the city rains fall heavily in August, September, and October mostly in afternoons and evenings with an average duration of 30 minutes. In the late monsoon period rains last occasionally for one or two days, amounting to 2 or 3 inches. Within the rainy season, except the month July with a total monthly rain of 2.54 inches, every month gets more than 3.21 inches of rainfall.

With a mean temperature of 81.75°F and annual rainfall of 28.94 inches, it suffers a Tropical Steppe Climate (BSh) according to the Koppen's climatic classification. However, in some years with annual rainfall more than 40 inches, Monywa suffers Aw climate.

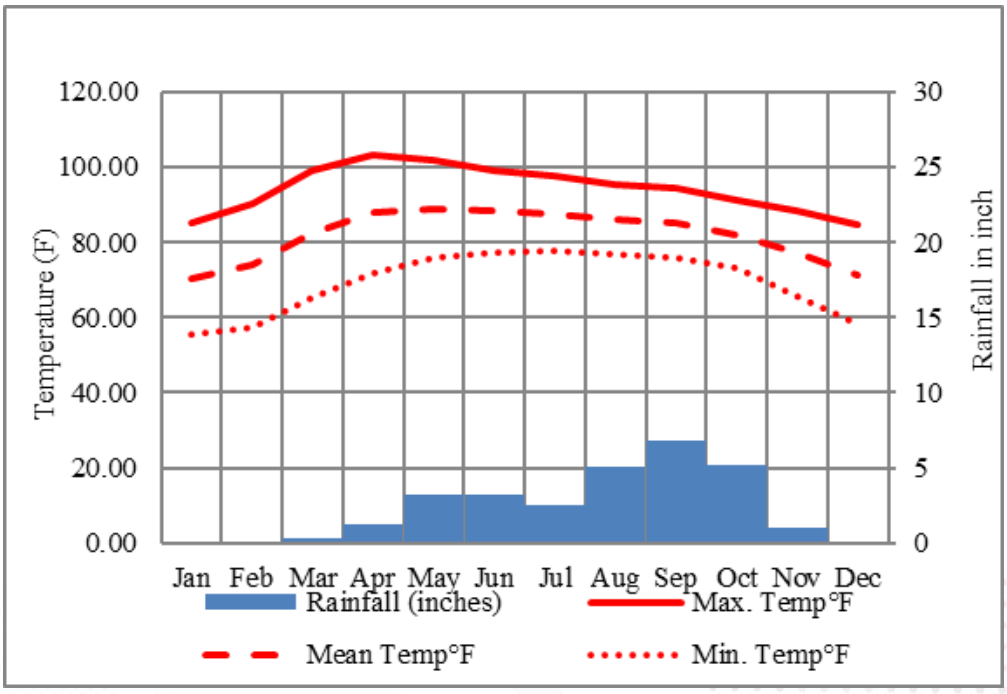

Figure 2 Temperature and Rainfall in Monywa (1986-2019)

Table 1 Temperatures and Rainfall of Monywa during the 1986~2019 Years

Tem/Rainfall	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg/ Total
Max Temp°F	85.25	90.51	99.27	103.49	101.85	98.96	97.54	95.60	94.47	91.27	88.35	84.64	94.27
Mean Temp°F	70.27	73.99	82.20	87.73	88.97	88.24	87.66	86.28	85.09	82.09	77.14	71.37	81.75
Min Temp°F	55.29	57.47	65.12	71.96	76.08	77.51	77.78	76.96	75.70	72.90	65.92	58.10	69.23
Rainfall (inches)	0.04	0.10	0.27	1.21	3.21	3.23	2.54	5.09	6.82	5.24	1.06	0.13	28.94

Source : *Meteorology and Hydrology Department, Monywa*

4.3 Discussion on Temperature and Rainfall

The hottest month in Monywa is May with 88.97°F of mean temperature (1986-2019), the second hottest month is June with 88.24°F and the third hottest month is April with 87.73°F. This situation is different from those of other towns of central Myanmar. However, regarding maximum temperature, the intense heat occurs in April with average maximum temperature of 103.49°F, in May with 101.86°F and in June with 98.96°F. This reveals that local people have to suffer the highest heat in April among the 12 months. Therefore, in this study the average maximum temperatures of April and May are examined by using line graph and linear regression method. According to the line graph of April, it is found that, in April, out of the 34 years there were 7 years (such as 1986,1987,1988, 1989, 1990, 2014 and 2015) with the average maximum temperature higher than 107°F and 27 remaining years with average maximum temperature of lower than 107°F (Figure-2). Moreover, it is found that in April there were 14 years with more than its average maximum temperature and 20 years with less than its average maximum temperature.

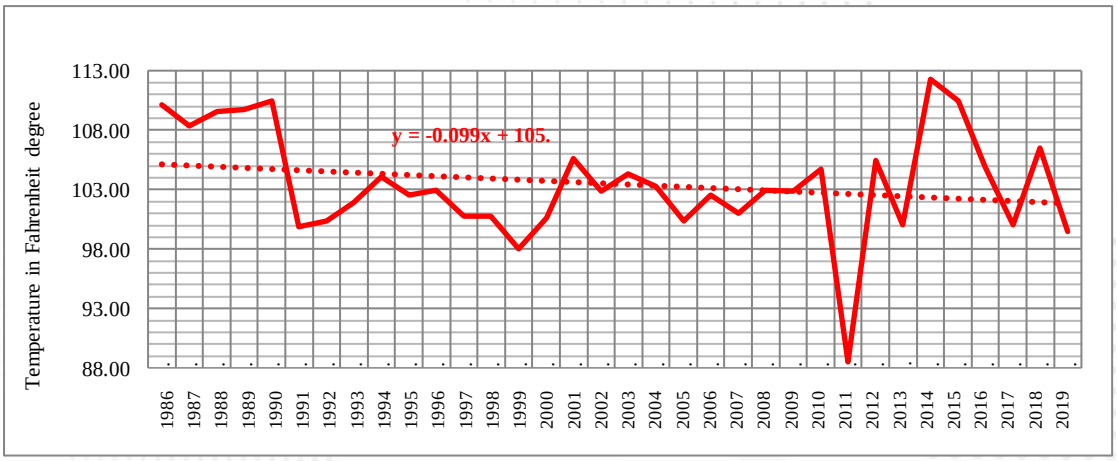

Figure 3 Maximum Temperature Changes of Monywa in April (1986-2019)

Source: Hydrology and Meteorology Department of Monywa (2019)

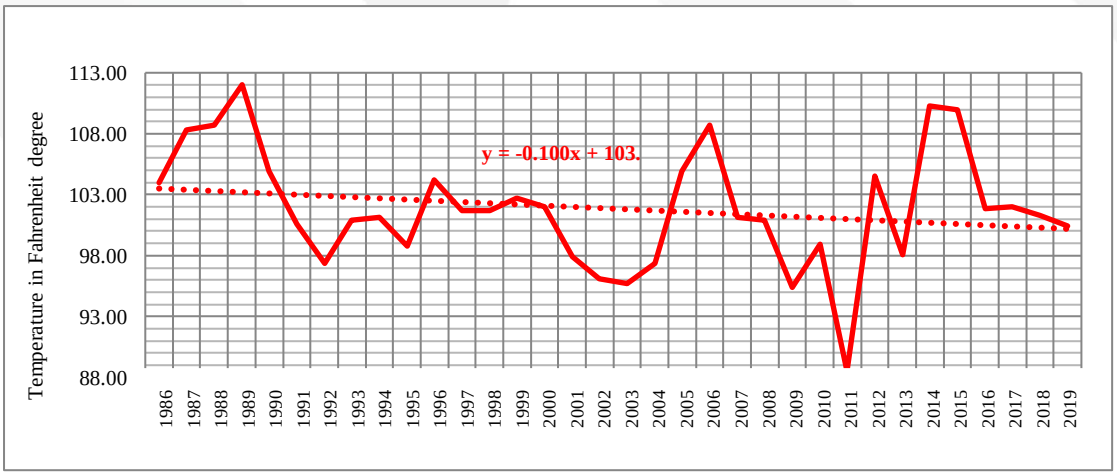

Figure 4 Maximum Temperature Changes of Monywa in May (1986-2019)
Source: Hydrology and Meteorology Department of Monywa (2019)

According to the regression analysis, the result (y = - 0.099x + 105.2) shows that the average maximum temperature of April has been decreasing during the 34 years. It implies that, despite the occurrence of increase in global temperature trend and local mean annual temperature trend, the intense heat of Monywa in April has been reducing year after year at an average annual decrease rate of 0.10 °F. This annual lessening of April heat releases suffering of the urbanites from the intense summer heat annually experienced. Similar case of temperature trend also occurs in May (Figure-3). It is clearly indicated by the regression equation of y = -0.100x + 103.6. Regarding average maximum temperature of March, there was no distinct change annually but very slightly decrease occurred. It was indicated by y = -0.007x + 99.41 of the regression equation for March (Figure-5). It means that March maximum temperature will go on regularly. Regarding mean annual temperature, Figure-6 displays that it has been rising at an annual increase rate of 0.04°F in Monywa. This refers to year round temperature rising than ever and to that local people may suffer intense heat greater than the previous years. Although it is so, the results on average maximum temperature trends of March, April and May reveal that such temperatures have been decreasing year after year.

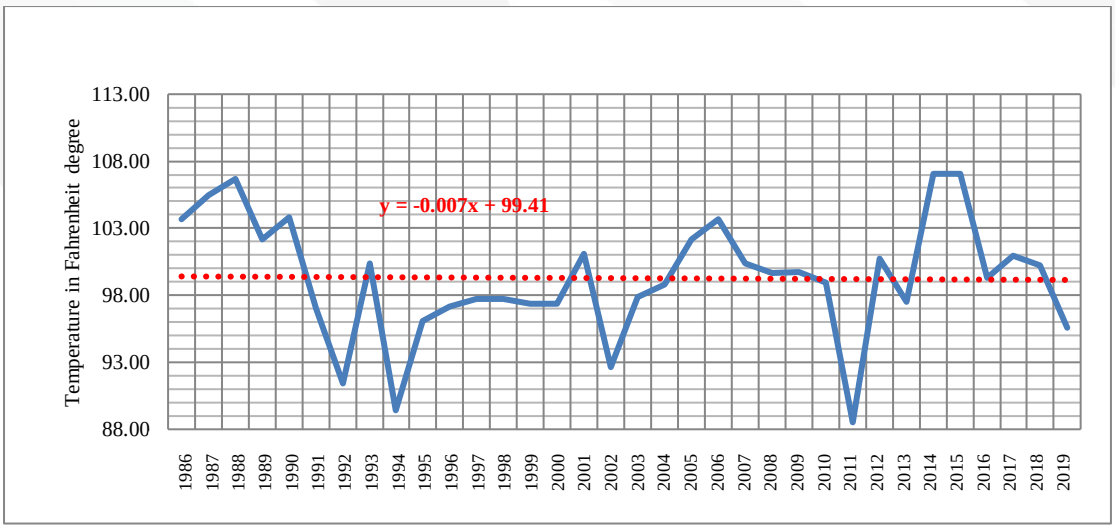

Figure 5 Maximum Temperature Changes of Monywa in March (1986-2019)
Source: Hydrology and Meteorology Department of Monywa (2019)

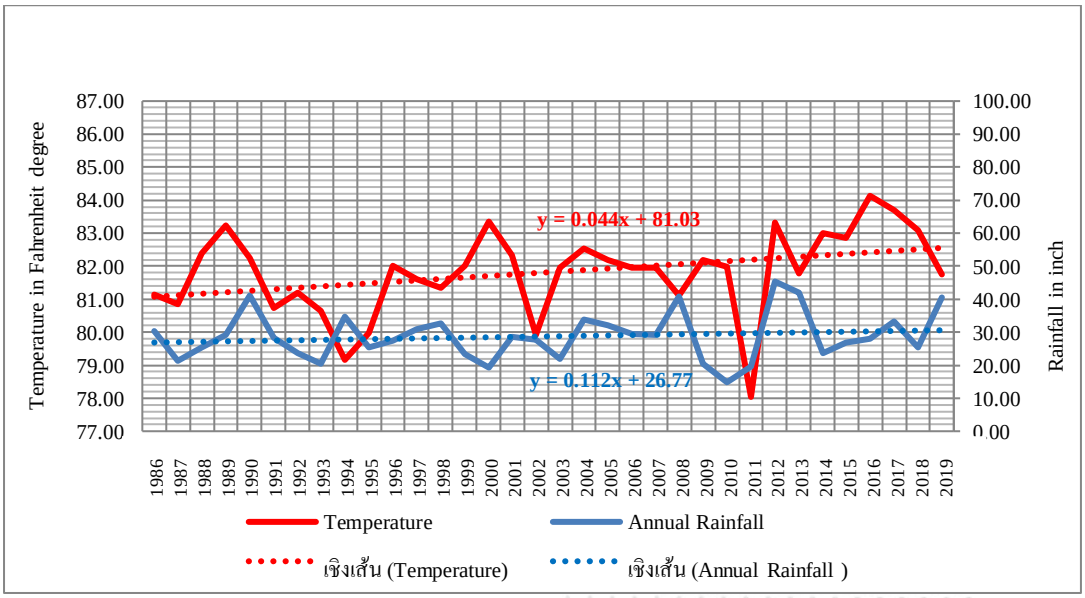

Figure 6 Changes in Mean Annual Temperature and Annual Rainfall of Monywa (1986 -2019)
Source: Hydrology and Meteorology Department of Monywa (2019)

In rainfall condition, according to the 1986-2019 data, average annual rainfall of 34 years accounts for 28.74 inches (719mm). Of these, there were 15 years with annual rainfall of more than the average and 19 years with less than the average. According to the regression analysis, the equation (y = 0.112x + 26.77) reveals that during the study period of 34 years (1986-2019) annual rainfall has been increasing year after year at an annual increase rate of 0.11 inch (2.75mm per year) and it will continue at this rate in coming years (Figure-6).

Based on the meteorological data on Monywa, in order to know the climate change of Monywa, relevant data (1986-2019) are tabulated and described in Table (2) in which yearly climate types are also calculated and described.

According to Andy Koh (2008), **climate** refers to the weather pattern of a place over a long period of time, usually 25 or 30 years and more. The climate types shown in column five of Table (2) are intended to be understood possibly close to consideration of general yearly condition on climate. Regarding climate classification, the method of Koppen is followed and 25-year running means of mean annual temperatures and annual rainfalls are used (Table-3). Table (2) shows that within 34 years (1986-2019) Monywa had experienced BSh climate except the years of 1988, 1992,2002, 2006, 2010, 2011 and 2017 which have experienced Aw climate (Tropical Savanna Type). However, Table (3) which described the calculation for series of successive 25 years indicates that Monywa had BSh (Tropical Steppe) climate.

Table 2 Calculation of Climate for Every Year in Monywa (1986-2019)

Sr.	Year	Temperature	Annual Rainfall	Climate	(0.44*T)-3
1	1986	81.14	30.31	BSh	32.7
2	1987	80.86	21.41	BSh	32.57
3	1988	82.40	25.39	BSh	33.26
4	1989	83.22	29.29	BSh	33.62
5	1990	82.24	41.10	Aw	33.19
6	1991	80.72	28.41	BSh	32.52
7	1992	81.21	23.66	BSh	32.73
8	1993	80.65	20.38	BSh	32.49
9	1994	79.15	34.74	Aw	31.83
10	1995	79.97	25.51	BSh	32.19
11	1996	82.01	27.44	BSh	33.08
12	1997	81.61	30.90	BSh	32.91
13	1998	81.34	32.61	BSh	32.79
14	1999	82.02	23.31	BSh	33.09
15	2000	83.36	19.25	BSh	33.68
16	2001	82.32	28.48	BSh	33.22
17	2002	79.91	27.69	BSh	32.16
18	2003	81.95	22.01	BSh	33.06
19	2004	82.53	33.78	Aw	33.31
20	2005	82.18	32.04	BSh	33.16
21	2006	81.96	29.53	BSh	33.06

Table 2 (Continue)

Sr.	Year	Temperature	Annual Rainfall	Climate	(0.44*T)-3
22	2007	81.94	29.21	BSh	33.05
23	2008	81.10	40.71	Aw	32.68
24	2009	82.20	20.41	BSh	33.17
25	2010	81.99	14.83	BSh	33.08
26	2011	78.04	19.63	BSh	31.34
27	2012	83.32	45.35	Aw	33.66
28	2013	81.79	42.09	Aw	32.99
29	2014	83.01	23.77	BSh	33.52
30	2015	82.86	26.76	BSh	33.46
31	2016	84.13	27.99	BSh	34.02
32	2017	83.70	33.23	BSh	33.83
33	2018	83.10	25.31	BSh	33.56
34	2019	81.75	40.57	Aw	32.97
		81.69	28.94	BSh	32.94

Source: Hydrology and Meteorology Department of Monywa (2019)

Table 3 Change of Climate Types in Monywa (1986-2019)

Periods	Temperature	Rainfall (inch)	(0.44*Temp.)-3	Climate Type
1986-2010	81.60	27.70	32.90	BSh
1987-2010	81.48	27.27	32.85	BSh
1988-2012	81.57	28.23	32.89	BSh
1089-2013	81.55	28.89	32.88	BSh
1990-2014	81.54	28.67	32.88	BSh
1991-2015	81.57	28.10	32.89	BSh
1992-2016	81.70	28.08	32.95	BSh
1993-2017	81.80	28.47	32.99	BSh
1994-2018	81.90	28.66	33.04	BSh
1995-2019	82.00	28.90	33.08	BSh

Source: Hydrology and Meteorology Department of Monywa (2019)

Climatically, the trend (0.049x + 81.39) of 25-year running mean temperatures of Monywa (1986-2019) points out that the temperature has been rising at an increase rate of 0.05°F in every 25 years (Figure-7) between 1984 and 2017. The equation y = 0.113x + 27.67

shows that statistically average 25-year running annual rainfall of Monywa has been increasing at a rate of 0.11 inch in every 25 years (Figure-8).

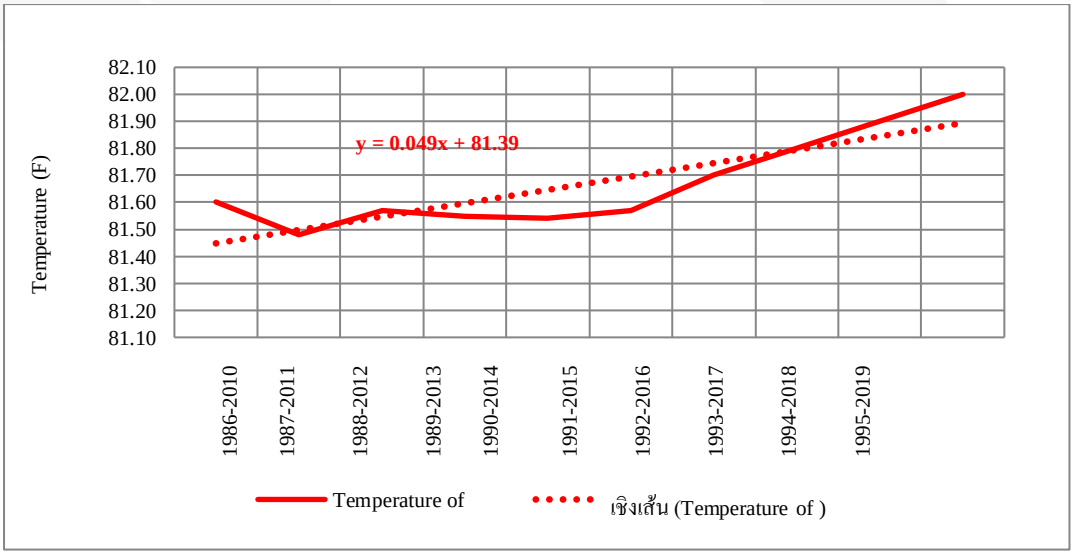

Figure 7 25-year Running Mean Temperatures of Monywa (1986-2019)

Source: Based on Table 3

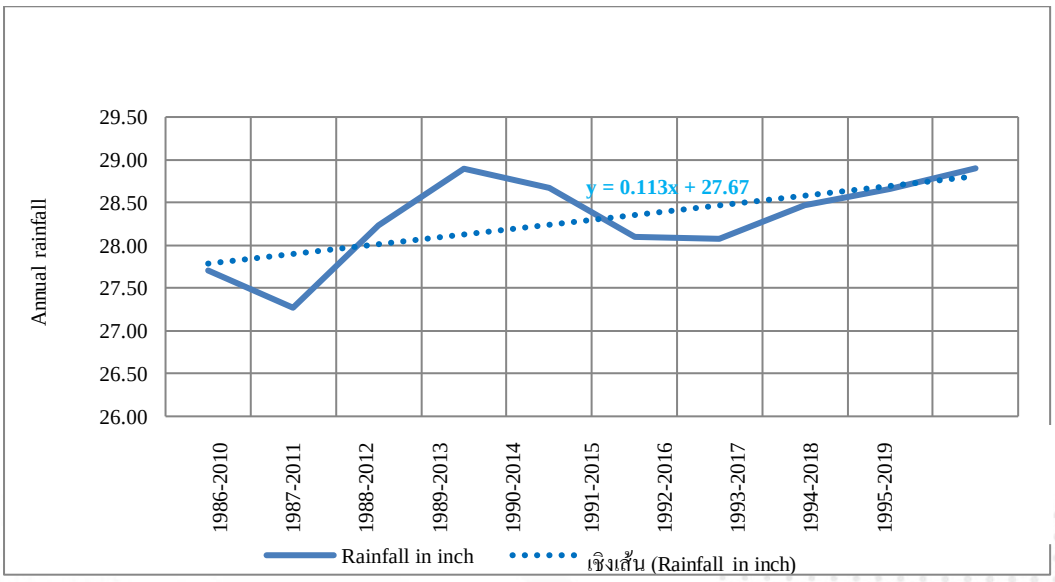

Figure 8 25-year Running Mean Annual Rainfalls (inch) of Monywa(1986-2019)

Source: Based on Table 3

5. Discussion

Climatically, the trend (0.049x + 81.39) of 25-year running mean temperatures of Monywa (1986-2019) points out that the temperature has been rising at an increase rate of 0.05°F in every 25 years (Figure-7) between 1986 and 2019. The equation y = 0.113x + 27.67

shows that statistically average 25-year running annual rainfall of Monywa has been increasing at a rate of 0.11 inch in every 25 years (Figure-8).

6. Conclusion

In conclusion, the results show that generally annual mean temperature of the town goes on at an increase rate of 0.04°F per year and does annual rainfall at an increase rate of 0.11 inch per year. As to the 25-year running mean, it is found that mean temperature has been increasing at a rate of 0.05°F per year. Although it is so, the average maximum temperatures of the hottest months such as April and May are found to have been declining at an annual decrease rate of 0.10 °F. The results of this research show that the temperature trends will continue at these rates in coming decade.

7. Recommendation

The following are some recommendations based on the research results.

7.1 The results show that generally annual mean temperature of the town goes on at an increase rate of 0.04°F per year and does annual rainfall at an increase rate of 0.11 inch per year. As to the 25-year running mean, it is found that mean temperature has been increasing at a rate of 0.05°F per year.

7.2 The average maximum temperatures of the hottest months such as April and May are found to have been declining at an annual decrease rate of 0.10 °F. The results of this research show that the temperature trends will continue at these rates in coming decade.

8. References

Arkin H. and Colton R. R. (1965). *Statistical Method*, Fourth Edition. BARNES & NOBLE Inc. New York

Burma Gazetteer (1913). Lower Chindwin District. Vol. A.

Chhibber, M. L. (1934). *Geology of Burma*, St. Martin Street, London.

Gregory, S. (1980). *Methods of Correlation, Regression Lines and Confidence Limits, Fluctuations and Trends*, Statistical Methods and the Geographer Longman, London and New York, pp. 176-224.

Hammond, R. & Mccullagh (1978). *Quantitative Techniques in geography,* Second Edition, Clarendon Press, Oxford.

Hla Tun Aung, U (2003). *Myanmar: The Study of Processes and Patterns*, National Center for Human Resource Development, Ministry of Education, Myanmar.

Saw Aung, Mg (1971). *Economic Geography of Monywa District (Myanmar),* Mandalay University.

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Agricultural Land Use and Cropping Patterns of Salingyi Township, Sagaing Region in Myanmar

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Abstract

Agriculture is the most fundamental activity of mankind. Agriculture refers to the art of raising plant from soil. This research is mainly based by agriculture. The land use patterns explain from agriculture cropping pattern and changes are analyzed. Primary and secondary data are collected and analyzed by cropping pattern and land use pattern. Salingyi Township is situated in Sagaing Region in the Dry Zone of Central Myanmar. Agricultural land use varies with natural factors such as topographic characteristics, climate, soil and social factors. According to 2018-2019 township land use data, the current cultivated area was 106219 acres. The study area was found to be dominated by "Ya" Land in agricultural land use. In analyzing the cropping pattern of the study area, it is found to be dominated by "Ya" crops such as sesamum, gram, pigeon pea, groundnut and sunflower. Therefore, the distribution of ranking crops had been classified as first, second and third ranking crops.

Keywords : Ranking Crops, Agricultural Land Use, Cropping Patterns, Myanmar

1. Introduction

Agriculture still forms the backbone of Myanmar economy, in spite concerned efforts towards industrialization in last three decades. Agriculture contributes a high share of net domestic product by sectors in Myanmar. Farmers are growing numerous of crops in the field rather than single crop. The distributional pattern of crops in any region is an outcome of predominance of certain crop or combination of crops. This is a term of emergence of typical crop combination. Cropping pattern in study region has undergone an evolutionary process. The soil and other natural environmental factors, along with the socioeconomic factors, affect the cropping pattern in study region. Agriculture is the most fundamental activity of mankind. Agriculture refers to the art of raising plant from soil. It is carried throughout the world. In many Asian countries more than 70 percent of the population depends upon agriculture. Even in industrialized countries, the agriculture is an important activity because it provides food crops like paddy and wheat, industrial

raw materials like sugarcane and rubber, and many other products. Rapid land use change has taken place in Yinmabin district due to accelerated and mainly for agriculture, industrialization and urbanization. Due to the growth of population the food requirements are also increased. In order to meet the basic requirements, the govt. has planned to increase the irrigation facilities and the agricultural inputs. Agricultural land is typically land devoted to agriculture, the systematic and controlled use of other forms of life-particularly the rearing of livestock and with production of crops to produce food for humans. Land use is mainly related to the optimum use of the limited land between alternative major types of land use (RB Mandal 1982). Land use of a region depends partly on the living standard of people who live in the respective region and the development of the region itself. Cropping pattern is the proportion of area under various crops at a point of as it changes over space and time. Cropping pattern mean the production of area under various crops at a point of time. The main aim of the study is to investigate the agricultural land use and differentiation of cropping pattern of the study area. The objectives are as follows:

- to study the spatial distribution of agricultural land use
- to observe the cultivation of major crops
- to analyze the distribution of ranking crops of the study area

2. Methodology

Salingyi Township is situated in the Dry Zone of Central Myanmar, Sagaing Region. It lies between north latitudes 21^{o} 49' and 22^{o} 54' and east longitudes 94^{o} 58' and 95^{o} 58'. The total area of Salingyi Township is 263.02 square miles (168333 acres). It is constituted as four urban wards and (39) village tracts. Generally, the topography of Salingyi Township can be divided into three parts; (1) the eastern region, (2) the central hilly region and (3) the western plain. Chindwin River is the eastern boundary of Salingyi Township which flows from north to south. North Yama Chaung and South Yama Chaung are the tributaries of Chindwin River. According to the period from 1990 to 2019, Salingyi has an average mean temperature of (81.89^{o}F) and annual rainfall of (29.29) inches. Therefore, the township has a BSh climate according to the Koppen's classification. The soils of Salingyi Township play an important role in its economic development. The soils appear to have been influenced by relief, climate natural vegetation and parent material of the township. The soil types of Salingyi Township can be divided into five types: Primitive Crushed Stone soil, Black Earth Soil, Red Brown Savanna soil, Dark Compact Savanna soil and Meadow soil. Semi-arid type of vegetation and tropical savanna types of vegetation can be found in this area.

In this paper, primary and secondary data are used. Primary data are obtained from field survey, and interview methods. Secondary data are mainly collected from Department of

Meteorology and Hydrology in Monywa, Department of Agricultural Management and Statistics in Salingyi Township.

Based on the field survey and secondary data, the research is constructed. Then the research was analyzed by means of geographical methods. Similarly, the method of ranking crops are used to analyze the agricultural data.

3. Results

Agricultural Land Use

The agricultural land use of the study area varies with natural factors such as topography and relief, soil and climate. In the year 2018-2019 data, the agricultural land use in Salingyi Township can be divided into four types; "Le" Land, "Ya" Land, "Kaing-Kyun" Land and Garden Land. The current cultivated area of Salingyi Township was 106219 acres in 2018-2019.

Of this acreage "Le" land is 6226 acres accounting for 5.86% of the total current cultivated area. "Le" land is the second most important in the study area. "Le" land can be found along the south Yama Chaung and western part of the township. Phongkatar Village Tract is the smallest number of "Le" land with 3 acres or 0.1% of the total current cultivated area. Tayar Village Tract is the largest number of "Le" land 702 acres with account for 22% of the total current cultivated area. Paddy is grown as the main crop on "Le" land. Seven village tracts are not found in "Le" land.

"Ya" land is the most important and the largest of cultivated land. In 2018-2019, the total "Ya" land in township was 95084 acres with 89.52% the total current cultivated area. The smallest acres of "Ya" land with amount of 268 acres or 0.28% of the total current cultivated area is found in Kyaukmyet Village Tracts Kyaingkhamauk Village Tract is the largest acres of "Ya" land 5,612 acres are 5.9% of the total current cultivated area.

"Kaing-kyun land is 4,874 acres or 4.59% in the Salingyi Township. "Kaing-kyun" lands are found along the Chindwin River, North Yama Chaung and South Yama Chaung. Latpataung Village Tract is the largest number of "Kaing-kyun" land 1122 acres with account 23.02% of the total current cultivated area. Linsarkyet Village Tract is the smallest number of "Kaing-kyun" land 2 acres or 0.04% of the total current cultivated area. 20 village tracts are not found in "Kaing-kyun" land.

In 2018-2019, garden land covered 35 acres or 0.02% of the total cultivated area. The largest amount of garden land with 8 acres is found in Nyaungpingyi Village Tract. Kyardet Village Tract is the smallest amount of garden land with one acres. Garden land was not found in 28 village tracts of the study area.

The Cultivation of Major Crops

The major crop cultivation of the study area change depending on climate, soil condition, the government project crops, market price of crops and need to the local people. In

Salingyi Township, major crops are gram, sasemum, sunflower, pigeon pea, gree gram, groundnut, paddy and wheat. These crops were grown in summer, rainy and cold seasons. The major crops are shown in Table (1) and figure (2).

The Distribution of Ranking Crops

As Salingyi Township is a dry region "Ya" Land is the largest cultivated land and "Ya" crops are largely grown there. In order to analyze the cropping pattern of Salingyi Township, it is necessary to classify the types of crop within the township such as; major crops and minor crops. The sown areas of various crops in village tracts the year of 2019 were being studied in the study area. Based on the percentage of sown acreage of each type of crops sown in each single village tract, the classification of crop according to ranking system could be made for various village tracts as first ranking crops, second ranking crops and third ranking crops, respectively. The distribution of ranking crops in Salingyi Township shown by table (2).

First Raking Crops

In 2019 year data, there are six crops classified as first ranking crops and is described in Figure (3). These crops are gram, sesamum, pigeon pea, green gram, paddy and groundnut. Gram and sesamum were extensively grown in the whole of Salingyi Township. Among these six crops, gram is dominant crop in (16) village tracts which are found in the western and south western parts of the township. These village tracts with dark compact savanna soil grow gram as the main crop. Sesamum as first ranking crop were grown in town area and (14) village tracts which lies in the central, northern and southern parts of the township. Sesamum is grown in rainy season and winter season. These village tracts are town area, Duhtauk, Paungwa, Nyaungpingyi, Moegyopyin, Phaungkatar, Nyaungpinto, Mataungta, Thammataw, Kyekhotaw, Yomepinyoe, Sarkha, Hnawkutoe, Linsarkyet and Tayar. Pigeon pea was grown as first ranking crop in three village tracts. These village tracts are Yemain, Shwethamin and Bokesu. Pigeon pea was grown on "Ya" Land and during rainy season. Green gram as first ranking crop was cultivated in Myaezone and Sonetar Village Tracts. These village tracts are situated in south western part of the township. First ranking crop of groundnut was grown in Latpataung and Taungpalu Village Tracts. These village tracts are found in north eastern part of the township. Paddy was grown as first ranking crop in only one village tract of Ngakhone. It is located near the South Yama Chaung and Chindwin River.

Second Ranking Crops

In Salingyi Township five crops are classified as second ranking crops and is shown in Figure (4). These crops are sesamum, pigeon pea, gram, sunflower and green gram. Among these crops, sesamum was leading grown in (17) village tracts. These village tracts are Sarhtone, Htanzin, Latpataung, Ywashee, Tone, Kyaukmyet, Dontaw, Taungpalu, Bikethayet, Yemain, Zeechine, Zeepani (N), Ywathamin, Chaungyoe, Phlankan and Bokesu. Pigeon pea was cultivated

as second ranking crop in Town area and (8) village tracts. These are Town area, Duhtauk, Moegyopyin, Nyaungpinto, Kyekhotaw, Panhtoo, Yonwpinyoe, Sarkha and Linsarkyet Village Tracts. Gram was grown as second ranking crop. It is found in (9) village tracts. These village tracts are Paungwa, Nyaungpingyi, Mataungta, Thanmataw, Myaezone, Sonetar, Hnawkutoe, Ngakhone and Tayar. Sunflower as second ranking crop was cultivated in Phaungkatar, Kyardet, Zeepani (S) and Khunthar village tracts. Green gram was grown as second ranking crop in only are village tract of Kyaungkhamauk.

Third Ranking Crops

The third ranking crops in Salingyi Township are shown in Figure (5). There were seven types of crops in the study area. Sesamum was found as the largest crop grown. The village tracts which grow sesamum as the third ranking crop include in (12) village tracts. These are Duhtauk, Sarhtone, Paungwa, Nyaungpingyi, Kyaukmyet, Dontaw, Nyaungpinto, Bikethayet, Mataungta, Zeechine, Zeepani (N) and Ngakhone village tracts. Gram was grown in nine village tracts within the Salingyi Township as the third ranking crop. These village tracts are Latpataung, Tawungpalu, Moegyopyin, Phaungkatar, Shwethamin, Yemain, Sarkha, Bokesu and Linsarkyet. Green gram which is cultivated as third ranking crop was found in five village tracts and Town area. They are Htanzin, Thanmataw, Ywathamin, Panhtoo and Tayar village tracts. Sesamum was grown in six village tracts as the third ranking crops. Kyardet, Zeepani (S), Myaezone, Sonetar, Kyaingkhamauk and Khunthar village tracts are included in the third ranking crop. Groundnut was cultivated in five village tracts within the study area. These village tracts are Ywashee, Yonepinyoe, Chaungyoe, Phalankan and Hnawkutoe. Wheat was grown in Tone Village Tract as the third ranking crops. Paddy which is cultivated as third ranking was found in Kyekhotaw Village Tract. Therefore, gram, sesamum, pigeon pea, green gram and groundnut could be regarded as the major crops of Salingyi Township. The remaining crops or other crops could be regarded as the minor crops.

Table 1 Major crops cultivated by town area and village tracts in Salingyi Township (2019)

No	Town / Village Tracts	Gram	Sesa-mum	Pigeon Pea	Sun-flower	Green Gram	Ground-nut	Paddy	Wheat
1	Town area	51	3647	3237	102	1452	-	1058	-
2	Duhtauk	84	712	242	240	172	-	-	-
3	Sarhtone	397	366	249	366	157	-	3	36
4	Paungwa	413	437	343	316	110	-	2	27
5	Htanzin	439	352	182	302	315	-	-	-
6	Lapataung	532	670	51	389	300	860	3	385
7	Ywashee	450	426	170	187	95	405	87	-
8	Tone	713	500	31	292	170	51	-	365
9	Nyaungpingyi	437	868	236	182	47	147	-	72

Table 1 (Continue)

No	Town / Village Tracts	Gram	Sesa-mum	Pigeon Pea	Sun-flower	Green Gram	Ground-nut	Paddy	Wheat
10	Kyaukmyet	352	258	51	226	-	102	-	-
11	Dontaw	363	275	71	165	-	57	5	-
12	Taungpalu	337	449	109	319	58	860	-	385
13	Moegyopyin	363	1516	884	294	42	-	237	239
14	Phaungkatar	353	987	349	406	194	-	167	304
15	Nyaungpinto	356	1211	540	393	225	-	40	-
16	Bikethayet	1654	1360	60	596	175	136	500	518
17	Mataungta	768	1610	195	530	73	285	205	194
18	Shwethamin	410	1370	2119	373	265	78	25	-
19	Thanmataw	1704	1978	733	546	873	357	185	-
20	Kyekhotaw	-	762	540	373	65	82	450	-
21	Panhtoo	1702	891	1425	652	1100	679	216	183
22	Yemain	1235	1385	1850	389	523	189	120	-
23	Yonepinyoe	159	1090	906	300	133	724	115	-
24	Kyardet	2312	1049	185	1127	404	-	24	345
25	Zeechine	973	397	35	341	99	200	5	155
26	Zeepani (S)	2161	649	43	669	280	402	15	-
27	Zeepani (N)	1992	660	60	447	400	403	-	-
28	Ywathamin	3210	1370	28	1120	1170	199	48	105
29	Myaezone	1372	1279	829	906	1473	736	213	-
30	Sonetar	3355	1323	2	1209	1437	418	14	44
31	Kyaingkhamauk	3066	2595	-	765	2537	924	-	-
32	Chaungyoe	1057	730	-	353	225	554	-	-
33	Phalankan	4393	911	-	1282	512	924	32	-
34	Sarkha	226	727	387	-	114	83	-	22
35	Khunthar	448	415	341	440	90	193	9	216
36	Hnawkutoe	451	513	185	231	135	287	252	185
37	Ngakhone	386	289	116	343	277	277	501	190
38	Bokesu	586	626	1371	468	285	135	439	222
39	Linsarkyet	542	1002	547	513	395	397	342	202
40	Tayar	792	925	329	404	549	356	511	-
	Total	40594	38580	19031	18556	16926	11500	5823	4394

Source: Department of agricultural land management and statistics, Salingyi Township

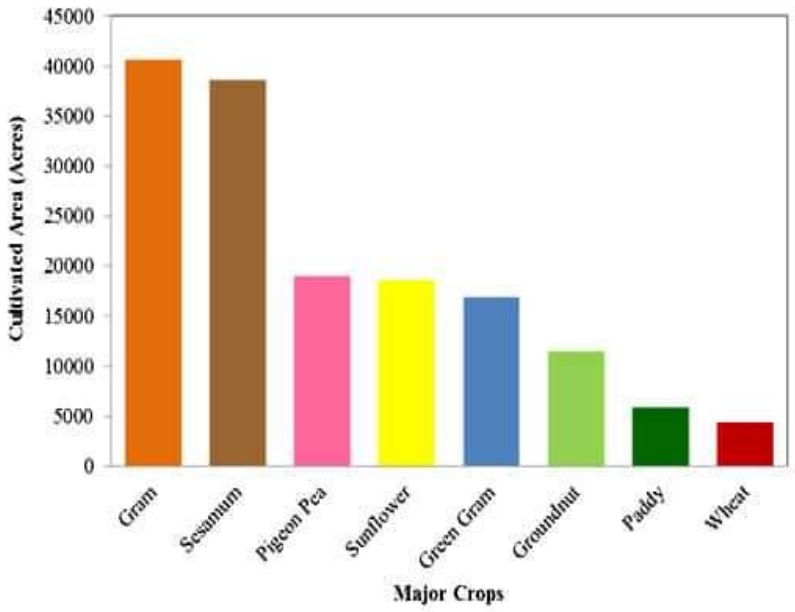

Figure 1 Major crops cultivated by town area and village tracts in Salingyi Township (2019)

Table 2 Distribution of ranking crops in Salingyi Township (2019)

No	Town / Village Tracts	Ranking of Crops		
		First	Second	Third
1	Town Area	Sm	Pp	Gg
2	Duhtauk	Sm	Pp	Sf
3	Sarhtone	G	Sm	Sf
4	Paungwa	Sm	G	Sf
5	Htanzin	G	Sm	Gg
6	Lapataung	Gn	Sm	G
7	Ywashee	G	Sm	Gn
8	Tone	G	Sm	W
9	Nyaungpingyi	Sm	G	Sf
10	Kyaukmyet	G	Sm	Sf
11	Dontaw	G	Sm	Sf
12	Taungpalu	Gn	Sm	G
13	Moegyopyin	Sm	Pp	G
14	Phaungkatar	Sm	Sf	G
15	Nyaungpinto	Sm	Pp	Sf
16	Bikethayet	G	Sm	Sf

Table 2 Distribution of ranking crops in Salingyi Township (2019)

No	Town / Village Tracts	Ranking of Crops		
		First	Second	Third
17	Mataungta	Sm	G	Sf
18	Shwethamin	Pp	Sm	G
19	Thanmataw	Sm	G	Gg
20	Kyekhotaw	Sm	Pp	P
21	Panhtoo	G	Pp	Gg
22	Yemain	Pp	Sm	G
23	Yonepinyoe	Sm	Pp	Gn
24	Kyardet	G	Sf	Sm
25	Zeechine	G	Sm	Sf
26	Zeepani (S)	G	Sf	Sm
27	Zeepani (N)	G	Sm	Sf
28	Ywathamin	G	Sm	Gg
29	Myaezone	Gg	G	Sm
30	Sonetar	Gg	G	Sm
31	Kyaingkhamauk	G	Gg	Sm
32	Chaungyoe	G	Sm	Gn
33	Phalankan	G	Sm	Gn
34	Sarkha	Sm	Pp	G
35	Khunthar	G	Sf	Sm
36	Hnawkutoe	Sm	G	Gn
37	Ngakhone	P	G	Sf
38	Bokesu	Pp	Sm	G
39	Linsarkyet	Sm	Pp	G
40	Tayar	Sm	G	Gg

Source: Compiled by researcher based on department of agricultural land management and statistics, Salingyi Township

Sm = Sesamum, G = Gram, Pp = Pigeon pea, Gn = Groundnut, Gg = Green gram,
P = Paddy, Sf = Sunflower, W = Wheat

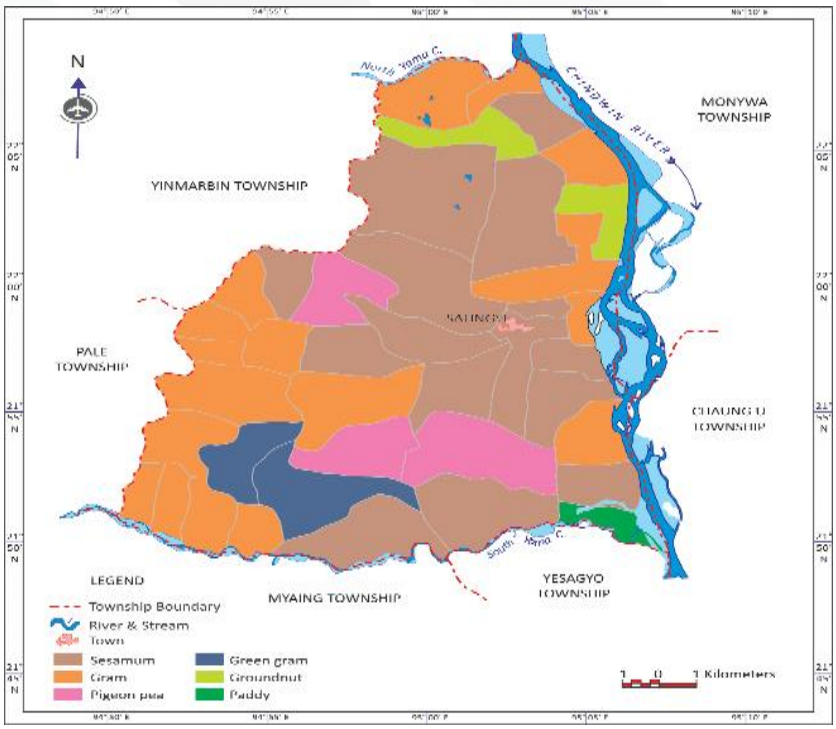

Figure 3 Distribution of first ranking in Salingyi Township (2019)

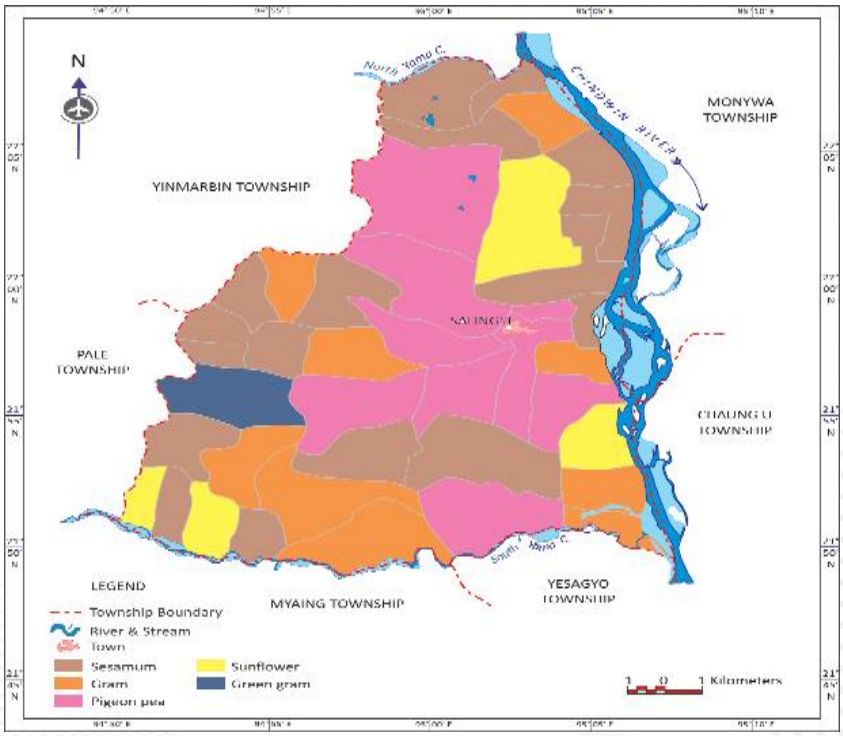

Figure 4 Distribution of second ranking crops in crops Salingyi Township (2019)

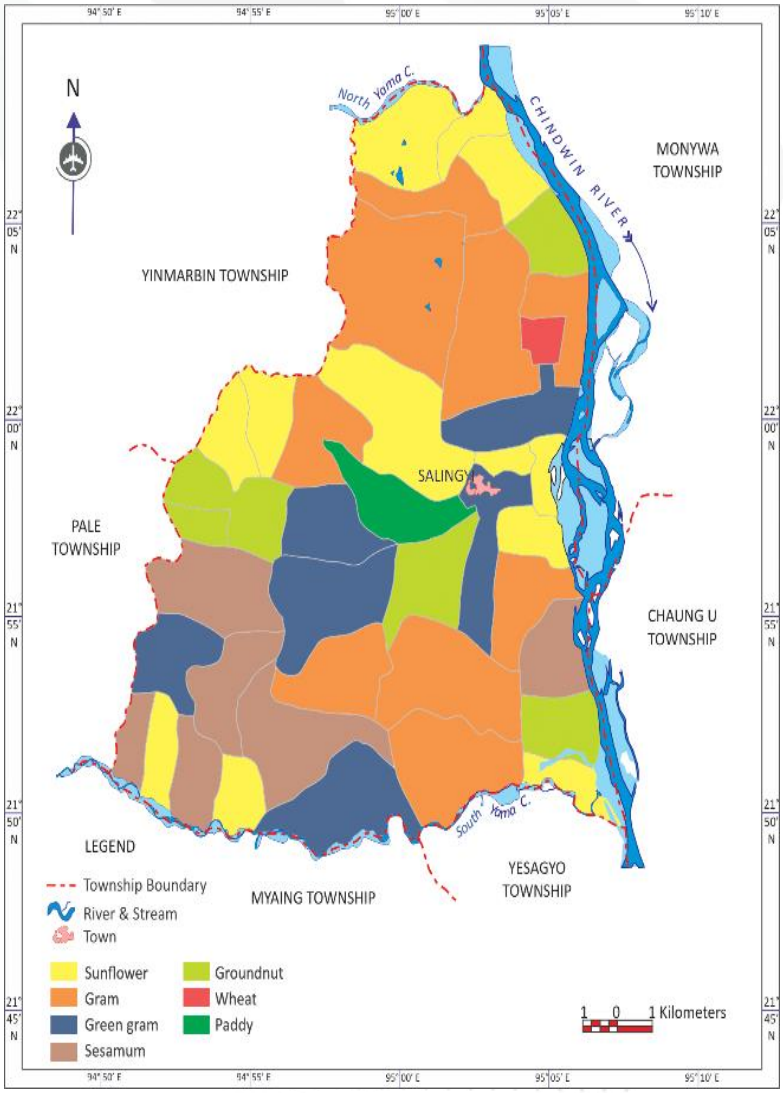

Figure 5 Distribution of third ranking crops in Salingyi Township (2019)

4. Discussion

The present land use pattern of Salingyi Township, Sagaing Region in Myanmar is as followed. Salingyi Township is situated in the Dry Zone of Central Myanmar. In 2018-2019 data, the current cultivated area was 106219 acres. As Salingyi Township is a dry region, "Ya" Land are mostly found occupying the largest agricultural area. The crops grown on "Ya" lands are sesamum, groundnut, pigeon pea, gram, sunflower, etc. Paddy, gram and wheat are grown on "Le" lands. Groundnut and pulses were cultivated on "Kaing kyun land. In Salingyi Township, farmers should change their present cropping pattern to a more profitable cropping pattern which is suitable to the natural conditions of their crop lands. In the study area, major crops and minor crops are grown in cropping pattern. The distribution of ranking crops had been classified as first, second and third ranking crops.

5. References

Grigg, David. (1984): *An Introduction to Agriculture Geography:* Hutchison, Londan, Melbourne.

Gupta, S.L (1969): *The Cropping Pattern of Haryana*, Geographical Review of Myanmar. Vol-XXII

Hla Tun Aung (2008): *Myanmar: The Study of Processes and Patterns; National Center for Human Resources Development*, Yangon, Myanmar.

Jasbir Singh and S.S. Dhillion, (2004): *Agricultural Geography, 3rd Edition*, Ta Ta Mc Graw-Hill Publishing Company limited, New Delhi.

Khin Nyo Win, Ma (2010): *A Geographical study of Agricultural Landuse in Monywa District*, Ph.D Dissertation, Geography Department, Mandalay University, (Unpublished)

Thin Thin Oo, Ma (2010): *A Geographical Study on Cropping Pattern of Pakokku District* (Unpublished Ph.D. Dissertation) University of Mandalay

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Structural Elucidation of a Pure Antimicrobial Active Organic Compound from *Magnolia grandiflora* L.

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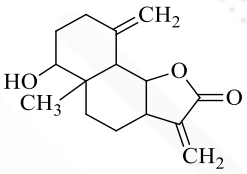
Abstract

The aim of this study was to evaluate the phytochemical screening, antimicrobial activity on crude extract and chemically isolated compound and isolation and structure elucidation of pure compound from *Magnolia grandiflora* L. Preliminary phytochemical screening was performed with standard procedures. The antimicrobial activities were determined by agar well diffusion method against six selected microorganisms. The bark of *Magnolia grandiflora* contains alkaloid, glycoside, flavonoid, phenol, polyphenol, steroid and terpene. The bark of *Magnolia grandiflora* gave high antimicrobial activities on all tested organisms. A pure bioactive organic compound (MTM-1) was isolated from the bark of *Magnolia grandiflora* by advanced separation techniques including thin layer and column chromatographic chromatography. Yellowish brown oily compound (30.2 mg) was obtained from the column separation. The yield percent of this pure compound was found to be (1.2 %) based upon the ethyl acetate crude extract. The antimicrobial activity of pure compound was checked by agar well diffusion method, which responded high activities on five tested organisms, such as *Bacillus subtilis, Staphylococcus aureus, Bacillus pumilus, Candida albicans* and *Escherichia coli*. Moreover, the structure of the pure compound (MTM-1) was elucidated by using some spectroscopic methods, such as FT-IR, ^{1}H NMR (500 MHz), ^{13}C NMR (125 MHz), HMQC, DEPT, DQF-COSY, HMBC and EI-Mass spectrum. The pure compound (MTM-1) possess the type of terpene (sesquiterpene lactone). This study demonstrates that this plant and pure compound (MTM-1) could be a potential source of natural antioxidants.



Pure compound (MTM-1)

Keywords : Structural Elucidation, Organic Compound, Terpene, Antimicrobial Activity, Phytochemical

1. Introduction

Herbal medicines, as the major remedy in traditional medical systems; have been used in medical practice for thousands of years and have made a great contribution to maintaining human health. A majority of the world's population in developing countries still relies on herbal medicines to meet its health needs. A plant-derived material or preparation with therapeutic or other human health benefits which contains either raw or processed ingredients from one or more plants. In traditional medicines, materials of inorganic or animal origin may also be present such as hypertension, hyperlipidaemia, diabetes and ischaemic heart diseases in modern society.

Myanmar is one of the richest sources of medicinal plants which are distributed in almost all part of the country. Thus, the therapeutic use of traditional medicinal plants is widespread in Myanmar, with most of the population relying on it. To bring about the development of indigenous medicine is one of the tasks of the health plan laid down by Ministry of Health and to obtain the Scientific laris for the safe use of the herbal medicines is the tasks of researchers in Myanmar. Thus, assurance of the safety, quality and efficacy of medicinal plants and herbal products have now become a key issue in industrialized and in developing countries. The chemical constituents in herbal plants depending on the localities or geographic regions with different temperatures, climate, rainfall, altitude and radiation characteristics, may have different compositions and different efficacy of biological activities. Many researches on natural products are being done in Myanmar and research findings will gain breakthroughs in medical science. Up to the present day, many researches concerning with antimicrobial activity and antioxidant activity of Myanmar medicinal plants have been carried out using both in *vitro* and in *vivo* methods. *Magnolia grandiflora* L., one of the invaluable indigenous plants belongs to the family "Magnoliaceae", locally known as Ta-tine-mhwe. It is widely distributed in tropical countries, such as North America, Mexico and Central America, the West Indies, tropical South America, Southern and eastern India, Srilanka, Indochina, Malasia, China, Southern Asia and Myanmar. The bark of this plant has been used for the treatment of diabetes, headaches, heart disease and cancer. In this research, the preliminary phytochemical screening and antimicrobial activities of crude extracts of bark of Ta-tine-mhwe have been studied. As an experimental work, an unknown bioactive organic compound (MTM-1) could be isolated and its planar structure, conformational structure were assigned by modern sophisticated spectroscopic methods, such as ^{1}H NMR (500 MHz), ^{13}C NMR (125 MHz), DEPT, DQF-COSY, HMQC, HMBC, NOESY and EI-mass spectral data respectively.

1.1 Botanical Description and Medicinal Uses

Family Name : Magnoliaceae

Botanical Name : *Magnolia grandiflora* L.

Local Name	:	Ta-tine-mhwe
Part used	:	Bark
Medicinal Uses	:	diabetes, headaches, heart disease and cancer

Figure 1.1 The Bark, Fruit and Flower of *Magnolia grandiflora L.*

2. Research Objectives

This research consisted of three objectives:

2.1 To investigate the phytochemical screening of the bark of *Magnolia grandiflora L*;

2.2 To determine the antimicrobial activities of crude and pure compounds isolated from the bark of *Magnolia grandiflora L*;

2.3 To illustrate the chemical structure of pure bioactive organic compound by various spectroscopic methods such as such as FT-IR, ^{1}H NMR (500 MHz), ^{13}C NMR (125 MHz), HMQC, DEPT, DQF-COSY, HMBC and EI-Mass spectrum

3. Methodology

3.1 Sample Collection

The barks of *Magnolia grandiflora* L. (Ta-tine-mhwe) were collected from Pyin-Oo-Lwin Township, Mandalay Region, Myanmar. The collected samples were cut into small pieces and were dried in the shade. Then the raw materials were stored in the well-stopped glass bottle and used throughout the experiment.

3.2 Preliminary Phytochemical Test of Plant Sample

Phytochemical analysis for alkaloid, flavonoid, terpene, sterol, glycoside, reducing sugar, lipophilic, polyphenol, sponin and phenolic were carried out by standard methods and each of the tests was quantitatively expressed as negative (-) or positive (+).

3.3 Antimicrobial Activities of Crude Extract and Pure Compound of *Magnolia officinalis* L.

The antimicrobial activities of crude extract of *Magnolia grandiflora* L. with various solvent systems were tested by applying agar-well diffusion method on six selected organisms on six selected organisms such as *Bacillus subilis, Staphylococcus aureus*, *Pseudomonas aeruginosa, B. pumilus*, *Candida albican* and *Escherichia coli* at Development Center of Pharmacetical Technology (DCPT), Insein, Yangon.

3.4 Extraction and Isolation of Pure Compound (MTM-1) from *Magnolia grandiflora L.*

Air dried sample of *M.grandiflora* L. (350 g) was percolated with 95% EtOH (3 liter) for two months. The extracted solution was filtered and evaporated. The residue was dissolved (250 ml) in EtOAc and EtOAc extract solution was evaporated at room temperature.The neutral ethyl acetate extract (2.5 g) was chromatographed by silica gel column, using n-hexane and ethyl acetate with various ratios from non-polar to polar. Totally 185 fractions were obtained. Each fraction was checked by TLC for purity and then the same R_f value fractions were combined. Seven combined fractions were observed. The fraction (IV) gave single spot on TLC and UV active. It was concentrated and the yellowish brown oil form compound (30.2 mg) was obtained. The yield percent of this pure compound was found to be 1.2% based upon the EtOAc crude extract.

4. Results and Discussion

4.1 Preliminary Phytochemical Test of Plant Sample

The presence of alkaloid, flavonoid, terpene, glycoside, reducing sugar, lipophilic, polyphenol, saponin, and phenolic was detected in the extract of *Magnolia grandiflora* L.

4.2 Molecular Formula Determination of Pure Compound (MTM-1)

4.2.1 FT-IR Assignment of Pure Organic Compound (MTM-1)

The FT-IR spectrum of isolated pure compound (MTM-1) was measured at the Department of Chemistry, University of Mandalay and it is shown in Figure (3.1). According to FT-IR spectrum, pure compound should consist of alcohol group, sp^2 hydrocarbon and sp^3 hydrocarbon, carbonyl group, allylic hydrocarbon, ether group and exomethylene group respectively.

4.2.2 ^{1}H NMR Spectrum of Compound (MTM-1)

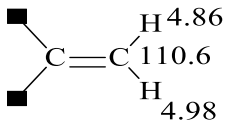
^{1}H NMR (500 MHz) spectrum is described in Figure (3.2). In this spectrum, 19 protons including methyl, one methyl, four sp^3 methylene, two sp^2 methylene groups could be observed.

4.2.3 ^{13}C NMR Spectral Data of Compound (MTM-1)

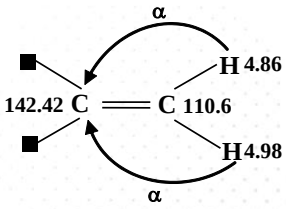
^{13}C NMR spectrum of compound (MTM-1) is presented in Figure (3.3). one sp^3 methyl carbon ,four sp^3 methylene carbon, one sp^3 quaternary carbon ,four sp^3 methine carbon , two sp^2 methylene carbon , three sp^2 quaternary carbon. According to ^{13}C NMR spectrum, the total number of carbons was found to be (15) in this compound.

4.3 Structure Elucidation of Pure Organic Compound (MTM-1)

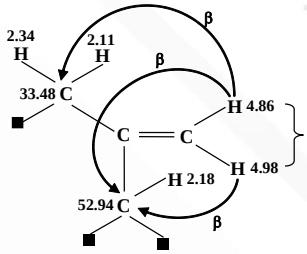
In DEPT spectrum, Figure (3.5), the downward appearance of sp^2 methylene carbon at (δ 110.6 ppm) determines the existence of exomethylene group in this compound. The parallel attachment of sp^2 methylene protons (δ 4.86 ppm and δ 4.98 ppm) to the same alkenic carbon (δ 110.6 ppm) in HMQC spectrum, Figure (3.4), confirms the above fragment.



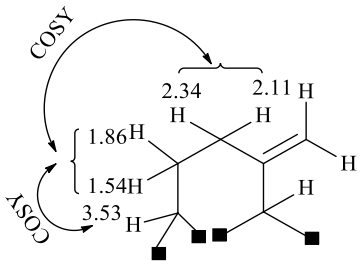
Moreover, in HMBC spectrum, Figure (3.7), the observation of α ^{1}H-C long range coupling of the two sp^2 methylene protons (δ 4.86 ppm and δ 4.98 ppm) with sp^2 quaternary carbon (δ 142.42 ppm) leads to the following fragment.



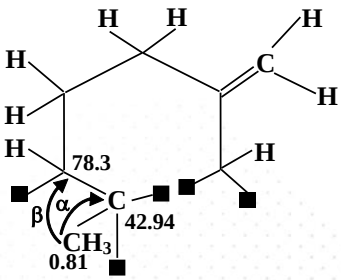
In HMBC spectrum, the observation of β ^{1}H-C long range coupling of the two sp^2 methylene protons (δ 4.86 ppm and δ 4.98 ppm) with sp^3 methine carbon (δ 52.94 ppm) and sp^3 methylene carbon (δ 33.48 ppm) indicates the fragment.



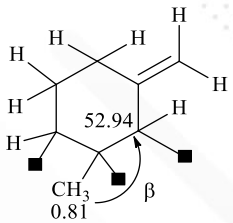
Moreover in DQF-COSY spectrum, Figure (3.6), there is observed medium graphic area between the two methylene groups (δ 2.34 ppm, δ 2.11 ppm) and (δ 1.85 ppm and δ 1.56 ppm), giving rise to the following fragment. Furthermore, the methylene protons (δ 1.85 ppm, δ 1.56 ppm) and sp^3 methine proton (δ 3.53 ppm) are coupled with medium square metric area to produce the fragment.



Meanwhile, in HMBC spectrum (Figure 3.7), there are α and β proton carbon long range coupling of methyl protons (δ 0.81 ppm) with sp^3 quaternary carbon (δ 42.94 ppm) and sp^3 methine carbon (δ 78.3 ppm) leads to this fragment.

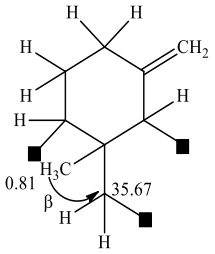


On the other hand, in HMBC spectrum, there is β proton carbon long range coupling of singlet methyl group (δ 0.81 ppm) with sp^3 methine carbon (δ 52.94 ppm) which gives rise to the following fragment a .

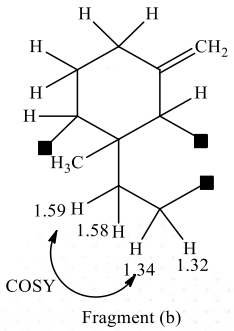


Fragment a

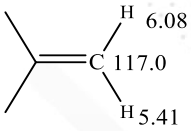
In addition, this spectrum also determines β proton-carbon long range coupling of methyl protons (δ 0.81 ppm) with sp^3 methylene carbon (δ 35.67 ppm) indicating the following fragment.



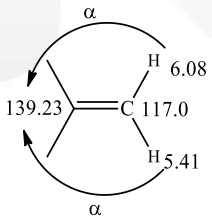
In another front, the methylene group (δ 1.34 ppm and δ 1.32 ppm) are coupling with adjacent methylene group (δ 1.58 ppm and δ 1.59 ppm) in DQF-COSY spectrum (Figure 3.6) which implies the following fragment Ъ .



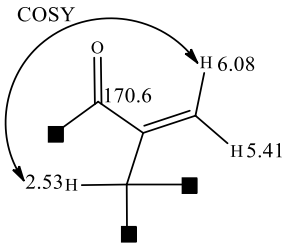
On the other hand, in DEPT spectrum, Figure (3.5), the downward appearance of sp^2 methylene carbon (δ 117.0 ppm) reveals the existence of exomethylene group in this compound. The parallel attachment of sp^2 methylene proton (δ5.41ppm and δ 6.08 ppm) to the carbon at (δ 117.0 ppm) in HMQC spectrum, Figure (3.4), confirms the above fragment.



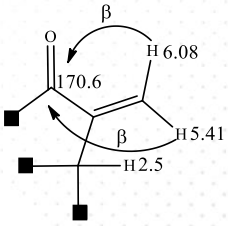
In another front, the observation of α proton carbon long range coupling of sp^2 methylene protons (δ 5.41 ppm and δ 6.08 ppm) with sp^2 quaternary carbon (δ 139.23 ppm) in HMBC spectrum, Figure (3.7) leads to the following fragment.



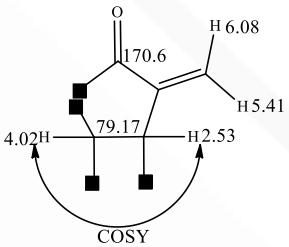
In addition, in DQF-COSY spectrum, Figure (3.6), the existence of small graphic area (W-coupling) between the two sp^2 methylene protons (δ 5.41 ppm and δ 6.08 ppm) and the sp^3 methine proton (δ 2.53 ppm) responds the following fragment.



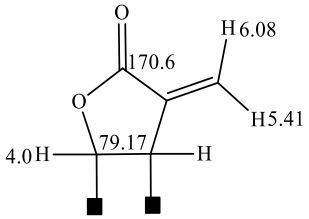
Moreover, in HMBC spectrum, Figure (3.7), the observation of β ^{1}H-C long range coupling of the two sp^2 methylene protons (δ 5.41 ppm and δ 6.08 ppm) with carbonyl carbon (δ 170.6 ppm) leads to the following fragment.



In DQF-COSY spectrum, Figure (3.6), the determination of medium graphic area between the two sp^3 methine protons (δ 2.53 ppm and δ 4.02 ppm) indicates the following fragment.

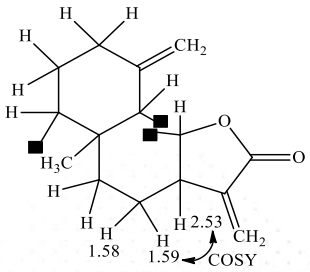


Furthermore, the connection of oxygen atom to the downfield chemical shift sp^3 methine carbon (δ 79.17 ppm) and carbonyl carbon (δ 170.6 ppm) produces the following fragment ς containing γ lactone ring. In FT-IR spectrum, Figure (3.1), the observation of C = O stretching vibration of carbonyl group at 1756 cm^{-1} indicates the good evidence for the existence of the □ lactone ring.



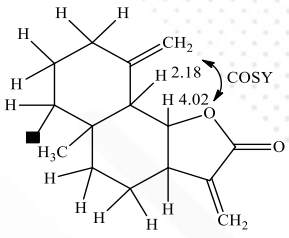
fragment c

On the other hand, the two methylene protons (δ 1.58 ppm and δ 1.59 ppm) are coupled to sp^3 methine carbon (δ 2.53 ppm) in the medium graphic area in DQF-COSY spectrum which implies the following fragment ɖ .



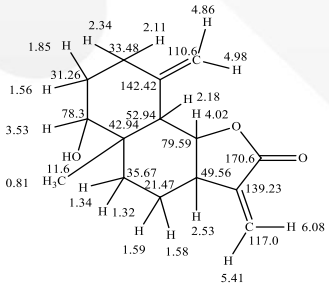
fragment d

In this spectrum, the existence of medium square metric area between the downfield chemical shift methine proton (δ 4.02 ppm) and sp^3 methine proton (δ 2.18 ppm) which indicates the following fragment ɐ .



fragment e

Partial molecular formula of fragment ɐ could be calculated as $C_{15}H_{19}O_2$. The remaining partial molecular formula is OH. Hence, it is one hydroxyl group in this compound. Connection of one hydroxyl group to the downfield chemical shift sp^3 methine carbon (δ 78.3 ppm) gave rise to the complete structure of the pure compound.



Pure compound (MTM-1)

In EI-Mass spectrum, Figure (3.8), the molecular ion peak (m/z) is 248 and is good agreement with molecular mass of elucidated compound (MTM-1).

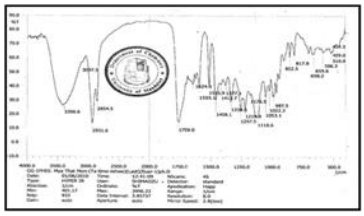


Figure (3.1) FT IR Spectrum of MTM-1

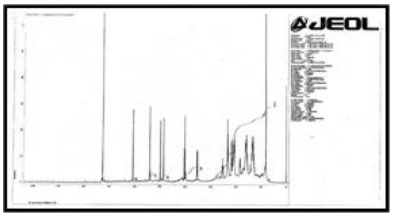


Figure (3.2) ^{1}H NMR Spectrum of MTM-1

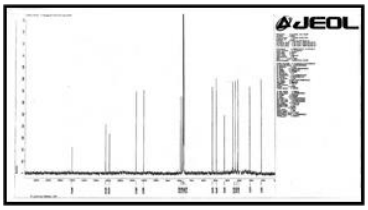


Figure (3.3) ^{13}C NMR Spectrum of MTM-1

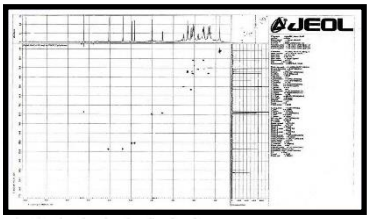


Figure (3.4) HMQC Spectrum of MTM-1

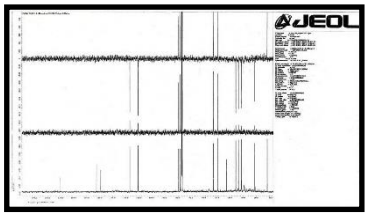


Figure (3.5) DEPT Spectrum of MTM-1

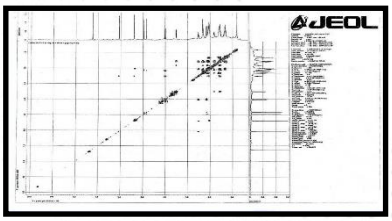


Figure (3.6) DQF-COSY Spectrum of MTM-1

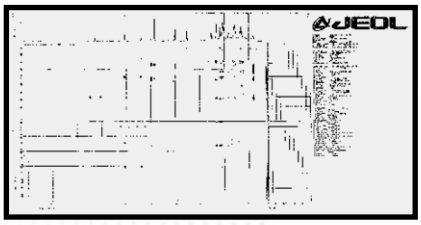


Figure (3.7) HMBC Spectrum of MTM-1

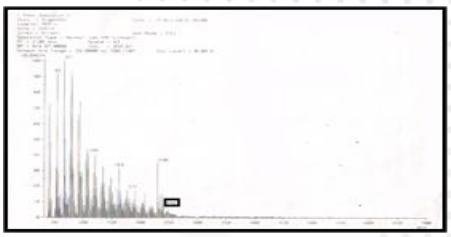
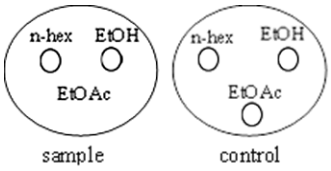
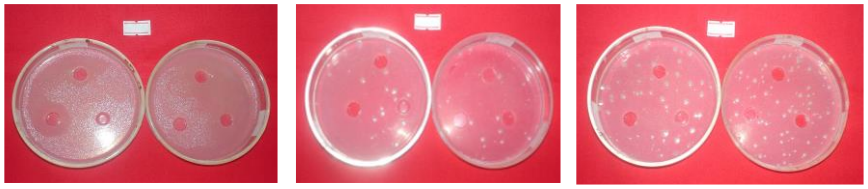


Figure (3.8) EI MS Spectrum of MTM-1

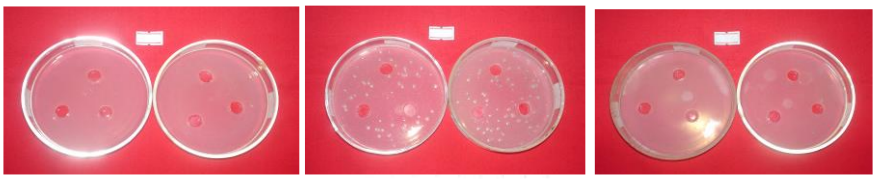
4.4 Antimicrobial Activities of Crude Extract and pure compound of Magnolia officinalis L.

According to the antimicrobial experiment (Figure 3.9), the ethyl acetate extract showed high activity against all tested microorganisms. Crude ethanolic extract showed high sensitivity on *Bacillus subtilis* and *Bacilus pumilus* and medium activity on remaining four organisms. The n-hexane extract revealed low antimicrobial activity for all types of organisms.



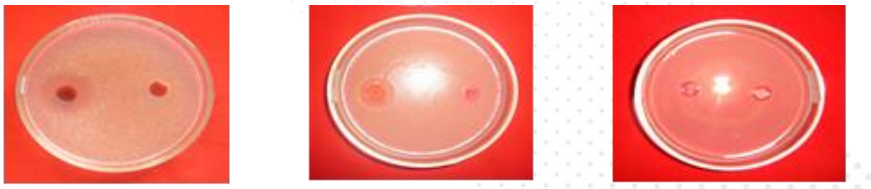


Bacillus subtilis ***Staphylococcus aureus*** ***Pseudomonas aeruginosa***

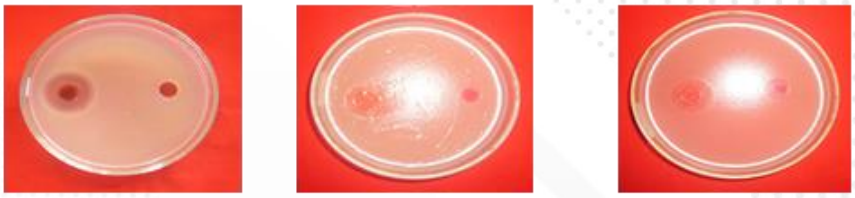


Bacillus pumilus ***Candida*** ***E.coli***

Figure (3.9) Antimicrobial Activities three extracts of Magnolia officinalis L.



Bacillus subtilis ***Staphylococcus aureus*** ***Pseudomonas aeruginosa***



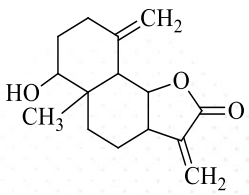
Bacillus pumilus ***Candida ablicans*** ***E. coli***

Figure 3.10 Antimicrobial Activities of Pure Compound (MTM-1)

The pure compound (Figure 3.10) responded high activity on *B.subtilis*, *S. aureus*, *B.pumilus*, *Candida albicans* and *E coli* but no activity on *P.aeruginosa*.

5. Conclusion

In this study, Myanmar medicinal plant namely *M.officinalis* L. was selected for phytochemical investigation, isolation of pure compound and screening of antimicrobial activity on crude extract and chemically isolated pure compound. The results of phytochemical analysis revealed that the extract of *Magnolia officinalis* L. contained all phytochemical constituents except steroids. The result of antimicrobial activity on crude extract revealed the high activity against all tested microorganisms. As in the case of antimicrobial activity of pure compound (MTM-1), it responded high activity on *B.subtilis*, *S.aureus*, *B. pumilus, C. albicans* and *E coli* but no activity on *P.aeruginosa*. In addition, by applying the advanced spectroscopic methods such as FT IR, ^{1}H NMR (500 MHz), ^{13}C NMR (125 MHz), DEPT, DQF-COSY, HSQC, HMBC and EI mass spectral data, the complete structure of pure bioactive organic compound (MTM-1) could be determined. The molecular formula and molecular mass of pure compound is $C_{15}H_{20}O_3$ and 248. EI mass spectrum of pure compound (MTM-1) showed that m/z = 248 and is good agreement with molecular mass of elucidated compound. The pure compound (MTM-1) possesses the type of terpene (sesquiterpene lactone). The complete structure of the isolated pure organic compounds (MTM-1) was illustrated below.



The result of the present study suggests that *Magnolia officinalis* L. plant and isolated pure compound (MTM-1) can be applicable as a source of antioxidants for pharmacological preparations.

6. References

Ah Shin Nagathein, (1983), *Pon Pya Say Abidan* 3rd Edition, Mingala Printing Press, Yangon.

Chevallien, A. (1996), *The Encyclopedia of Medicinal Plants*. Doriling Kinderslay Ltd: London.

David Dolphin, *et. al*, (1977), *Tabulation of Infrared Spectral Data*, John Wiley & Sons, Canada.

WHO (2000), *General Guidelines for Methodologies on Research and Evaluation of Tradition Medicine*, Geneva.

Harborne, J.B. (1993), *Phytochemical methods: A Guide to Modern Techniques of Plant Analysis*, Chapman and Hall Ltd, U.S.A.

John. H. Nelson (2003), *Nuclear Magnetic Resonance Spectroscopy*, Pearson Education, Inc. Upper Saddle River. NJ07458.

Johnson, L. F., & Jankowski, W. C. (1972). *Carbon-13 NMR Spectra: A collection of assigned, coded, and indexed spectra* (p. 230). New York: Wiley-Interscience.

Merk Index (1983) *10th Edition*, Merk & Co. Inc. USA.

Manfred Hesse, *et. Al* (1997) *Spectrometric Methods in Organic Chemistry*, George Thieme Verlag Stuttgart, New York.

Nakanishi.k (1969) *Infrared Absorption Spectroscopy*, 3rd Edition, ELBS with Macmillan.

Phillip Crews. Jaime Rodriguez, Marcel. Jaspars (1998), *Organic Structure Analysis*, University of California, Santa Cruz, Oxford University, New York.

Prajapati, N.D, *et al* (2003), *A Handbook of Medicinal Plants*, Agrobios, India.

Raoelison Emmanuel (2002), *Phytochemical Survey of Plants from Madagascar*, Faculte des. Sciences, Institute de Pharmacognosic *et. al*. phytochimie, Universities de Lausanne.

WHO (1993), *Research guidelines for evaluating the safety and efficacy of herbal medicines*, *Manila*, WHO Regional for the Western Pacific.

Silverstein, R.M. *et. al* (1989), *Spectrometric Identification of Organic Compound*, 4th Edition, John Wiley & Sons, Inc, Singapore.

Timothy, D.W. Claridge (1999), *High-resolution NMR Techniques in Organic Chemistry*, Pergamon, An imprint of Elsevier Science, Amsterdam-Lausanne, New York, Oxford-Shannon, Singapore, Tokyo.

Willan Kemp (1994) *Organic Spectroscopy*, 3rd Edition, ELBS with Macmillan.

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Valuable Fatty Acids Found in Some Plants: Mandalay Region of Myanmar

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Abstract

Fatty acids are present in both animal and plant species. Lipids found in plants present, in their composition, polyunsaturated fatty acids (PUFA), mainly omega-6 and omega-3, which are derived from linoleic acid and α-linolenic acids, respectively. Fatty acid biosynthesis in plants occurs in the chloroplasts of green tissue and in the plastids of nonphotosynthetic tissues and not in the cytosol as in the animal cell. Although de novo synthesis is in the stroma, plant mitochondria are capable of limited fatty acid synthesis. Plants synthesize a huge variety of fatty acids although only a few are major and common constituents like palmitic, oleic, linoleic, and linolenic acids. Like other eukaryotes, lipids are necessary for the biogenesis of cell membranes, as signal molecules and especially as a source of carbon and energy. Altogether eight species belonging to eight genera of eight families were identified and investigated. They are *Arachis hypogaea* L., *Azadirachia indica* A. Juss., *Brassica campestris* L., *Cocos nucifera* L., *Gossypium herbaceum* L., *Helianthus annuus* L., *Ricinus communis* L. and *Sesamum indicum* L. Characteristics of oils, utilization of the products and values of fatty acid in oil content are described and recorded with relevant photographs. The amount of fatty acid values in oil were observed for the advantages of good health for human. Tendency to fatty acid was chemically characterized mainly by the amount of saturated and unsaturated fatty acids. Eight types of oil such as groundnut, neem, mustard, coconut, cottonseed, sunflower, castor and sesame oil were used. The valuable oil and oil products provide benefits for human health. Vegetable oils essentially consist of the following fatty acids such as palmitic, stearic, oleic and linoleic acids. The occurrence of groundnut oil includes saturated (18.77%), unsaturated (81.22%); neem oil contains saturated (75.41%), unsaturated (24.59%); mustard oil involves saturated (47.10%), unsaturated (52.91%); coconut oil composes saturated (60.61%), unsaturated (38.39%); cottonseed oil involves saturated (27.45%), unsaturated (72.55%); sunflower oil contains saturated (45.21%), unsaturated (54.80%); castor oil involves saturated (13.09%), unsaturated (86.92%) and sesame oil consists saturated (15.63%), unsaturated (83.81%) of fatty acids. As an analytical method, GCMS (Gas Chromatography-mass spectrometry), was used for determination of oils content. was used for the determination of oils contents. Therefore, the results showed that the predominant fatty acids identified of eight oil types. In this research,

characteristics of oils, utilization of the products and values of fatty acid in oil content in Myanmar context were explored. It has been found that minimization of saturated fatty acid could be lost the cholesterol and the concept of saturated and unsaturated fatty acid coordination in action could be a significant strategy for improvement of cholesterol and productivity of fatty acid. Additionally, positive interaction has been reported to be beneficial for various aspects of fatty acids. The current research is hoped for the improvement of valuable fatty acids of some plants in detail.

Keywords : Fatty Acids, Plants, Mandalay Region of Myanmar

1. Introduction

Fatty acids come from fish and other seafood (especially cold-water fatty fish, such as salmon, mackerel, tuna, herring, and sardines), nuts and seeds (such as flaxseed, chia seeds, and walnuts) and plant oils (such as flaxseed oil, soybean oil, and canola oil). Fatty acids play roles outside the body; they are used as lubricants, in cooking and food engineering, and in the production of soaps, detergents, and cosmetics. There is several oil yielding plants all over the world. Oils play important role in men's daily life. Oils are essential components of the daily diet as a source of energy, essential fatty acids and some vitamins. Various oils of several plants are not only value in nutrition of man but also important medicinal and industrial application. They have also several important functions in food preparation and processing adding flavor during cooking and frying and providing in bakery products (Kite, 2003).

Groundnut (*Arachis hypogaea* L.) is a species in the legume family fabaceae, native to South America, Mexico and Central America. Groundnuts have been known to man as an important food crop for many centuries. It is a major source of edible oil and protein meal and considered highly valuable for human and animal nutrition, especially in the developing world. Groundnut is grown mainly for its oil, protein, plant residue and seed cake. More than half of the world groundnut production is crushed for expulsion of oil, which was diverted mainly as edible oil. (Fekria, 2012).

Neem (*Azadirachta indica* A. Juss) is a plant of the Meliaceae family belonging to the Indian subcontinent. It was later introduced into many tropical countries of America and Africa including Senegal with a population of 18 to 30 million trees. *A indica* that would be one of the most important biopesticides. Different parts or extracts of neem have been used since a long time, particularly in traditional medicine. Unfit for human consumption it has multiple uses mainly for the soap, pesticide, and pharmaceutical (Diedhiou, 2015).

Mustard (*Brassica campestris* L.) is an annual plant of the Brassicaceae family. Mustard oil used as traditional edible oil in most parts for centuries is well known for its medicinal utilities.

It will be useful to learn about therapeutic uses mustard oil. About the study of mustard oil for beneficial to clinical application. The mustard seed is used as a type of traditional medicine and food condiment (Yadav *et. al,* 2013).

Coconut oil is a vegetable oil that is derived from the Kernel of *Cocos nucifera,* L. The coconut (*C. nucifera*) is a perennial palm, is chiefly cultivated in the humid tropics for the nuts from which are obtained the edible fresh kernel, its desiccated form copra and coconut oil. The traditional use of coconut oil as a dietary oil in the tropical areas where it's grown, has been discouraged since the second half of the last century, allegedly due to its role in its contribution to hyper-cholesteremia and therefore to coronary heart diseases, due to its highly saturated nature (Shamin, 2007).

Cotton belongs to genus *Gossypium* and Malvaceae family that grows naturally as a perennial, but for commercial purposes is grown as an annual crop. Cotton is a major crop in the world. Cotton fiber is a source of natural textile, and cottonseed is a source of oil for human consumption, cotton meal and minerals. Therefore, maintaining high quality fiber and cottonseed nutritional value is critical. Cottonseed is the second major product from the cotton plant which serves as raw material for oil extraction or animal feed production (Yuksel, 2016).

The common sunflower (*Helianthus annuus* L.) is a species of the Asteraceae family grown commercially worldwide offering a variety of nutritional and medicinal benefits. Sunflower plays an important role in human nutrition. The chemical composition of sunflower shows that the seed is an important source of oil (Satish, 2011).

The castor bean plant (*Ricinus communis* L.) belongs to the family Euphorbiaceae. It is highly toxic to humans and other animals, including insects. If the seed is swallowed without chewing and there is no damage to the seed coat, it will most likely pass harmlessly through the digestive tract. However, if it is chewed or broken and swallowed, the ricin toxin will be absorbed by intestines and will bring about abdominal pain, vomiting and diarrhea. It originates from India and cultivated in the tropical and sub-tropical climates of the world (Khaliq, 2017).

Sesame seed (*Sesamum indicum* L.) is one of the world's most important and oldest oil seed crops known to man. The genus *sesamum* is a member of the family Pedaliaceae. Sesame seed, a rich source of protein, is one of the first crops processed for oil production. It has been cultivated for centuries, particularly in Asia and Africa (Gharby *et. al,* 2017). Research Objectives are as follows.

(i) To explore the knowledge of the oil.

(ii) To investigate oil characters of fatty acids.

(iii) To study the utilization of studied oil.

2. Research Methodology

Specimens of fatty acid composition from the altogether eight oils were investigated in laboratory room with the help of Chemistry Department, Mandalay University of Myanmar. Fatty acids were quantified by using gas chromatography method spectroscopy. Ten ml of oil sample added with 25 ml of methanol and 5 ml of hydrochloric (HCL) acid were put into a funnel flask and then the mixture was heated for 30 minutes. The triglycerides came out as the result of specimens from the mixture of oil solution. Then, the solution was put into a filter funnel. After reaction, the solution was centrifuged to separate the oil mixture for 20 minutes. After separating the mixture oil, we got the two layers (oil and fat) solution. Thus, the oil solution diluted with normal hexane and we prepared for GCMS (Gas Chromatography-mass spectrometry) analysis for the determination by gas chromatography. The oil samples were prepared by methyl esterification according to the following GC (Gas Chromatography) method equation.

$$\text{oil} + \text{methanol} + \text{HCL} \xrightarrow{\text{reflux}} \text{oil} + \text{fat}$$

3. Results

The results were presented according to the research objectives as follows:

The list of collected oils was shown in Table (1) with their English name and local name.

Table 1 List of collected oils

Sr No	Food oils		Sr No	Nonfood oils	
	English Name	Myanmar Name		1 English	Myanmar Name
1.	Groundnut	Myaype	5.	Neem	Tamar
2.	Coconut	Ohn	6.	Mustard	Monnyin
3.	Sunflower	Naykya	7.	Cotton	Wa
4.	Sesame	Hnan	8.	Castor	Kyetsu

Oil can be grouped into two types according to their uses; food oils and non-food oils. Food oils consist of groundnut, coconut, sunflower and sesame. Non-food oils are neem, mustard, cotton and castor oil.

1. *Arachis hypogaea* L., Sp. Pl. 2:741 (1753).

English name - Groundnut

Contents of Fatty Acids

(a) Saturated Fatty Acids

It includes two types of saturated fatty acids which are Palmitic acid (11.68%) and Hexadecanoate acid (7.09%).

(b) Unsaturated Fatty Acids

It includes two types of unsaturated fatty acids which are Elaidic acid (40.83%) and Oleic acid (40.39%).

Physical characteristics of Groundnut Oil

It has nutty flavor or mild - tasting and pleasing aroma. Groundnut oil has yellow colour.

Local Uses of Groundnut Oil

The groundnut oil is so popular that it is commonly used in cooking. Almost every dish is cooked with groundnut oil. This oil is also used in many grubs and food processing industries.

2. *Azadirachta indica* A. Juss., Mem. Mus. Hist. Nat. 19:221 (1830).

English name - Neem

Contents of Fatty Acids

(a) Saturated Fatty Acids

It includes five types of saturated fatty acids; Palmitic acid (6.92%), Hexadecanoic acid (12.66%), Stearic acid (1.70%), cis 9-Hexadecenal acid (39.79%) and Octadecanoic acid (14.34%).

(b) Unsaturated Fatty Acids

It includes one type of unsaturated fatty acids which is Elaidic acid (24.59%).

Physical characteristics of Neem Oil

It has the distinctive scent or garlic odor, bitter taste and has brown in color.

Local Uses of Neem Oil

The need oil is not used as cooking oil but it is used for preparing cosmetics such as soap. This oil is also used for the pesticides and pharmaceutical industries. This oil is also used to naturally treat skin conditions and diseases.

3. *Brassica campestris* L., Sp. Pl. 2:666 (1753).

English name - Mustard

Contents of Fatty Acids

(a) Saturated Fatty Acids

It includes three types of saturated fatty acids; Palmitic acid (21.69%), Hexadecanoate acid (8.67%) and Hexadecental acid (16.74%).

(b) Unsaturated Fatty Acids

It includes two types of unsaturated fatty acids; Oleic acid (32.01%) and linoleic acid (20.90%).

Physical characteristics of Mustard Oil

It has the distinctive pungent or bitter taste, pungent aroma and has deep yellow color.

Local uses of Mustard Oil

The mustard oil can be used in therapeutic applications and for the home medicines to give several concerns. It is actually supportive for skin health. This oil is extensively used as body massage oil to relieve pain and cramps. The mustard oil is essentially used as several health benefits.

4. *Cocos nucifera* L., Sp. Pl. 2:1188 (1753).

English name - Coconut

Contents of Fatty Acids

(a) Saturated Fatty Acids

It includes four types of saturated fatty acids; Myristic acid (30.30%), Palmitic acid (16.46%), Hexadecanoic acid (9.65%) and Stearic acid (4.20%).

(b) Unsaturated Fatty Acids

It includes three types of unsaturated fatty acids; Tetradecanoic acid (12.84%), 9- Octadecenoic acid (16.85%) and 9- Octadecenoic acid (9.70%).

Physical characteristics of Coconut oil

It has a pleasant flavor, odor and has pale yellow color.

Local Uses of Coconut Oil

Coconut oil is used as natural dry lip, hair growth, dry hair, split ends and scalp help, hair mask and conditioner, various hair products and medicines. The coconut is also used to work as a leather moisturizer and in bake good.

5. *Gossypium herbaceum* L., Sp. Pl. 2:693 (1753).

English name - Cotton

Contents of Fatty Acids

(a) Saturated Fatty Acids

It includes three types of saturated fatty acids; Myristic acid (1.02%), Palmitic acid (11.92%) and n- Hexadecanoic acid (14.51%).

(b) Unsaturated Fatty Acids

It is included three types of unsaturated fatty acids; linoleic acid (28.19%), Octadecadien acid (39.68%) and Ricinoleic acid (4.68%).

Physical characteristics of Cottonseed Oil

It has pungent flavor, strong odor and has dark brown color.

Local Uses of Cottonseed Oil

The cottonseed oil is mainly used for deep frying. It is used in confectionery such as crackers, cakes, cookies, biscuits and snack foods.

6. *Helianthus annuus* L., Sp. Pl. 2:904 (1753).

English name - Sunflower

Contents of Fatty Acids

(a) Saturated Fatty Acids

It includes three types of saturated fatty acids; Palmitic acid (6.44%), Hexadecanoic acid (4.72%) and Hexadecenal acid (34.05%).

(b) Unsaturated Fatty Acids

It includes one type of unsaturated fatty acid which is Elaidic acid (54.80%).

Physical characteristics of Sunflower oil

It has mild flavor, pungent odor and has yellow color.

Local uses of Sunflower Oil

The sunflower oil is mainly used as cooking and salad dressing. Sunflower oil can be used in the manufacture of food snacks and margarine. The sunflower oil can also be used as massage oil and to use in lowering of cholesterol.

7. *Ricinus communis* L., Sp. Pl. 2:1007 (1753).

English name - Castor

Contents of Fatty Acids

(a) Saturated Fatty Acids

It includes five types of saturated fatty acids; Myristic acid (1.64%), Palmitic acid (5.11%), n- Hexadecanoic acid (1.51%), Methyl stearate acid (4.26%) and Dodecanoic acid (0.57%).

(b) Unsaturated Fatty Acids

It includes six types of unsaturated fatty acids; 9- Octadecanoic acid (6.07%), Ricinoleic acid (50.55%), Ricinoleic acid (7.60%), Eicosadienoic acid (18.84%), Palmitoleic acid (3.25%) and Tetradecanoic acid (0.61%).

Physical characteristics of Castor Oil

It has a nauseating taste, unpleasant aroma and has pale reddish brown color.

Local uses of Castor Oil

The castor oil is used in the manufacturing of soaps and pharmaceutical industry. Castor oil can be used as a purgative acting on the small intestines. This oil is used for acute constipation or as laxative against worms.

8. *Sesamum indicum* L., Sp. Pl. 2:634 (1753), nom. cons.

English name - Sesame

Contents of Fatty Acids

(a) Saturated Fatty Acids

It includes three types of saturated fatty acids; Palmitic acid (5.91%), Palmitic acid (4.86%) and Stearic acid (4.86%).

(b) Unsaturated Fatty Acids

It includes four types of unsaturated fatty acids; Elaidic acid (20.27%), 9-Octadecenoic acid (25.89%), Linoleic acid (18.82%) and Linoleic acid (18.38%).

(c) Natural Compound Fatty Acid

It includes one type of natural compound fatty acid which is sesamol acid (1.02%).

Physical characteristics of Sesame Oil

It has a slightly bitter taste, intense sesame aroma and has an amber color.

Local uses of Sesame Oil

The sesame oil is used in many food preparations. Sesame oil is a vital part of the Ayurvedic massaging. It is also used as the traditional medicine.

Food Oils

The highest amount of saturated fatty acids is found in coconut oil but highest amount of unsaturated fatty acids is found in sesame oil.

Non-food Oils

The highest amount of saturated fatty acids is found in mustard oil and the highest amount of unsaturated fatty acids is found in castor oil.

Natural Fatty acid

The natural fatty acids were found in the only sesame oil.

4. Discussion

Many oil yielding cultivated, and wild plants were presented all over the world. In Myingyan Township, edible oil yielding crops such as groundnut, sesame, cotton are cultivated. In addition to non-edible oil-yielding crops and other oil yielding plants are primarily naturally growing but sometimes cultivated for other purposes have been investigated.

(i) Groundnut oil found in the highest amount unsaturated (81.22%) and saturated (18.77%) fatty acid contents. So, the highest amount of unsaturated acids in groundnut oil has good qualities for human health. According to the result value, groundnut oil is suitable for human consumption.

(ii) The highest amount of saturated (75.41%) and the lowest amount of unsaturated (24.59%) fatty acid contents were found in the Neem oil. Thus, the oil in the highest amount of saturated fatty acids have bad qualities that is not edible for human health.

(iii) Mustard oil found in the highest amount of (52.91%) unsaturated and the lowest amount of (47.1%) saturated fatty acid contents. Therefore, the highest amount of unsaturated fatty acids in these oils have good qualities that appropriate edible oil for human health.

(iv) Coconut oil found in the highest amount of (60.61%) saturated and a trace amount of (39.39%) unsaturated fatty acid. So, the highest amount of saturated fatty acids in these oil have bad qualities that don't edible for human health.

(v) Sunflower oil found in the lowest amount of (45.21%) saturated and the highest amount of (54.80%) unsaturated fatty acids. Therefore, the highest amount of unsaturated fatty acids in this oil has good qualities that support edible for human health.

(vi) Cottonseed oil found in the lowest amount of (27.45%) saturated and the highest amount of unsaturated (72.55%) fatty acid contents. Thus, the lowest amount of unsaturated fatty acids in the oil have good qualities that beseem edible for human health.

(vii) Castor oil found in the highest amount of (86.92%) unsaturated and the lowest amount of (13.09%) saturated fatty acid contents. So, the highest amount of unsaturated fatty acids in the oil have good qualities for human health. However, castor oil is unacceptable for human consumption because castor oil contains a toxic enzyme called ricinoleic acid that support do not edible for human consumption.

(viii) The lowest amount of saturated (15.63%) and the highest amount of unsaturated (83.36%) fatty acids composition found in the sesame oil. So, the highest amount of unsaturated fatty acids in the oil have good qualities that decently edible for human health. According to backwash of the acid contents, sesame oil is agreeable for human consumption.

Table 2 Unsaturated and Saturated of fatty acids contents found in collected oils

SN	Number Collected oil	of Natural compound fatty acid	Fatty acid contents		Result Value
			Unsaturated	Saturated	
1	Groundnut oil	-	81.22%	18.77%	(i) Suitable for human consumption (ii) Good qualities for human health
2	Neem oil	-	24.59%	75.41%	(i) Not edible for human consumption (ii) Bad qualities for human health
3	Mustard oil	-	52.91%	47.1%	(i) Appropriate edible for human consumption (ii) Good qualities for human health
4	Coconut oil	-	39.39%	60.61%	(i) Not edible for human consumption (ii) Bad qualities for human health
5	Sunflower oil	-	54.80%	45.21%	(i) Edible for human consumption (ii) Good qualities for human health

Table 2 (Continue)

SN	Number Collected oil	of Natural compound fatty acid	Fatty acid contents		Result Value
			Unsaturated	Saturated	
6	Cottonseed oil	-	72.55%	27.45%	(i) Seem edible for human consumption (ii) Good qualities for human health
7	Castor oil	-	86.92%	13.09%	(i) Not edible for human consumption (ii) Good qualities for human health
8	Sesame oil	1.02%	83.36%	15.63%	(i) Decently edible for human consumption (ii) Good qualities for human health

Fatty Acids composition of vegetable oils is formed by a mixture of saturated and unsaturated fatty Acids. Nevertheless, each of analyzed vegetable oils has specific fatty acid distribution depending on their plant sources. So, their impact on human health could be assessed according to individual fatty acids because of their different influence on human health and risks of serious diseases. But eating too much fat can lead to weight gain. All fats contain 9 calories per grams. This is more than twice the amount of calories found in carbohydrates and protein. It is not enough to add foods high in unsaturated fats to a diet filled with unhealthy foods and fats.

Unsaturated fats are liquid at room temperature, unlike saturated fats that are solid at room temperature. These unsaturated fats help reduce the risk of high blood cholesterol levels and have other health benefits when they are replaced saturated fat in the diet. Examples of unsaturated fatty acids are oleic, linoleic and arachidonic acid. Because the saturated fat molecules are tightly packed together, they are harder for human bodies to break down. Eating foods that contain saturated fats raises the level of cholesterol in human blood (Kite, 2000). Because of the high level of LDL cholesterol in human blood increase, the risk of heart disease and stroke. Sesame oils are mostly rich in unsaturated fatty acid and 1.02% of sesamol natural fatty acid. Sesame oil has essential positive effects on the human health which could be mainly attributed to presence of several taste and health related compounds with advantageous nutritive value.

In this study, Oleic acid (40.39%), Palmitic acid (11.68%), Hexadecanoate acid (7.09%) and Elaidic acid (40.83%) were found. Mandloi *et. al,* (2014) stated that, fatty acid contents of groundnut oil are Oleic acid (46.8%), linoleic acid (33.4%) and Palmitic acid (10.0%). Therefore, these fatty acids of groundnut oil, Oleic and Palmitic acids except Linoleic acid, Hexadecanoate acid, Elaidic acid and percentages contents were agreed with the previous investigations.

Elaidic acid (24.59%), Stearic acid (1.70%), Octadecanoic acid (14.34%), Palmitic acid (6.92%), Hexadecanoic acid (12.66%) and cis 9-Hexadecenal (39.79%) were found in this study. Zakia *et al,* (2017) stated that, fatty acid contents of neem oil are Oleic acid (50-60%), linoleic

acid (8-16%), Palmitic acid (13-15%) and Stearic acid (14-19%). Therefore, these fatty acids of neem oil, Stearic and Palmitic acids except Oleic acid, Linoleic acid, Elaidic acid, Octadecanoic acid and percentages contents were corroborated with the previous investigations.

In this study, Oleic acid (32.01%), Linoleic acid (20.90%), Palmitic acid (21.69%), Hexadecanoate acid (8.67%) and Hexadecental acid (16.74%) were found. Yadav *et. al,* (2013) stated that, fatty acid contents of mustard oil are Oleic acid (12-24%), Linoleic acid (40-55%), Linolenic acid (7-10%), Palmitic acid (1-3%), Stearic acid (0.4-3.5%), Behenic acid (0.6-2.1%), Erucic acid (40-55%), Arachidic acid (0.5-2.4%), Lignoceric acid (0.5-1.1%) and Elcosenoic (3.5-11.6%). Therefore, these fatty acids of mustard oil, Oleic, Linoleic and Palmitic acids except Linolenic acid, Stearic acid, Behenic acid, Erucic acid, Arachidic acid, Lignoceric acid, Elcosenoic acid, Hexadecanoate acid, Hexadecental acid and percentages contents were agreed with the previous investigations.

Myristic acid (30.30%), Tetradecanoic acid (12.84%), Palmitic acid (16.46%), Hexadecanoic acid (9.65%), 9-Octadecenoic acid (16.85%), 9-Octadecenoic acid (9.70%) and Stearic acid (4.20%) were found in this study. Gopala *et. al,* (2009) stated that, fatty acid contents of coconut oil are Palmitic acid (6-7%), Stearic acid (3-6%), Oleic acid (14-24%), Linoleic acid (14-19%) and Linolenic acid (48-60%). Therefore, these fatty acids of coconut oil, Palmitic and Stearic acids except Oleic acid, Linoleic acid, Linolenic acid, Myristic acid, Tetradecanoic acid, Hexadecanoic acid, 9-Octadecenoic and percentages contents were corroborated with the previous investigations.

In this study, Myristic acid (1.02%), Palmitic acid (11.92%), n-Hexadecanoic acid (14.51%), Linoleic acid (28.19%), Octadecadien acid (39.68%) and Ricinoleic acid (4.68%) were found. Ibanga *et. al,* (2013) stated that, fatty acid contents of cottonseed oil are Oleic acid (24.7%), Linoleic acid (49.7%), Myristic acid (0.6%), Palmitic acid (22.9%) and Stearic acid (2.2%). Therefore, these fatty acids of cottonseed oil, Linoleic, Myristic and Palmitic acids except Oleic acid, Stearic acid, n-Hexadecanoic acid, Octadecadien acid, Ricinoleic acid and percentages contents were agreed with the previous investigations.

Palmitic (6.44%), Hexadecanoic acid (4.72%), Hexadecenal acid (34.05%) and Elaidic acid (54.80%) were found in this study. Blanca (2006) stated that, fatty acid contents of Sunflower oil are Oleic acid (Min-75%), Linoleic acid (5-15%), Linolenic acid (Max-0.2%), Palmitic (3.5-8%) and Stearic (3-7%). Therefore, these fatty acids of Sunflower oil, Palmitic acid except Oleic acid, Linoleic acid, Linolenic acid, Stearic acid, Hexadecanoic acid, Hexadecenal acid, Elaidic acid and percentages contents were corroborated with the previous investigations.

In this study, Myristic acid (1.64%), Palmitic acid (5.11%), n-Hexadecanoic acid (1.51%), Methyl stearate (4.26%), Dodecanoic acid (0.57%), Ricinoleic acid (7.60%), Ricinoleic acid (50.55%), Eicosadienoic acid (18.84%), Palmitoleic acid (3.25%), Tetradecanoic acid (0.61%) and

9-Octadecenoic acid (6.07%) were found. Yusuf *et. al,* (2015) stated that, fatty acid contents of castor oil are Palmitic acid (2.59%), Linolenic acid (10.32%), Oleic acid (7.55%), Stearic acid (2.81%), Ricinoleic acid (74.10%), Eicosadienoic acid (0.93%) and Erucic acid (1.70%). Therefore, these fatty acids of castor oil, Palmitic, Stearic, Ricinoleic and Eicosadienoic acids except Linolenic acid, Oleic acid, Erucic acid, Myristic acid, n-Hexadecanoic acid, Dodecanoic acid and percentages contents were agreed with the previous investigations.

Sesamol (1.02%), Palmitic acid methyl ester (5.91%), Palmitic acid (4.86%), Linoleic acid (18.82%), Linoleic acid (18.38%), Stearic acid (4.86%) Elaidic acid (20.27%) and 9-Octadecenoic acid (25.89%) were found in this study. Shah, (2013) stated that, fatty acid contents of sesame oil are Oleic acid (38%), Linoleic acid (48%), Palmitic acid (9%) and Stearic acid (5%). Therefore, these fatty acids of sesame oil, Linoleic, Palmitic and Stearic acids except Oleic acid, Sesamol acid, Elaidic acid, 9-Octadecenoic acid and percentages contents were corroborated with the previous investigations.

According to the present research, some valuable oil yielding plants were found in Myingyan township of Myanmar. Therefore, it is hoped that the resulting valuable oils will be beneficial not only for local people but also for other researchers.

5. Conclusion

According to the findings of these acid values, sesame, groundnut, cottonseed, mustard and sunflower oils have low amount of saturated fatty acids. They are good sources of unsaturated fatty acids and they provide various health benefits. On the other hand, coconut and neem oils are the good sources of saturated fatty acids and they are not suitable to eat. Although castor oil has low saturated fatty acids, it has a toxin called ricinoleic acid and therefore, they are also inedible. In this study, four types of food oils were found among the studied eight kinds of oils. Groundnut, sunflower, sesame and coconut oils are food oils, but coconut oil is the exception because it is the least edible oil because it is rich in saturated fatty acids, Sesame oil is found out to be the most suitable oil for human consumption because it has the lowest amount of saturated fatty acids, also known as harmful acids for human's health. Moreover, sesame oil consists of 1.02% of natural fatty acid contents (sesamol acid). Non-food oils are castor, neem, mustard and cottonseed oils. Although castor oil has the highest content of unsaturated fatty acid, it has ricinoleic acid that latches in smooth muscle cells on the walls of the small intestine and causes contractions. Therefore, it should be used as a laxative. Neem oil also has the highest amount of unsaturated fatty acid, but it has azadirachtin component, and therefore it is used as pesticides. Mustard oil should be used for health benefits because these oils compose of 32% of oleic acid. The oleic acid is incorporated into cell membrane phospholipids where it is important for proper membrane

fluidity. Cottonseed oil is not used for cooking in Myanmar households. It is only used for grub production.

In conclusion, although unsaturated fatty acids provide many health benefits, the amount of toxic and other harmful acids also provides the main considerations on whether the oil is suitable for human consumption or not. After studying the acid components in eight oils, sesame oil is found out to be the most suitable one for humans because it is rich in unsaturated fatty acid and natural compound acid. It has lower saturated fatty acids as well as other harmful acids. Therefore, it is believed that the present study can be a good reference and contributed to the other researchers.

Figure 1 Comparison of the Studied Eight Oils

6. Recommendation

During the first six months of life, dietary total fat should contribute 45 - 65 % of total energy to cover the energy needed for growth and the fat required for tissue deposition. From age 6 months to 4 years, fat intake should be reduced gradually, depending on the physical activity of the child, to approximately 25 - 35 % of energy, this is in line with the upper adult acceptable macronutrient distribution range. The proposed ranges are mean values for the acceptable distribution of mean energy in take from fat for a population, expressed as percent of energy.

7. References

Blanca M., (2006). *Sunflower Oil, High Oleic Product Data Sheet.* CAS Number: 8001-21 6.

Diedhiou D, (2015). *Physical Characteristics, Chemical Composition And Distribution of Constituents of The Neem seeds (A. indica A. Juss) Collected in Senegal*

Fekria, A. M, (2012). *Nutritional And functional Characterization of Defatted Seed Cake Flour of Two Sudanese Groundnut (A. hypogaea) Cultivars.* University of Khartoum North, Shambat, Sudan.

Gopala K.A.G., Gaurav R., Ajit S.B., Prasanth K.P.K. and Preeti C., (2009). *Coconut Oil: Chemistry, Production and Its Applications A Review.* Department of Lipid Science & Traditional foods, Central food Technological Research Institute. Indian Coconut Journal.

Gharby. S, Harhar H., Bouzoubaa Z., Asdadi A., Yadini A. E1, Charrouf Z, (2017). Chemical Characterization and Oxidative Stability of Seeds and Oil of Sesame Grown In Morocco. *J. of the Saudi soci. of Agri. Scie* 105-111.

Ibanga O. I., Okon D.E., (2013). Fatty Acid Composition of Cottonseed Oil and its Application in Production and Evaluation of Biopolymers. *American Journal of Polymer Science*, 3(2): 13-22.

Khaliq IH, (2017). *Chemical Composition and Oil Characterization of Some Accessions of (R. communis) Seed.* Waried Telecom Pakistan and Pacific Western University (USA), Waried Telecom and Pakistan.

Kite, G. (2003). PROSEA. Plants Resources of South-East Asia 14. Vegetable oils and fats. *Kew Bulletin*, *58*(1), 236.

Mandloi S., Radadia BB., Visavadia M., Vaghela A., (2014). *A Review of Chemical Characteristics (Acid Value and Iodine Value) of Peanut Oil.* International Journal for Pharmaceutical Research Scholars. ISSN No: 2277-7878.

Satish I, (2011). *Chemical Studies of New Varieties of Sunflower (H. annuus) Lsf - 11 and Lsf - 8 seeds.* Department of Applied Chemistry, Government Engineering College Jabalpur - 482011 (M.P.), India.

Shah N.C., (2013). Sesamum Indicum (Sesame OR Til): Seeds & Oil-An Historical And Scientific Evaluation from Indian Perspective. *Indian Journal of History of Science*, 48.2 : 151-174.

Shamin A, (2007). *Fatty Acid Profile of Coconut Oil In Relation to Nut Maturity and Season In Selected Cultivars.* Indian Council of Agricultural Research, Kerala, India.

Yadav R. P, Kumari B, (2013). *Ultrasonic Studies ON Mustard Oil: A Critical Review.* Inter. J. of. Scie and Research. ISSN (Online): 2319 - 7064.

Yuksel B, (2016). *Screening of Cotton Genotypes for Protein Content, Oil and Fatty Acid Composition.* Department of Agricultural biotechnology, Faculty of Agriculture, Kahramanmaras Sutcu Imam University, Kahramanmaras, Turkey.

Yusuf A.K., Mamza P.A.P., Ahmed A.S. and Agunwa U.A., (2015). Extraction and Characterization of Castor Seed Oil from Wild Ricinus communis L. *International Journal of Science, Environment and Technology*, Vol. 4, No. 5, 1392-1404.

Zakia K, Hanan M. Al-Y, Ompal S., and Irshad Ul. H. B., (2017). *Neem Oil: Green Pesticides Handbook*. King Saud University.

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Effects of Chitosan and Pepper Essential Oil on Physicochemical and Microbiological Qualities of Chicken Sausage During Chilled Storage

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Abstract

In this study, the effects of chitosan powder (CP) at a concentration of 1.0% and different concentrations of pepper essential oil (PO) at levels of 0.0, 0.5, and 1.0 μL/g, added as CPO1, CPO2, and CPO3, respectively, were studied. The physicochemical and microbiological qualities of chicken sausages under chilled storage (4±1°C) for 0, 7, 14, 21, and 28 days were investigated. The results revealed that CP and PO treatments were showed to be effective in increasing pH, while water activity (a_w) decreased with added CP and PO ($p \leq 0.05$). Moreover, the addition of CP and PO led to increases in L*, a*, and b* ($p \leq 0.05$) during storage time concerning the corresponding control. For texture profile analysis, the addition of CP and PO in chicken sausages induced a raise in hardness, chewiness, and cohesiveness values relation of control samples. Moreover, total plate counts (TPC) in CPO1, CPO2, and CPO3 samples were significantly ($p \leq 0.05$) lower compared to control samples at 7, 14, 21, and 28 days of storage, proving the importance of CP and PO amount on TPC growth. Interestingly, CPO2 and CPO3 samples were not detected yeast and mold during storage. The results indicated that the application of CP and PO in the chicken sausage samples could improve the microbiological quality and extends the shelf life, which could an alternative to chemical protective additives.

Keywords : Meat Products, Chitosan, Essential Oil, Shelf-Life, Food Safety

1. Introduction

Recently, the customer demand for food safety is motivating meat product processors to used natural preservative ingredients for healthier. Although chemical preservatives and synthetic antioxidants can be effectively used to improve the shelf life of meat products (due to low cost, high stability, and efficiency), the toxicological aspects have become a topic of concern and discussion because there is no current single substitute for such compounds, particularly for nitrite/nitrate. Nitrites are noticeably unhealthy due to the potential forming of carcinogenic N-

nitroso compounds (NOCs), particularly N-nitrosamines, which are related to increased risks of esophageal, nasopharyngeal, gastric, and bladder cancer (Zhang et al., 2018). Therefore, studies have suggested alternative methods to substitute nitrite and nitrate salts applied in chicken sausage production (Alirezalu et al., 2019).

Meat is an ideal substrate for various spoilage microorganisms, such as *Escherichia coli*, which is recognized as an important cause of food-borne disease and food hygiene indicator bacteria. Due to the concern of meat shelf-life for both consumers, different kinds of meat preservation techniques have been developed in recent years, among which the natural food preservatives had the potential for application in meat industry. In past few years, the interest of researchers has been focused on finding alternatives for these additives from natural resources. It is well known that plant essential oils and extracts exhibit strong antioxidative, antimicrobial activities, possess anticarcinogenic, and antimutagenic properties. Hence, the addition of plant essential oils and/or plant extracts combined with nitrite reduction could be a good solution to improve the health image of different types of meat products. Essential oils (EO) have been used as antibacterial, antifungal, and antioxidant, as well as used for meat preserving. The majority of the EO has been classified as generally recognized as safe (GRAS) by EU standards (Zhang et al., 2017). To reduce the microbiological risk in foods and to decrease the use of synthetic additives, essential oils and antimicrobial peptides have been studied extensively. EO have a wide range of antimicrobial activities against various species of bacteria such as *Escherichia coli* O157:H7, *Bacillus cereus*, *Staphylococcus aureus*, *Staph. epidermidis*, *Listeria monocytogenes*, *Salmonella* Typhimurium, *Yersinia enterocolitica*, and *Proteus vulgaris* (Araújo et al., 2018).

Chitosan and its derivatives, which are natural, biodegradable, bio-renewable, and nontoxic, represent the most promising agents for the effective preservation of food. The inhibitory effect of chitosan depends on its concentration, molecular weight, and type of bacteria. This polymer is given the generally recognized as safe (GRAS) status, which is a safety guarantee in use as a natural food component (Rosca et al., 2005; Eldaly et al., 2018). In addition to its antimicrobial capacity, chitosan possesses other interesting properties such as antioxidant capacity, lipid and water binding capacity, and emulsification properties. Due to these properties, chitosan has been described as an interesting functional and technological ingredient, since it could act not only as an additive, but could also provide improved properties and a better nutritional profile to the final product (Amaral et al., 2015). Potential applications of chitosan as a biopreservative have been investigated in various meat products. Several studies have demonstrated the beneficial effects of chitosan applied either individually, or in combination with natural antimicrobials in food systems over the past few years. However, retention of the quality characteristics and extension of shelf-life during chilled storage of chitosan combined with pepper essential oil in meat products are yet to be demonstrated.

2. Research Objectives

The study aimed to investigate the application of chitosan combined with different concentrations of pepper essential oil as natural preservatives in chicken sausage production and also determine the changes of physicochemical and microbiological quality of chicken sausages during chilled storage in *situ*.

3. Research Methodology

3.1 Raw materials and preparation of chicken sausages

The chicken thigh was purchased from the supermarket (Makro, Sakon Nakhon, Thailand) and immediately transported to the laboratory. Chitosan powder (CP) and pepper essential oil (PO) were purchased from PKC Instrument LTD., PART (Thailand). Chicken sausages were prepared from ground the chicken thigh (71.20%), NaCl (0.81%), pepper powder (0.18%), starch (1.84%), egg white (1.42%), garlic (1.42%), ground pork back fat (6.25%), MSG (0.18%), sucrose (1.84%), ice water (14.24%), and polyphosphate (0.35%). The ground chicken thigh, ground pork back fat, all ingredients and antimicrobial agent (1.0% of CP and 0.0, 0.5 and 1.0 μL/g of PO as CPO1, CPO2, and CPO3 treatments) ingredients were mixed in a bowl chopper at high speed until the batter had been homogenized and keep the temperature of the batter below 11°C. The control treatment was mixed of all ingredients without CP and PO. The chicken batters were stuffed into polyamide casing (diameter of 28 mm) and dried at 65 °C for 30 min by using a sausage smoke chamber. After that, sausages were boiled cooked at 75 °C for 25 min until an internal temperature of 72 °C. Then, sausages were immediately chilled with cold water, vacuum-packed, and stored at 4±1°C in a refrigerator (Alirezalu *et al.*, 2019). All samples were taken at 0, 7, 14, 21, and 28 days of storage for physicochemical and microbiological analyses of each sample.

3.2 Physicochemical analysis

Sausage samples were homogenized with distilled water at 1:10 ratio, and then the pH was measured using a pH meter equipped with an electrode (Mettler Toledo, Switzerland). The water activity (a_w) of all sausage samples were determined using a LabMaster-aw (Novasina, Switzerland).

The color parameters of L*, a*, and b* were carried out using a colorimeter (Miniscan EZ, Hunter Lab, USA). The texture profile analysis (TPA) of each sausage sample was analyzed in terms of hardness, chewiness, and cohesiveness. The TPA was determined using a TA1 texture analyzer (Lloyd Instruments, UK). Force–time curves were recorded at a crosshead speed of 5 mm/s at a distance of 35 mm (Amaral et al., 2015). All experiments were repeated three times with duplicate samples.

3.3 Microbiological analysis

Twenty-five (25) grams of each sample of sausage batch were collected aseptically, transferred into sterile stomacher bags, and homogenized with 225 ml of saline peptone water (0.85% w/v NaCl and 0.1% w/v bacteriological peptone) in a stomacher Lab-blender 400 (Seaward Medical, USA) at normal speed for 2 min. Total plate counts (TPC) were determined by pour plating with plate count agar (PCA, Himedia, India) and incubated at 30°C for 48-72 h (BAM, 2001). Yeast and mold counts (YMC) were conducted in potato dextrose agar (PDA; Himedia, India) incubated at 25°C for 3 to 5 days (BAM 2001).

3.4 Statistical analysis

The experiments were performed with arrangements in a completely randomized design (CRD) and the mean value ± standard deviations were presented. Data analyses were performed by ANOVA (analysis of variance) and computed by the SPSS statistics for Windows, Version 17.0 (SPSS Inc., Chicago, U.S.A.). Duncan's new multiple range test (DMRT) was used to determine significant differences among results and statistical significance was accepted at the 95% probability ($p \leq 0.05$) level.

4. Research Results

4.1 pH and water activity (a_w) analysis

The results of pH and a_w analyses of chicken sausage samples prepared with different PO levels, with and without CP during chilled storage (4±1°C) for 0, 7, 14, 21, and 28 days are shown in Table 1. From the results, the pH of samples containing CP and PO (CPO1, CPO2, and CPO3) showed higher values than control, maintaining these differences throughout the storage time. The initial pH levels of samples at 0 day of storage time ranged from 6.44-6.76. At the end of storage, the highest pH value of 6.92 was observed in CPO3 (1.0% CP, 1.0 μL/g of PO) sample, while the control sample was found to have the lowest pH value of 6.40. Moreover, the CP and PO had a very important effect on the a_w decrease of chicken sausage samples. The addition of CP and PO induced a significant reduction of a_w values in the chicken sausage samples. In addition, the pH and a_w values of all samples had slightly changed during storage.

4.2 Color analysis

The results are shown in Table 2. The addition of CP and PO significantly increased the lightness of samples. All samples containing CP and PO (CPO1, CPO2, and CPO3) had significantly higher L* values than control samples. While a* values (redness) showed the positive value in all samples, indicating a dark red color. However, treated samples yielded higher values for the red color (a*) as compared to controls ($p \leq 0.05$). The highest L* and a* values were found in CPO3 sample of 6.29 and 13.48, respectively, at 21 days of storage time, while the control sample was found to have the lowest L* and a* values of 50.37 and 10.57, respectively,

at 7 days of storage time. For b* values (yellowness) of all samples showed positive value, indicated that dark yellow color. Moreover, the addition of CP and PO affected ($p \leq 0.05$) b* value of samples. The highest b* value was observed in CPO3 sample, while the control sample was found to have the lowest b* value. However, the different concentrations of PO did not affect ($p \leq 0.05$) L* values (lightness) and a* values (redness) of samples, whereas b* values (yellowness) had significantly. In addition, the values of L*, a*, and b* slightly increased in all samples during storage.

4.3 Texture profile analysis

Table 3 shows the texture profile analysis (TPA) of chicken sausage samples during storage. The highest hardness value for chicken sausage samples was found in CPO1 (35.31 N), while the lowest value was obtained in the control sample (30.40 N) at 0 day of storage. The CPO1 and CPO2 samples that containing CP and PO had significantly higher ($p \leq 0.05$) hardness values than control samples. However, the hardness values of all samples slightly decreased during storage. The addition of PO in chicken sausages caused a decrease in chewiness values relation of CPO1, CPO2, and CPO3 samples. While the addition of CP and PO in chicken sausages caused an increased in cohesiveness values relation of control samples. Nevertheless, the chewiness and cohesiveness values of all samples slightly changed during storage.

Table 1 Changes in pH and a_w values of chicken sausage samples during storage.

		Storage time (day)				
	Sample	**0**	**7**	**14**	**21**	**28**
pH	Control	6.44 ± 0.17^{a}	6.61 ± 0.47^{a}	6.40 ± 1.44^{a}	6.40 ± 0.72^{a}	6.40 ± 0.30^{a}
	CPO1	$6.67\pm0.12^{a,b}$	6.65 ± 0.95^{a}	$6.68\pm0.21^{a,b}$	$6.68\pm0.15^{a,b}$	6.59 ± 0.32^{b}
	CPO2	6.76 ± 0.55^{b}	6.91 ± 0.96^{b}	6.87 ± 0.15^{b}	6.87 ± 0.50^{b}	6.84 ± 0.18^{c}
	CPO3	$6.68\pm0.30^{a,b}$	6.95 ± 0.92^{b}	6.77 ± 0.28^{b}	$6.77\pm0.30^{a,b}$	6.92 ± 0.10^{c}
a_w	Control	0.962 ± 0.001^{c}	0.956 ± 0.000^{b}	0.968 ± 0.000^{b}	0.955 ± 0.000^{c}	0.944 ± 0.001^{b}
	CPO1	0.926 ± 0.002^{a}	0.935 ± 0.017^{a}	0.925 ± 0.000^{a}	0.927 ± 0.002^{b}	0.925 ± 0.000^{a}
	CPO2	0.936 ± 0.003^{b}	0.931 ± 0.007^{a}	0.926 ± 0.005^{a}	0.914 ± 0.005^{a}	0.924 ± 0.004^{a}
	CPO3	0.940 ± 0.014^{b}	$0.943\pm0.009^{a,b}$	0.926 ± 0.007^{a}	0.930 ± 0.005^{b}	0.922 ± 0.009^{a}

$^{a-c}$: Superscript letters with different letters in the same column indicate a significant difference ($p \leq 0.05$).

Control: 0.0% CP and 0.0 μL/g of PO; CPO1: 1.0% CP and 0.0 μL/g of PO; CPO2: 1.0% CP and 0.5 μL/g of PO; CPO3: 1.0% CP and 1.0 μL/g of PO.

Table 2 Changes in color parameters of chicken sausage samples during storage.

	Sample	Storage time (day) 0	7	14	21	28
L*	Control	53.96±8.10^{a}	50.37±4.59^{a}	53.08±0.26^{a}	55.53±0.31^{a}	56.51±0.36^{a}
	CPO1	63.50±4.37^{b}	64.00±3.60^{b}	62.60±0.42^{b}	63.45±0.24^{b}	65.55±0.34^{b}
	CPO2	63.81±2.38^{b}	64.64±0.43^{b}	65.47±0.31^{b}	65.29±0.31^{b}	65.70±0.93^{b}
	CPO3	63.20±6.00^{b}	65.53±0.05^{b}	65.30±0.26^{b}	66.29±0.30^{b}	65.57±0.33^{b}
a*	Control	10.78±1.17^{a}	10.57±0.27^{a}	11.23±1.39^{a}	12.48±0.23^{a}	10.57±0.25^{a}
	CPO1	12.27±0.30^{b}	11.46±0.30^{b}	12.23±0.55^{b}	13.36±0.45^{b}	13.47±0.31^{b}
	CPO2	12.84±0.60^{b}	12.87±0.46^{b}	12.27±0.36^{b}	13.48±0.32^{b}	13.48±0.20^{b}
	CPO3	12.10±1.09^{b}	13.02±0.05^{b}	12.46±0.22^{b}	13.44±0.22^{b}	13.65±0.30^{b}
b*	Control	21.42±0.90^{a}	21.57±0.27^{a}	21.50±1.39^{a}	25.23±0.95^{a}	21.82±0.26^{a}
	CPO1	25.59±2.81^{b}	24.54±0.70^{b}	26.05±0.27^{b}	25.24±0.42^{a}	25.38±0.59^{b}
	CPO2	25.89±2.04^{b}	26.85±1.86^{c}	28.49±0.25^{c}	28.59±0.44^{b}	26.44±0.41^{c}
	CPO3	26.77±2.02^{ab}	29.20±0.58^{d}	29.50±0.31^{d}	28.58±0.39^{b}	29.41±0.25^{d}

$^{a-d}$: Superscript letters with different letters in the same column indicate a significant difference ($p \leq 0.05$).

Control: 0.0% CP and 0.0 μL/g of PO; CPO1: 1.0% CP and 0.0 μL/g of PO; CPO2: 1.0% CP and 0.5 μL/g of PO; CPO3: 1.0% CP and 1.0 μL/g of PO.

Table 3 Evaluation of texture properties of chicken sausage samples during storage through texture profile analysis.

	Sample	Storage time (day) 0	7	14	21	28
Hardness (N)	Control	30.40±1.30^{a}	30.82±0.28^{b}	27.92±0.76^{a}	25.85±0.65^{a}	28.56±1.04^{a}
	CPO1	35.31±1.12^{b}	32.62±0.54^{c}	30.53±0.48^{b}	28.21±0.77^{b}	33.01±0.56^{c}
	CPO2	34.19±0.81^{b}	32.60±0.46^{c}	31.58±0.51^{b}	28.65±0.48^{b}	32.09±0.15^{c}
	CPO3	31.64±0.75^{a}	29.72±0.59^{a}	28.89±0.67^{a}	27.96±0.88^{b}	29.82±0.26^{b}
Chewiness (N mm)	Control	3.19±0.05^{a}	3.27±0.12^{b}	3.33±0.12^{ns}	3.30±0.18^{b}	2.43±0.16^{a,b}
	CPO1	3.51±0.17^{b}	3.34±0.10^{b}	3.17±0.21^{ns}	2.90±0.15^{a}	2.62±0.29^{b}
	CPO2	3.35±0.10^{a,b}	3.24±0.09^{b}	3.20±0.12^{ns}	2.67±0.23^{a}	2.44±0.11^{a,b}
	CPO3	3.22±0.08^{a}	3.06±0.06^{a}	3.26±0.05^{ns}	2.61±0.21^{a}	2.24±0.11^{a}
Cohesiveness (ratio)	Control	0.27±0.02^{a}	0.31±0.02^{a}	0.33 ±0.03^{ns}	0.32±0.01^{ns}	0.29±0.01^{a}
	CPO1	0.31±0.03^{b}	0.34±0.01^{a,b}	0.35±0.02^{ns}	0.33±0.02^{ns}	0.31±0.01^{a,b}
	CPO2	0.33±0.01^{b}	0.36±0.03^{b}	0.36±0.02^{ns}	0.32±0.02^{ns}	0.33±0.020^{a,b}
	CPO3	0.33±0.02^{b}	0.37±0.02^{b}	0.36±0.02^{ns}	0.34±0.03^{ns}	0.34±0.04^{b}

$^{a-c}$: Superscript letters with different letters in the same column indicate a significant difference ($p \leq 0.05$).

Control: 0.0% CP and 0.0 μL/g of PO; CPO1: 1.0% CP and 0.0 μL/g of PO; CPO2: 1.0% CP and 0.5 μL/g of PO; CPO3: 1.0% CP and 1.0 μL/g of PO.

ns: not significant.

4.4 Microbiological analysis

The results of the microbiological analysis during storage are presented in Table 4. At 0 day of storage, the total plate counts (TPC) of all samples did not differ significantly ($p \leq 0.05$) between the examined batches of sausages at the range of 2.37-2.89 CFU/g. After 7 days of storage, TPC for CPO1, CPO2, and CPO3 was significantly higher ($p \leq 0.05$), compared to the control samples. At the end of storage, the total number of TPC was the highest in the control sample (8.06 CFU/g) and the lowest in the CPO3 sample (3.60 CFU/g). Moreover, the sausages containing CP and PO at the concentration of 1.0% and 1.0 μL/g, respectively, leads to minimal changes in TPC during storage. In all of the chicken sausage samples, yeast and mold counts (YMC) were not detected at 0 and 7 days of storage time. Interestingly, CPO2 and CPO3 samples were not detected yeasts and molds during storage. However, the YMC of the control sample was found at 14 days (2.73 CFU/g) of storage and also increased at 4.44 CFU/g at the end of storage.

Table 4 Determination of total plate counts, yeasts and molds of chicken sausage samples during storage.

		Storage time (day)				
	Sample	0	7	14	21	28
TPC	Control	2.86 ± 0.27^{ns}	3.74 ± 0.37^{b}	4.28 ± 0.27^{c}	6.49 ± 0.30^{c}	8.06 ± 0.36^{d}
	CPO1	$2.37\pm\pm0.45^{ns}$	2.94 ± 0.25^{a}	3.54 ± 0.48^{b}	4.76 ± 0.32^{b}	6.94 ± 0.34^{c}
	CPO2	2.89 ± 0.05^{ns}	2.69 ± 0.11^{a}	2.87 ± 0.12^{a}	3.46 ± 0.51^{a}	5.07 ± 0.98^{b}
	CPO3	2.70 ± 0.16^{ns}	2.56 ± 0.06^{a}	2.57 ± 0.07^{a}	3.09 ± 0.45^{a}	3.60 ± 0.33^{a}
YMC	Control	ND	ND	2.73 ± 0.21^{b}	3.62 ± 0.34^{b}	4.44 ± 0.39^{c}
	CPO1	ND	ND	ND^{a}	ND^{a}	2.68 ± 0.16^{b}
	CPO2	ND	ND	ND^{a}	ND^{a}	ND^{a}
	CPO3	ND	ND	ND^{a}	ND^{a}	ND^{a}

$^{a-d}$: Superscript letters with different letters in the same column indicate significant difference ($p \leq 0.05$).

Control: 0.0% CP and 0.0 μL/g of PO; CPO1: 1.0% CP and 0.0 μL/g of PO; CPO2: 1.0% CP and 0.5 μL/g of PO; CPO3: 1.0% CP and 1.0 μL/g of PO.

TPC: total plate counts (CFU/g); YMC: yeast and mold counts (CFU/g)

ND: not detected.

ns: not significant.

5. Discussion

In the chicken sausages developed in this research, the addition of preservatives including chitosan (CP) and pepper essential oil (PO), with no added nitrites. Although chitosan has been shortly reviewed in particular for antimicrobial and antioxidant properties, which are useful in the food industry to enhance food quality and shelf life. For pH and a_w, samples added

CP and PO showed higher values than control samples during storage. However, the pH of all samples is conducive to the growth of most deteriorating microorganisms. The increase of pH is due to the fundamental structure of chitosan promoted by the amino groups present (Sayas-Barberá et al., 2011). Fluctuations in pH value could be due to production of lactic acid through LAB metabolism and carbonic acid formation through dissolution of CO_2 into meat aqueous phase. However, pH value decreased at a slower rate in treatment groups, which indicated that during initial period of storage, essential oils might have exerted antibacterial action by presence of phenolic, terpenes, eugenol etc. in essential oil which reduced development of lactic acid bacteria and spoilage microorganisms (Sharma et al., 2017) The water activity (a_w) of chicken sausage samples related with ingredients, was affected by the addition of CP and PO. This fact is due to the ability of chitosan to absorb water. However, the a_w values of all samples range of 0.922-0.943 during storage, such values also being favorable to the growth of a variety of microorganisms. Therefore, it is important to emphasize the importance of having the appropriate technology, such as refrigeration temperature control, during storage (Martins et al., 2019).

The color of meat product is one of the most important parameters by which consumers evaluate meat and meat product quality. The addition of CO and PO significantly affected the color parameters ($p \leq 0.05$) of chicken sausage samples. The increasing concentrations of CP and PO led to increases in L*, a*, and b* ($p \leq 0.05$) during storage time concerning the corresponding control. From the results, the L* of CPO1, CPO2, and CPO3 samples were in the range of 62.60-66.29 during storage. Lightness is a main attribute which correlates well with consumer acceptability. According to Dingstad et al. (2005), at least 60% of consumers were willing to buy the sausages when L* was between 62.3 and 68.5. The L* values of all samples increased may be due to the oxidation and concentration of meta-myoglobin in the meat. Moreover, changes in L* can also be related to surface water, water vapor exchanges between the products and the environment, and modifications of the different states of the heme pigment (Amaral et al., 2015). The a* and b* were also always higher in samples with CP and PO than in control samples. Similar behavior was reported by Amaral et al. (2015) who reported that added chitosan in meat sausages had a more reddish surface than sausages without chitosan. In addition, the storage time of meat products could be effects on color properties, observed the same trend, and indicated that oxidation could increase b* values by rancidity.

The addition of CP and PO could influence the hardness of the sausage samples. Among texture attributes, hardness is the most important to the customers as it determine the commercial value of meat products (Huda et al., 2010). Hardness can be related to the force necessary to break the food with the incisors during mastication. In addition, hardness is the maximum force required to compress the sample during the first compression or first bite. The higher hardness value within the sample CPO1 may be related to the lower PO content, as

compared to sample CPO2 and CPO3. However, that the hardness of the sausage increased by an increase in molecular weight of chitosan, especially, at the highest molecular weight (120,000) increased viscosity which may cause adverse effect on processing (García et al., 2010). Moreover, Abdulhameed et al. (2016) reported that the hardness value decreased as the temperature and time increased due to starch gelatinization during the cooking process.

TPC and YMC in CPO1, CPO2, and CPO3 samples were significantly ($p \leq 0.05$) lower compared to control samples, proving the importance of CP and PO amount on TPC and YMC growth. Probably, there were result of antimicrobial activity of CP and PO. At the end of storage, treatment of CP and PO at concentration of 1.0% and 1.0 μL/g retarded the TPC growth and lower the maximum growth levels in the sausages. Colony count of TPC was found at 3.60 CFU/g. According to Amaral et al. (2015), chitosan incorporation induced, in general, a significant reduction of viable cells (ca. 0.5–1.0 log CFU/mL) in the fresh sausage samples, maintaining these differences throughout the storage time. Moreover, Firouzi et al. (2007) reported that the reduction in the total number of mesophilic bacteria was, probably, the consequence of antimicrobial properties of nutmeg essential oil. The presence of yeasts and molds in meat products is undesirable and may cause changes in taste and smell, which is due to the possible presence of toxins (Martins et al., 2019). Interestingly, the samples added 0.1% CP with 0.5% and 1.0 μL/g of PO were not detected YMC during storage. Therefore, the addition of CP is not the only factor influencing antimicrobial activity, but the concentration of PO is also playing the key role.

6. Conclusion

Chitosan and pepper essential oil were obtained as natural concentrated additives with proven antimicrobial. Both additives showed effective antimicrobial potential determined by in vitro assays and in chicken sausages. The results of this study indicated that combinations of natural antimicrobial (chitosan and pepper essential oil) could be used as effective partial replacement to chemical preservatives in chicken sausages. Consequently, it can be concluded that the chicken sausage with 1.0% CP and 1.0 μL/g of PO addition was the suitable condition of physicochemical and microbiological quality for extent shelf life of the product.

7. Recommendation

1. It is recommended that further studies should be evaluated for organoleptic properties, as well as lipid oxidation of such products.

2. It is also recommended that further studies should be evaluate the synergistic effect achieved by the combinations of CP and PO was determined in reduction of residual nitrite content and prevention of lipid oxidation of cooked pork sausages.

References

Abdulhameed, A., Yang, T.A., & Abdulkarim, A.A. (2016). *Kinetics of texture and colour changes in chicken sausage during superheated stream cooking*. Polish Journal of Food and Nutrition Sciences. 66(3), 199-209.

Alirezalu, K., Hesari, J., Nemati, Z., Munekata, P.E.S., Barba, F.J., & Lorenzo J.M. (2019). *Combined effect of natural antioxidants and antimicrobial compounds during refrigerated storage of nitrite-free frankfurter-type sausage*. Food Research International. 120, 839-850.

Amaral, D.S., Cardelle-Cobas, A., Nascimento, B.M.S., Monteiro, M.J., Madruga, M.S., & Pintado, M.M.E. (2015). *Development of a low fat fresh pork sausage based on chitosan with health claims: impact on the quality, functionality and shelf-life*. Food & Function. 6(8), 2768-2778.

Araújo, M. K., Gumiela, A.M., Bordin, K., Luciano, F.B., & de Macedo, R.E.F. (2018). Combination of garlic essential oil, allyl isothiocyanate, and nisin Z as bio-preservatives in fresh sausage. Meat Science. 143, 177-183.

BAM: Aerobic plate count. (2001). Maturin, L., and Peeler J.T., authors. *Microbiological method and bacteriological manual (BAM): U.S. Food and Drug Administration*. Silver Spring, Maryland: FDA. Avialable from: https://www.fda.gov/Food/Food ScienceResearch/LaboratoryMethods/ucm063346.htm

BAM: Yeasts, Molds and Mycotoxins. 2001. Tournas V, Stack EM, Mislivec B, Koch HA, Bandler R, authors. *Microbiological method and bacteriological manual (BAM)*: U.S. Food and Drug Administration. Silver Spring, Maryland: FDA. Avialable from: https://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm071435.htm

Dingstad, G.I., Kubberød, E., Naes T., & Egelandsdal, B. (2005). *Critical quality constraints of sensory attributes in frankfurter-type sausages, to be applied in optimization models*. LWT-Food Science and Technology. 38, 665-676.

Eldaly, E.A., Fikry, A., Mahmoud, A., & Abobakr, H.M. (2018). *Preservative effect of chitosan coating on shelf life and sensory properties of chicken fillets during chilled storage. Journal of Nutrition and Food Security*. 3(3), 139-148.

Firouzi, R., Shekarforoush, S. S., Nazer, A. H., Borumand, Z., & Jooyandeh, A. R. (2007). *Effects of essential oils of oregano and nutmeg on growth and survival of Yersinia enterocolitica and Listeria monocytogenes in barbecued chicken*. Journal of Food Protection, 70, 2626-2630.

García, M., Díaz, R., Puerta, F., Beldarrián, T., Gonzáalez, I. (2010). *Influence of chitosan addition on quality properties of vacuum-packaged pork sausages*. Food Science and Technology. 30(2), 560-564.

Huda, N, Wei, L.M., Jean, A.T.L., & Ismail, I. (2010). *Physicochemical properties of Malaysian commercial chicken sausages. International Journal of Poultry Science*. 9(10), 954-958.

Martins, A.P., de Abreu Martins, H.H., Isidoro, S.R., Alcântara, J., Ramos, E.M., & Piccoli, R.H. (2019). *Changes in the quality of sliced mortadella sausages prepared using chitosan*. Journal of Food Safety. e12645. DOI: 10.1111/jfs.12645.

Rosca, C., Popa, M.I., Lisa, G., & Chitanu, G.C. (2005). *Interaction of chitosan with natural or synthetic anionic polyelectrolytes. 1. The chitosan-carboxymethylcellulose complex*. Carbohydrate Polymers. 17, 35-41.

Sayas-Barberá, E., Quesada, J., Sánchez-Zapata, E., Viusa-martos, M., Fernández-López, F., Pérez-Alvarez, J.A., & Sendra, E. (2011). *Effect of the molecular weight and concentration of chitosan in pork model burgers*. Meat Science. 88(4), 740-749.

Sharma, H., Mendiratta, S.K., Agrawal, R.K., Gurunathan, K., Kumar, S., Singh, T.P. (2017). *Use of various essential oils as bio preservative and their effect on the quality of vacuum packaged fresh chicken sausages under frozen conditions*. LWT-Food Science and Technology. 81, 118-127.

Sojic, B., Pavlic, B., Ikonic, P., Tomovic, V., Ikonic, B., Zekovic, Z., & et al. (2019). *Coriander essential oil as natural food additive improves quality and safety of cooked pork sausages with different nitrate levels*. 157, 107879.

Zhang, H., Sun, C., Han, W., Zhang, J., & Hou, J. (2018). *Analysis of the monitoring status of residual nitrite in meat products in China from 2000 to 2011*. Meat Science, 136, 30–34.

Zhang, J., Ye, K.P., Zhang, X., Pan, D.D., Sun, Y.Y., & Cao, J.X. (2017). *Antibacterial activity and mechanism of action of black pepper essential oil on meat-borne Escherichia coli*. Frontiers in Microbiology. 7, 2094.

Perspectives towards Thai Education Policy Underlining the Thailand 20-Year National Strategy Plan

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Abstract

The Education Ministry is launching the '20-year Strategic Education Plan' as it works towards its vision to reform the education system and bring educational standards on a part with those of developed countries. The plan will be in line with the Thailand 20-year national strategy and each education policy is being geared towards the goals of investing in human capital; ensuring justice and reducing social disparities; strengthening the economy and enhancing competitiveness on a sustainable basis; and promoting green growth for sustainable development. The policies must also address stability for the country's development toward prosperity and sustainability, enhance the efficiency of management in the public sector and promote good governance. It is crucial by having clear directions for long-term educational development at this juncture of entering the so-called Thailand 4.0. However, the reflection of Thai education history can be taken into account in applying master plan into practice in the Thai education track as it is directly effected on Thai education development in a long period of time. Apart from raising awareness of Thai education history, this master plan needs to be harmonized engagement according to the learners' individual differences, local and international competency and dramatically changes of world situations.

Keywords : 20-year Strategic Education Plan (Thai Educational Policy, Thailand 20-year National Strategy Plan (National Strategy Plan), the 21st Century Skill, Local Wisdom, International Competency, World Situations,

1. Introduction

Thailand attaches great importance to the concept of sustainable development in a long period of time. Our country has been guided by the Sufficiency Economy Philosophy (SEP), conceived by His Majesty the Late King Bhumibol Adulyadej. The SEP has been adopted and adapted as the core principle of National Economic and Social Development Plan since 2002. The current constitution has integrated SEP and sustainable development as integral parts

(Khongkon & Thaweehirunratthakid, 2018). The development approach based on SEP is in conformity with the core principle of the 2030 Agenda and can serve as an approach to support the realization of the Sustainable Development Goals (SDGs). SEP promotes sustainability mindset and provides guidelines for inclusive, balanced and sustainable development. Therefore, SEP will continue to be our principle framework in completing the unfinished Millennium Development Goals (MDGs) business and achieving the SDGs. The cabinet has decided on 25 October 2016 to promote the application of SEP for SDGs in all areas and at all levels. Thailand has also been actively sharing SEP as a development model to the international community especially since her G77 chairmanship in 2016 (Barua, & Tejativaddhana, 2019).

Focusing on '20-year Strategic Education Plan', education in Thailand has a rich cultural and political history. Formal Thai education began as early as the 13th century with the development of the Thai alphabet. Members of the male nobility and royalty were educated at the Royal Institution of Instruction, while boys of the common class often received education at Buddhist temples from highly educated monks, skilled in grammar, fine arts, medicine, law, astronomy and math. It was not until 19th century, the Thai educational reforms can be grouped into three waves. The beginning in 1868 and lasting through 1910, Thai girls were allowed to receive an education. The first wave of reform emphasized the development of education as a secular institution. English and commerce were brought to the forefront of Thai studies, as the nation's central position allowed Thai leaders to acknowledge the importance of English communication, as well as participation in a quickly globalizing market. Education was also centralized and standardized in this period (David, 2014 and Engdahl, 2015). The second wave of Thai education reform started in 1973, and spanned through the remainder of the decade into 1980. During the military rule and political unrest, the reform was sparked by reaction to student activism in the period of October 1973 arrest of student activist Thirayudh Boonmi, a student uprising further rocked the country's stability, amassing 80,000 protesters by October 13 (David, 2014 and Winichakul, 1995). Thailand decided there needed to be unity in the management and administration of the education system. Leading administrators worked to abolish the inequality of the system, and to bring the curriculum up to date with the most relevant material for Thai students (David, 2014; Fry & Bi, 2013; and Naidoo, Wilkinson, Adoniou & Langat, 2018). The third wave of reform began in 1997 and came to a close recently in 2010. It has been the most complex and extensive reform period thus far, and has called for a number of changes: it guaranteed government-provided education for 12 years. Many universities became autonomous institutions. The system became decentralized, breaking into 175 different local education service areas. Standards were implemented to award teacher licenses (David, 2014). Furthermore, the political venerability has been main influence on the educational development.

As the world situation is dramatically changes, the policy makers and the practitioners need to get by in the real world. In the other words, they have to see through the needs of both local and international population. It cannot be denied that the political situation is directly affected on Thai educational reform and development.

2. Perspectives towards Thai Education Underlining the Thailand 20-Year National Strategy Plan

2.1 The Thai Education in the Past Period

As we know the Thai education in past period can be classified into three periods namely Sukhothai Period (A.D.1238-1378); Ayutthaya Period (A.D. 1350-1767), and Thonburi Period (A.D. 1727) respectively. The early development of Thai education started from Sukhothai Period (A.D.1238-1378) as the outstanding first Thai alphabet stone inscription of 1292 by King Ramkamhaeng. Absolutely the Sukhothai stone inscriptions recorded aspects of education in moral, intellectual and cultural terms and the original alphabets are still in use up to the present. Later on the basic structure of education for the princes, boys of noble birth, and commoners was adopted by the court and people of Ayutthaya (A.D. 1350-1767), and still prevailed in the early reigns of the Bangkok period. It is worth to claim that during the reign of King Narai the Great, a book for the study of the Thai language entitled *Chindamani* was written and became a popular text book in due time. It continued to be in use up to H.M. King Chulalongkorn's reign (1868-1910). It is generally accepted as the first textbook of the Thai language. After the fall of Ayutthaya in 1767, and following a brief Thonburi Period, where is unknown evidence pointing out the educational reform. In 1728 by King Rama I (1782-1809), the first King of the present Chakri Dynasty. He made an impact on the development of public education by reforming the Buddhist Church (Fry, G. W., & Bi, H. 2013).

However, it could be noted that such Thai education in the past period was of an academic type as it did not provide for occupational training which was generally handed down within the family or acquired through an apprenticeship which is far different from Thai education nowadays.

2.1.1 The Bangkok Period (1782 onwards)

This period known as the reform and modernization. During the early Bangkok period, a number of treaties were concluded with foreign powers, mostly in the form of a Treaty of Friendship and Commerce. The first King of the present Chakri Dynasty. He made an impact on the development of public education by reforming the Buddhist Church. Modern technology in the form of the printing press entered Thailand with the coming of Western missionaried and merchants in the mid 1800's. During King Rama IV realized that the kind of education provided by the monastery and the court was not adequate for future government officials. Therefore, the

commanded that measures be taken to modernize the education of the country and a good knowledge of English would form a part of the new educational requirements, as it had become a necessary key to further knowledge as well as a medium of communication with foreigners (David, 2014).

It can be said that the policy of educational modernization was further pursued by King Rama V (1868-1910). Recognizing the need for better-trained personnel in royal and governmental services, he opened a school in the palace to educate young princes and the sons of nobles in 1871. This was the first Thai school in the modern sense as it had its own school building, lay teachers and a time-table. In 1871, immediately after the setting-up of the first school, the ***Command Declaration on Schooling*** was issued for this purpose. Although, it is interesting to note that the Command Declaration on Schooling signifies the advent of a formal education in the reign of King Rama V, the fact remains that the education system at that time was essentially for the elite. During King Rama V set up an ***English school*** in the palace to prepare princes and court children for further studies abroad as well as a number of schools outside the palace for the education of commoners' children. Furthermore, in 1887, King Rama V established the Department of Education to oversee the Kingdom's education and religious affairs. At the time of its inception, the Department had under its jurisdiction, 34 schools in the metropolitan and provincial areas, 81 teachers and 1,994 students, including 4 other advanced schools in the metropolis. It is worth noting that the implicit significance of the establishment of the Department of Education lies not in the scope of its responsibilities but in the fact that education in Thailand was on its way to being a planned enterprise, more systematic than ever before, and that education also had its own spokesman to speak for its worthy cause (Kangkha, & Mahadi, 2017).

2.1.2 The Emergence of the Ministry of Education

The Department of Education became a full-fledged Ministry of Education on April 1, 1892, as a result of King Rama V's experimental measures in administrative and political reform with a view to establishing 13 ministries. By virtue of the 1892 Declaration, the control of private schools, in their rudimentary form, was introduced. A development in this respect reflected that the private sector had come in to share the educational responsibilities with the Government (Gerald W. Fry, 2002).

In 1898, the first ***Education Plan*** was launched. It was divided into 2 parts: the first concerned with education in the Bangkok area while the second with education in the provinces. The most significant feature of this Education Plan was that the educational organization had covered all levels namely; pre-primary, primary, secondary and technical education up to higher education.

In 1902 ***the National System of Education in Siam*** retained all the education levels of the 1898 Plan and reshaped them into 2 categories; namely, general education and professional

or technical education. Another feature of this plan was that a variety of age limits for admission was imposed to motivate graduation within a scheduled duration. In 1913, ***the School of Arts and Crafts (Poh Chang)*** was set up in Bangkok. In 1916, higher education emerged in Thailand as ***Chulalongkorn University*** was founded with 4 faculties: Medicine, Law and Political Science, Engineering, and Literature and Science. In 1921, the ***Compulsory Primary Education Act*** was proclaimed. The Year 1932 heralded a period of historical change in Thailand as a constitutional monarchy system replaced the traditional system of absolute monarchy. ***The first National Education Scheme*** was thus devised whereby individual educational ability regardless of sex, social background or physical conditions would be formally ecognized. In 1960, compulsory education was extended to 7 years. In addition, special provisions were, for the first time, made for disabled children, who were originally exempted from compulsory education, so that they might be given some form of basic education, regardless of their handicaps (Valenti, 1974).

In 1977, Thailand's educational system was changed from a 4-3-3-2 structure to a 6-3-3 system wherein six years of compulsory primary education is followed by three years of lower secondary school and by another three years of upper secondary schooling, which is still in use nowadays. From the year 1977 right through to the present day, it can accurately be said that all of the efforts made by the Ministry of Education have been geared towards one direction, which is to provide educational services as a means for a better quality of life and society (Ministry of Education, 2008 and Vorapanya & Dunlap, 2014).

It is obvious seen that Thai education system has been gradually developed with various factors. However, the world situation is changed rapidly. In other words, the world moves very fast, it seems that the knowledge inside the classroom in not real or not enough to bring it in dealing with the learners' problems in their real life. Therefore, the learners are interested in to explore the knowledge with suit their needs outside classroom world.

2.2 The Thai Education in the Current Situation

During this period education was heavily restructured into three basic levels: one, two and three. Level One is optional. It consists of kindergarten education for children between the ages of 3 and 5. Three grades are included in the program as a whole: KG1-KG3. Level Two begins primary education, and the first years of required schooling for Thai children. This level consists of six years: P1-P6. Level Three is secondary education, and includes M1-M6. Not all six grades are required; a student need only finish M1-M3. The end of each year requires children to take a test in order to advance to the next level of education. Despite these reforms, Thai leaders and researchers still acknowledge major problems with education. The main issue is with the quality –It has nation exam called O-NETs at the end of the year tests. It is clear that Thailand greatly values its system of education. Its significance in the traditional Thai culture of Buddhist monks and its prominent place in Thai political history reveal as much. But Thailand has more

education reform to accomplish before it can give its students the kind of education it so deeply wishes them to have.

2.3 The Thai Education in the Future Track

Many Thai scholars and leaders who involved in the policy makers revealed their interested ideas related to the educational reforming in Thailand as following:

Vejjajiva (2016) discussed Thai education is still a major problem in national development. No matter how many eras or times the world has changed, people have changed their habitats to Mars. But the thing that never changes is the Thai education system. Regardless of the number of parties and the government, why didn't they succeed? But didn't see any improvement. Everything is a dream which we ourselves believe that many adult leaders saw the problems but they are still unable to find a solution. It might be because of the modern world changes more and more rapidly and trend that enters Digitalization causes hyper competition. The world has changed from finding the right answer to find a satisfactory answer according to the context. Therefore, leadership skills that can communicate and make people around you believe that new things, different things are possible. There 3 factors that affect the development of Thailand's competitiveness. Highly Adaptive - learners adapt to learn new things, Highly Globalized - the exchange of learning and courses at the national level; Highly Personalized - choosing to study and adjust according to individual interests. And finally, Highly Focused yet Flexible - Focusing but flexible. The solution to the inequality in education Thai education requires EdTech (Education Technology) to help solve all of Thai children' access to quality education (Vejjajiva, 2016)

Pimpa (2017) mentioned the current Thai study that Thai education still needs to develop people, teachers, society in a variety of ways that focus on private and government involvement. As for education outside, to create smart learners, it must also emphasize children to be good, smart, happy, and virtue. Children now lack ideas. Educational technology is useful in increasing the country's competitiveness Therefore, education has to be added about new technology in the curriculum. And adapt to keep up with technological changes and economic factors also affect education because nowadays colleges, universities or schools of great quality. Therefore, the government could give a child or teacher or a good environment that must be caused by the government to help and emphasize less work on the document and focus on the work in a form to enable the child to enter (Pimpa, 2017).

Tungkunanan (2016) realized that Thai education from the past-present to the future is about a learning process to develop and build skills for people to live peacefully. For Thai education, it is a combination of the concept of Western and Buddhism based on Thailand in the past and has been modified. And changing education in the year 2006, which is a turning point due to the globalization caused by the advancement of technology. In this era, people have

developed all around to create a good quality society and environment. By using the revised National Education Plan 1979-2016, based on the philosophy of the sufficiency economy. The education plan organized by the Ministry of Education more than local government organizations and the private sectors. The role of the Ministry of Education can support decentralization in means of administration, budget and responsibility in accordance with the guidelines to encourage the province to self-study together with the education area. Local administrative organizations, community institutions, development systems, supervision, supervision, and collaborative work by four parties, namely representatives from the Ministry of Education and Higher Education, teachers, practitioners, experts, people and local organizations in order to collaborate in reforms and educational institutions in each province, district, sub-district to be able to effectively manage teaching in new ways. Thai education can be effective if Thais do not neglect to consult and focus on finding knowledge to be used in their careers (Tungkunanan, 2016).

Mekwan (2014) stated that Thai education reform is to provide opportunities for children in need to learn because some people want to study but they don't have a budget to study at all, they have to stay to help work at home. There may be groups that study privately with a tuition fee of a hundred thousand because they wish their children to be good. Some college schools may not focus on quality but quantity is to promote students by attending the school, give away iPads or have a 50% discount. Some schools have the motto that if full payment is made certainly good grades or bad grades which, even if it came to an end, quality and morality were not born out. In conclusion, if Thai education improves education quality children also have to develop morality, good attitude to end. It can be a learner who is not only good at but also a good person (Mekwan, 2014)

Chetaman and others (2019) discussed educational development under the framework of Thailand 4.0 to the 21st century that the development process. Education under Thailand 4.0 to the 21st century is the beginning of a 20-year strategy for moving the country towards stability, prosperity, sufficiency and concrete sustainability. By developing education to enable students to have sufficient economic philosophy; knowing, sharing, taking responsibility and giving value in knowledge. The country has continuously developed models 1.0 to 4.0, which is due to the connection between the development plan with national strategy. Teaching or education in the form of 4.0 that can meet the needs of the market today, the world of the internet. Studying in the form of development mechanism in promoting and in still the concept for citizens and youth of the nation, which is to apply knowledge to be innovated in the form teaching and learning in each period must focus on skills rather than content; focusing on practice rather than theory because even if you remember all the formulas, but if you don't use them in reality, it's no different from those who don't know. An advancement of technology can lead in learning and development as

technology make the learners develop quickly. Thailand 4.0 era can help the skills and develop students to gain knowledge (Chetaman and others, 2019)

Jindanurak (2017) said that teachers and students in the Thai education 4.0 era, that teachers in the 4.0 era must be professional teachers, whether it is the content of the knowledge to teach or even the teaching techniques to understand the students. Easy and remember for a long time, and technology is important because it is a point or a teaching tool. In addition, morality and ethics are important because after graduation, it must be a good person, have morality, can work together with others, being a teacher in the 4.0 era is not easy because it requires students to get the most benefit so that they are able to pursue a career. And is the key of the country for the next. And students in the 4.0 era must be personnel with the potential to create innovation until it is a quality product can then go abroad or may be invented to be used in the development of the community to advance technology and help with the burden of complicated steps easier and only a short time. 4.0 era, aside from having knowledge in order to teach students to be knowledgeable then still have morality and ethics. Good dependency is the main criterion for deciding to be a good person in society because teachers are good people in society. Moral teachers will receive respect from students, be accepted by parents, be supported by friends and supervisors make progress in work, and this is everyone's voice that there is no teacher, no pupil because the teacher is the one who brings life to the shore (Jindanurak, 2017). It is obviously seen that in the present day, where smart phones are able to do everything, it has significantly reduced the intention of schooling of Thai children and the rapid change of the 21st century world. Education as a mechanism of national development principles throughout and when the original plan is completed, develop and create a new plan to set the goals and directions of the country's education By focusing on education for all Thai people to have access to equal opportunities in quality education, develop an educational management system that is efficient, develop manpower to work in accordance with the needs of the market. Moreover, the national development National Education Plan processes on the importance of participation and acceptance of all relevant sectors.

After revising on Thai education history and the scholars' reviews in Thai contexts, we can be taken into account in applying master plan into practice by raising awareness of the learners' individual differences, local wisdom and international competency and dramatically changes of world situations which will be described the Figure 1. The following figure shown how to move our country to become the developed nation underpinning in the '20-year Strategic Educational Plan' i.e. it can be said that the ideal from the National Strategy Plan into practice on the Thai Educational Policy.

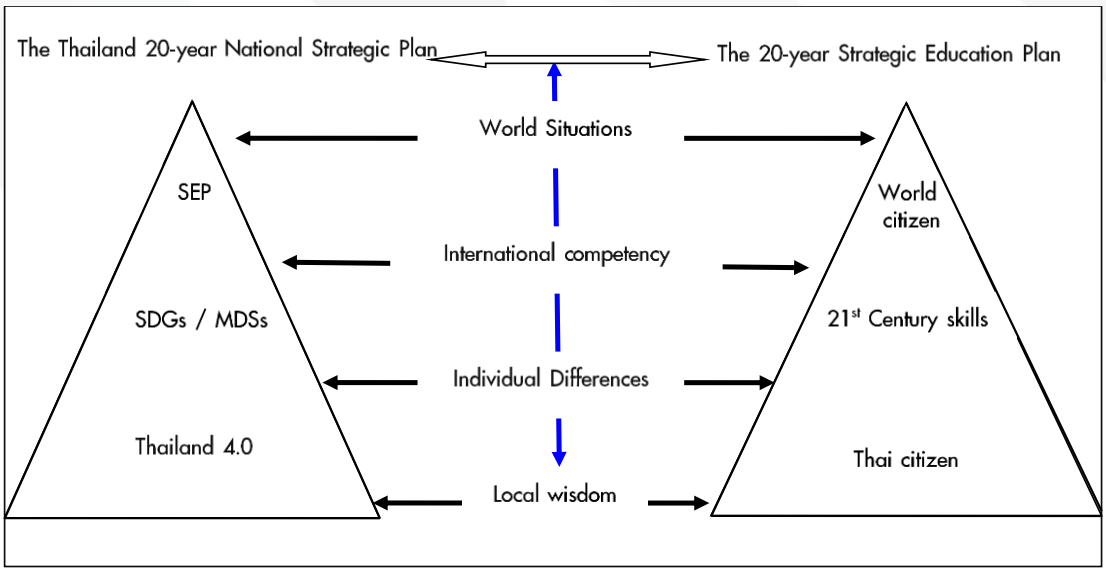

Figure 1: The ideal from the National Strategy Plan into practice on the Thai Educational Policy

Based on the Figure 1, it can be described on how to bridge the ideas stated in the Thailand 20-year National Strategic Plan (National Strategy Plan) shown in the left triangle into practice on the 20-year Strategic Educational Plan (Thai Educational Policy) shown in the left triangle by all practitioners, experts, and Thai people in the middle of those two triangular dimensions.

In the line of the conceptual framework provided in the Thailand 20-year National Strategic Plan (National Strategy Plan) shown in the left triangle. It emphasizes on the country development process which has now moved on the National Strategy Plan under tracking the country towards Stability Economics Philosophy (SEP) which directly runs on the stability, prosperity, sufficiency and concrete sustainability. This has been a key guiding principle of Thailand's sustainable development efforts. The philosophy stresses balance in the use of economic, social, environmental and cultural capital. The SEP is based on three principles that stress a middle path for Thai people at all levels, from family to community to country. These principles are: **Moderation** (moderation refers to the less wasteful consumption and production patterns, the curbing of fossil fuel usage, and sustainable management of marine and terrestrial ecosystems); **Reasonableness** (Reasonableness refers to thoughtful consideration of the impact that our actions and decisions may have both on others and the world around us. Considering the Sustainable Development Goals (SDGs), reasonableness has numerous practical applications in global issues of climate change, equality, justice, developing clean energy sources and reducing pollution); and **Prudence** (Prudence is about assessing potential risks, working methodically and achieving a level of competence and self-reliance before proceeding further. It is also about people taking care not to overreach their capabilities). The SEP umbrella has three main pillars: the Sustainable

Development Goals (SDGs) is for local development; the Millennium Development Goals (MDGs) is for global development and the Thailand 4.0 (Thailand 4.0) policy is a government tool to gear up the country's economy and production to become a high-income nation, move toward an inclusive economy and focus on sustainable growth and development. Firstly, the SDGs is for localization and it puts the sustainability including health, food, water and energy security whereas the MDGs is globally and it focuses on the social development e.g. hunger, poverty and inequality, illiteracy, sickness and environmental degradation. In Thailand, the SDGs were built on the success of the earlier MDGs as our country has been guided by the SEP on its people-centered development approach, empowering people and communities. For instance, Thailand has shared the expertise it gained from achieving the MDGs directly with other countries, as well as through regional forums such as ASEAN. This proved the contribution to the global development process by helping to strengthen its neighbors' capacity to fulfill their MDG commitments and their future development endeavors. Lastly, the Thailand 4.0 is an economic model that endeavors to change traditional farming to smart farming, traditional SMEs to smart enterprises, traditional services to high-value services, and transform the economy so that it is driven by innovation, creativity, research and development, and green industries. In other words, Thailand 4.0 is in line with the 20-Year National Strategy Framework and the 12th National Economic and Social Development Plan.

In the line of the educational practical concept was mapped out in line with the 20-year Strategic Education Plan (Thai Educational Policy) shown in the left triangle. Our country has been guided by the SEP on its people-centered development approach, empowering people and communities; therefore, Thai Education Policy needs to develop its education to enable students or learners to raise awareness of sufficient economic philosophy i.e. knowing, sharing, taking responsibility and giving value in knowledge both in locally and globally. Then, the provided skills embedded under the meaningful written policy decoded from the conceptual framework of the National Strategy Plan but conformed to the 12th National Economic and Social Development Plan are Thai and World citizenship by reskilling and upskilling the 21st century skills to the people of Thais to achieve the SEP ultimate goals. Firstly, how to become the quality of Thai citizenship, Thai learners and people would have been obtained the knowledge, skills, values and attitudes that needed for them to protect their country, societies and world to be more peaceful, tolerant, secure and definitely sustainability. Secondly, how to become the quality of world population, Thai learners and people have transferred their sense of sustainability belonging on the national identity to become the sensed of understanding an individual by the contributing to the world community, understanding of one own role as a world citizen and being responsible to one's own action, committing to the social justice and willing to act for the world's harmony, having good values and attitudes toward others, environment, and other living creatures (ONEC,1999). However, the key skills to become the quality of local and global citizen are:- knowledge and understanding;

skills (cognitive and social);- and values and attitudes for being active, responsible global citizens (Meuanpew, 2017). Last, the most important of how to become the quality of Thai or world population is the 21st century skills can be defined as the ability or competency (knowledge, skills, work habits, and character traits commonly associated with 21st century skills) that people have been effectively adopted for learning standards. This includes: Critical thinking, problem solving, reasoning, analysis, interpretation, synthesizing information; Research skills and practices, interrogative questioning; Creativity, artistry, curiosity, imagination, innovation, personal expression; Perseverance, self-direction, planning, self-discipline, adaptability, initiative; Oral and written communication, public speaking and presenting, listening; Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces; Information and communication technology (ICT) literacy, media and internet literacy, data interpretation and analysis, computer programming; Civic, ethical, and social-justice literacy; Scientific literacy and reasoning, the scientific method; Global awareness, multicultural literacy, humanitarianism (Kangkha and others, 2020)

Meanwhile in the middle of the left and right triangular shown how to the use of knowledge, skill and the application of science, technology, innovation and research and development by the practitioners, experts, and people in their specific with strong uniqueness areas to weigh how to balance and harmonize the momentum of ideas in their fields. As we known that the SEP emphasizes the value of local wisdom and culture to address localized development challenges and cultivates sustainability mindsets in people on the ground. Firstly, it is about ***the learners' individual differences.*** The learner individual differences refer to distinguishes of the following factors:- age, aptitude/intelligence, motivation, learning/cognitive style, and personality (Zafar, S., & Meenakshi, K. (2012). The ultimate goal of providing the educational quality is priority on the individualities of the learners. For instance, arranging the learning environment suit to demographic details like the ages, interests, sexes and others. As we know the gaps among the city and urban learners are very broad like Mekwan, (2014) mentioned that some learners prefer to study but they don't have sponsors or budget to support their study, meanwhile the learners in the big cities they have various learning accessories and also extra budget for tutorial fee. How to bridge the gaps is to provide equally opportunities for Thais both in urban and city. For this reason, the policy makers and authorities have to decentralize both educational budget and facilities into urbanization as Tungkunanan, (2016) recommended. Secondly, ***it is both local wisdom and international competency,*** a local wisdom is known as a combination of knowledge and traditions that are specific to a location, and that are passed on from generation to generation. For example, a Thai farmer can tell by the crying of cicadas in the morning and evening meant as ending of summer, whereas an international competency is defined as the skills, values, and behaviours that prepare young people to thrive in a more diverse, interconnected world. In a rapidly changing world, the ability to be engaged citizens and

collaborative problem solvers who are ready for the workforce is essential to be local and **global** problem solvers. How to harmonize both ideas in educational track e.g. training the learners how to link their local to international or how to think globally but act locally, then it can serve quality of educational goals easily. Lastly, ***it is the world situations.*** The world situation can be meant as trends, realities in terms of economic, politic, social, disaster, natural phenomenon, environment etc. happened or happening in real world which effect on the human beings. By observing, noticing and learning facts in current contexts can definitely induce what/how and why such learning skills (reskill/up skills), technology literacies and many more need to be embedded in the core educational policy including the flexibilities in practices. In other words, the idea of thinking globally but acting locally is still strong practical pathway.

3. Conclusion

In conclusion, the educational management to create a new generation of Thai people according to the Thailand 20-year National Strategy Plan that has been raising the quality of education and learning to have equal quality and thoroughly in the strategy of human development and capacity building is very important and interesting because the crises of the past education problems are complex, causing education has not yet experienced the success. In addition to studying the National Strategy Plan for competitiveness building, there are development goals that focus on raising the country's potential in many dimensions in the area of information technology development, accessibility is still small compared to other countries. By bridging the gaps among the ideal of SEG, SDGs, MDGs, and Thailand 4.0 in the lined with the Thailand 20-Year National Strategy Plan transitioning into practices in the line of the Thai educational policy by those practitioners, experts, learners and people in different areas. The potential and beneficial can encourage and support lifelong learning, but it needs how the designer/teacher maximize its potential to drag an individual development through continuum of learning from a young generation through to ongoing lifelong learning mode. However, the powerful form and structures of technology stated in Thailand 4.0 with the 21st century skills would be a potential at the beginning stage of Thai education development procedures.

4. References

Barua, P., & Tejativaddhana, P. (2019). Impact of Application of Sufficiency Economy Philosophy on the Well-Being of Thai Population: A Systematic Review and Meta-Analysis of Relevant Studies. *Journal of Population and Social Studies [JPSS]*, *27*(3), 195-219.

Chetaman and others, (2019). The Development Education Issue of Thailand 4.0 towards 21st Century. *Journal of Industrial Education*, *16*(2), 199-206. Retrieved from https://ph01.tci-thaijo.org/index.php/JIE/article/view/132985. [in Thai]

David, R. (2014). History of education in Thailand. *Borgen Magazine*.

Educational Management Information System Centre (EMISC), 1998. *Ministry of Education Net Thailand Service Programme*. Available on http://www.moe.go.th/main2/article/e-hist01.htm

Engdahl, I. (2015). Early childhood education for sustainability: The OMEP world project. *International Journal of Early Childhood*, *47*(3), 347-366.

Fry, G. W. (2002, September). The evolution of educational reform in Thailand. In *Second International Forum on education reform: Key factors in effective implementation to the Office of the National Education Commission, Office of the Prime Minister, Kingdom of Thailand*.

Fry, G. W., & Bi, H. (2013). The evolution of educational reform in Thailand: The Thai educational paradox. *Journal of Educational Administration*

Government Gazette. (2018). *National Education Act* (No.3) 2010. Retrieved on 4 Marc 2018 from http:22e.www.ratchakitcha.soc.go.th/RKJ/index2index.htm [in Thai]

Jindanurak. C (2017). *Teacher and Students in Thailand Education 4.0*. Retrieved from https://e-jodil.stou.ac.th/filejodil/16_2_603.pdf [in Thai]

Kangkha, P., & Mahadi, T. S. T. (2017). *Challenges and Opportunities for Internationalism Impacts Towards Thai Higher Education*.

Khongkon, B., & Thaweehirunratthakid, N. (2018). Sustainable Development of Common-Pool Resources in Ban Don Bay, Thailand. *Asian Administration & Management Review*, *1*(2).

Mekwan. C., (2014). *Lǐeow Nâa Lae Lăng · Bpà-Dtì Rôop Gaan-Sèuk-Săa-Tai · Bpai Glai Rĕu Yòo Têe Derm* Academic Journal, Buri Ram Rajabhat University [in Thai]

Meuanpew, N., (2017). *The Development of the Thai Citizen for Global Citizenship in Thailand 4.0. Centre for Educational Innovation*, Print and Online Media Faculty of Education Chulalongkorn University, 46(3), 86-99.

Ministry of Education (MOE). (2008). The basic education core curriculum B.E.2551 (AD 2008)

Naidoo, L., Wilkinson, J., Adoniou, M., & Langat, K. (2018). *Refugee background students transitioning into higher education: Navigating complex spaces*. Springer.

Officeof National Education Commission. (1999). National Education Act of B.E. 2542 (1999). Bangkok: Office of Prime Minister, Thailand.

Pimpa, P., (2018).Current Thai Studies. *Academic Journal of Mahamakut Buddhist University Roi Et Campus*, *7*(1), 242-249. [in Thai]

Tungkunannan. P., (2016). Thai Education from the PAST–PRESENT TO FUTURE. *Journal of Industrial Education*, *15*(1), 1-5. [in Thai]

Valenti, J. J. (1974). Current problems and developments in Thai education. *International Review of Education/Internationale Zeitschrift für Erziehungswissenschaft/Revue Internationale de l'Education*, *20*(1), 71-82.

Vejjajiva, A., & ZERRILLO, P. C. (2017). A new toolkit for Thailand 4.0. [in Thai]

Vorapanya, S., & Dunlap, D. (2014). Inclusive education in Thailand: Practices and challenges. *International Journal of Inclusive Education*, *18*(10), 1014-1028.

Winichakul, T. (1995). The changing landscape of the past: New histories in Thailand since 1973. *Journal of Southeast Asian Studies*, *26*(1), 99-120.

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Innovate Locally Impact Globally by Engaging The King's Philosophy

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Abstract

The emerging trends in higher education placed higher expectations on universities. Institutions of higher education are expected by the community and the government to provide tangible contribution to national, regional and international growth and well-being. Engagement is the interaction of the university with the civil society to which it belongs. Engagement means delivering university's teaching, research and service activities to achieve beneficial impacts. University-Community Engagement goes beyond mere outreach when newly-founded universities seek mutually beneficial relationships with communities to develop their infrastructures and capacities to be able to serve fully and engage society to enhance economic, social, and cultural well-being. Sustainable development requires responsibility for resource use and management intended to meet humans' present needs without compromising the resource for future generations. To succeed sustainable development goals (SDGs), it is crucial for governments to stay in touch with the rapidly evolving ideas about innovation systems globally and across various sectors, and to understand how these ideas would translate into productivity. His Majesty Late King of Thailand, Adulyadej Bhumibol (Rama IX), the world's longest-served head of state, spent decades on nurturing a philosophy of life in balance with nature, known as the sufficiency economy where "people are more self-reliant and have an adequate livelihood for themselves". The sufficiency economy philosophy highlights a balanced way of living, aims at improving human well-being as a development goal, and seeks to harmonize the social, economic and environmental aspects of development. Consequently, His Late Majesty's personal efforts to respond to problems of the rural areas resulted in over 4,000 development projects increasing the quality of life of his people while providing inspirations for those searching possibilities to extend the borders of the philosophy of sufficiency. Many countries have followed the philosophy with the support of the Thai Government. His Majesty Late King's efforts in achieving SDGs were recognized internationally, and the United Nations Development Program presented Him "Lifetime Human Achievement Award". The sufficiency philosophy is applicable in an individual, society or country basis; and not only in agriculture to empower the resource-poor but also to other sectors, including tourism, industry and any other.

Keywords : Community development, engagement, inclusive research, participatory paradigm, sustainable development

Humanities and Social Sciences

(Oral Presentation)

Early Feminists of Europe and Bengal– Mary Wollstonecraft and Rokeya Sakhawat Hossain- A Comparative Study

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Abstract

In the context of East and West, Mary Wollstonecraft and Rokeya Sakhawat Hossain are two pioneering and revolutionary writers in the history of women's rights movement. Though feminism as a movement started later than their era respectively, their intellectual contributions and the everlasting influence on the thinking of feminist concern placed them in a distinguished position of proto-feminists or mothers of modern feminism. Both of them fought for women's rights at such a time and social setting when women had no rights and opinions of their own, when they were not given many basic human and civil rights in comparison with men, when women had degraded social status and therefore the patriarchy was not ready to give them right honour. For this reason, despite a clear gap in the periods to which they lived, the similarity of their thinking and writings provides adequate ground to bring them under a study of comparison and contrast. The paper attempts to make a critical study on Wollstonecraft and Rokeya with special focus on their thoughts on society and education, contributions on the emancipation and empowerment of women, role on the elimination of religious bigotry, and above all, their influence on the women's rights movement of Bangladesh.

KeyWords : Awakening, Emancipation, Economic Independence, Empowerment, Co-education, Women's Rights Movement

1. Introduction

Throughout human civilization, women had been victims to the patriarchal society. Either in relation to men or to the society at large, they were not considered as equal to men. Authors, from time to time, have given different views regarding the sufferings of women (Roy and Mahmud 82). Some have tried to sympathize with them while others showed the way out. Most of them were male writers. Women did not appear at the scene till the late 18th century or who appeared, their writings were still conventional. They conformed to the societal norms and customs. The first one who dared to shock the patriarchal authority through her writings, in the west, was Mary Wollstonecraft (1759-1797). A very similar role was played in the east by Rokeya Sakhawat

Hossain (1880-1932). They are the pioneering figures in the history of feminist movement even though they did not begin writing as part of the movement. Feminism as a movement started later on and from their writings, the feminists got the food for their movement.

Wollstonecraft and Rokeya lived and wrote in different localities and times respectively. Despite a clear gap in the periods to which they lived, their motto was one and the same– to awaken and emancipate women by means of education and economic independence. In their writings, they criticized the patriarchy for not allowing women to exercise their rational minds. Side by side, they also chastised women for having some share in the subjugation process and accepting the degraded status. They urged women to become aware of their rights, receive education that was denied to them for ages, enter into the workforce, get financially independent, take full responsibilities as human beings and to abolish their dependence on men, and thereby to bring about a revolution in the patriarchal perception of women.

2. Thoughts on Education and Society

Mary Wollstonecraft was mostly self-educated and her thoughts were ahead of her time. She thought that people were victims of a society that assigned them their roles, comforts, and satisfactions according to the false divisions of class, age and gender. She boldly asserted that every person has a right to independence of mind irrespective of men and women. She envisioned a society where women would receive education and work together with men as equal in every sphere of life. She also called for uniform citizenship for both genders, offering everyone a "direct share . . . in the deliberations of government" (Wollstonecraft, *Rights of Woman 182*). She opined that boys and girls should be taught together in the same institute– today it is familiar as co-education. She said, "Day schools, for particular ages, should be established by government, in which boys and girls might be educated together" (209). She believed in informal conversational methods of teaching with several physical exercises. She opined, "The elements of religion, history, the history of man, and politics, might also be taught by conversations, in the socratic form" (210).

Wollstonecraft's view of education was influenced by a long Enlightenment tradition– manifested in the work of Lady Mary Wortley Montagu, Mary Astell and most importantly in Catherine Macaulay's *Letters on Education*, published only two years before– which argued against the system of trivial female upbringing and asked for a sound and serious education for girls (Curthoys 37). She believed that the existing society based on privilege and inherited property worked to the advantage of men. Women did not have any right and were not allowed to vote. They had no opportunity to utilize their brain power in professional or academic roles. She said that in keeping women in the role of 'convenient slaves', and denying them financial independence, the society was wasting its assets. She proposed that for careers and professions

women should be trained in medicine (not merely nursing), midwifery, business, farming, shop-keeping, etc. Wollstonecraft said:

> Women might certainly study the art of healing, and be physicians as well as nurses. And midwifery . . . They might, also, study politics, and settle their benevolence on the broadest basis . . . Business of various kinds, they might likewise pursue, if they were educated in a more orderly manner, which might save many from common and legal prostitution. (*Rights of Woman 183-84*)

She said that these would enable a woman "to struggle for herself instead of eating the bitter bread of dependence" (85) and would facilitate mothers and widows to live and manage their own affairs more reasonably. "I do not wish them to have power over men, but over themselves," (81) she wrote, and she upheld that "It is justice, not charity, that is wanting in this world" (92).

Wollstonecraft's thoughts on education were well expressed in her *Thoughts on the Education of Daughters (1787) and A Vindication of the Rights of Woman (1792)*. Her *Thoughts* offered advice on female education to the emerging British middle class. The book supported some educational objectives for women– free thinking, rationality, self-control, truthfulness, reception of one's social position, marketable skills, and faith in the Creator (Richardson 26). Wollstonecraft said that today's daughters would one day become mothers and teachers. She believed that as teacher women can most efficiently improve the society. She was of the view that as women were the elementary caregivers and educators of children, they should be given proper education. Five years later, she elaborated these ideas in her *A Vindication of the Rights of Woman* too. In the book, she emphasized on reason. It is through the exercise of reason that individuals become moral and political agents. Education becomes perfect when it results from exercising understanding and reason:

> The most perfect education, in my opinion, is such an exercise of the understanding as is best calculated to strengthen the body and form the heart. Or, in other words, to enable the individual to attain such habits of virtue as will render it independent. (Wollstonecraft, *Rights of Woman* 31)

To Wollstonecraft, the most perfect type of education is one which persuades the individual to achieve habits of virtue that will make him or her independent. The virtuous beings

must obtain their virtue from the practice of reason. Therefore, she prefers wholesome education which, through the practice of reason, will strengthen and enliven both the body and mind.

On the other hand, when Rokeya was born, the society did not understand the importance of educating their girls. Learning was limited to a narrow circle of the society. Before or during her lifetime, though some persons took initiatives for the education of Muslim women, in the Bengali Muslim society, Rokeya is the first to link up the expansion of education with the emancipation and progress of women. She thought about the liberation of women and considered education as the means of achieving that liberation. Rokeya wrote:

> The spread of education is the only panacea of this oppression! At least, the girls must be provided with primary education! By education I refer to the real education; being able to read some books or write few verses of poem is not education. I wish for that education– which will permit them to gain citizen rights. ("Subeh Sadek" 221)**

By female education Rokeya meant such education which will raise in them the awareness, self-confidence and self-esteem about their rights; will cultivate inspiration of independence. "The purpose of education," said Rokeya, "is not to blindly imitate a community or a race" ("Istrijatir Abanati" 12). According to Rokeya, it is "to develop the innate faculties of the individual through cultivation" (12). She also opined that academic degree is not real education. Real education is to develop the inherent qualities of human beings. In "Padmarag", the education system which she described of Tarini Bhavan's school, clearly reflects her above thoughts on education:

Teaching students to read several pages and moulding them in university form, they are not made puppets for luxury. Science, literature, geography, astronomy, history, mathematics– they are taught every subject, but the methods of education are different. By teaching to memorize fake history they are not taught to hate the country and its people. Special care is taken to teach ethics, religion, virtues, etc. The girls are trained to become ideal woman, good housewives, and good mother; they are instructed to love their country and religion more than their lives. They are specially supervised so that they become self-reliant, and like wooden puppets, they do not become dependent on their fathers, brothers, husbands or sons in future. ("Padmarag" 270)**

In the same novel, Rokeya writes, as an advice to Siddika from her late brother (Soleman): "Get ready for the awaiting life-struggle! With proper education I will prepare you so that you need not depend on any mischievous man for mere foodstuffs" ("Padmarag" 335-36).** In the novel, every statement of Siddika indicates that she has become aware of her rights. Obviously, though expressed in a different form, these are Rokeya's own arguments too.

** My translation. All double star marks (**) that follow refers to the same.

In social perspective, in some matters Rokeya's attitude was enough progressive than modern times. The first condition of libration is economic independence or self-reliance. The society where financially women are completely dependent on men, it is useless to speak of women's liberation in that society. Rokeya tells about this economic independence in "Delicia Hatta" (The Murder of Delicia). The main theme of the novel *Padmarag* is also the economic independence.

Rokeya did not confine her social struggles solely to women's rights; she was well-known as a social reformer. She felt distressed to see the suffering of peasants and social practices that were harmful to society. One particular case was her thoughts on the condition of the peasants. She wrote an essay entitled "Chashar Dukkhu" (Misery of the Farmer). In "Endi Shilpa" (Silk Craft), she commented about the fact that villagers were willing to pay more money to buy cloth that the British were producing mechanically. This cloth became known as Assam Silk, which was exported to India by the British. Mockingly, Rokeya says: "We began to consider it fashionable to buy suits made of Assam silk from the fashionable stores in Calcutta as our great masters– the masters for one hundred and fifty years—prepared their coats and skirts with it" (Rokeya "Endi Shilpa" 200).** Rokeya was pointing out the misplaced priorities of the Indian elite. The Indian elite placed their priorities by running after phony pursuits instead of helping vulnerable Indian peasants.

In the undivided Bengal, Rokeya brought the message of renaissance and regeneration among the Muslim women. She wanted women to shake up their laziness and servile mentality. For this reason she spent a great part of her life for the expansion of education among the Muslim women, and set up a girls' school for that; alongside, to make women fit for playing role in the society and the state, she set up an association named "Anjuman-e-Khawatin-e-Islam" or Muslim Ladies' Association.

3. Role on the Emancipation and the Empowerment of Women

Both in the Eastern and Western feminist perspectives, the basic point of women's emancipation is to increase the economic solvency and political power of women. And to establish the rights of women, both of Wollstonecraft and Rokeya emphasized on the economic solvency of women and reasoned that the attained economic solvency would lead to the empowerment of women. They maintained that if women receive education, enter into the work field and become financially solvent, they will be aware of their rights in the society. This awareness will help women have influence to take decisions in the affairs of the family, society, and even of the state.

Wollstonecraft believed that the monarchy, aristocracy and hereditary power stood in the way of securing women's rights. In aristocracy, the king thinks that he has inherited the power of ruling by the 'divine rights of kings'. The men, similarly, believe that they have inherited the power to rule over women by the divine rights of husbands. For this reason, Wollstonecraft strongly criticizes the monarchy, aristocracy, army, and priestly power and says that these systems are

living on the willful power secured by inheritance. She opines that so long as these systems exist, no change is possible. Hence, these systems need to be abolished.

Wollstonecraft did not believe in the partial improvement of women's condition. Therefore, she asks for the overall reformation. She maintains that hereditary power and riches are obstacles to reason and change. She repeatedly attacks the willful power obtained by inheritance and shows how its misuses have obstructed the liberation of humankind. She explains how, to sustain its supremacy, the patriarchy has differentiated the role of women, how it has assigned different ideal of women's success, and how it has kept women "in ignorance under the specious name of innocence" (*Rights of Woman* 28). She explains that women are socialized to seek male protection rather than support themselves. They are socialized to desire to be beautiful so that they can attract men. Wollstonecraft finds fault not only with the above weakening and degrading socialization of women, but also with their subjection to "a false system of education, gathered from the books written on this subject by men who, considering females rather as women than human creatures, have been more anxious to make them alluring mistresses than affectionate wives and rational mothers" (11). Men have wanted "softness" and "sweet attractive grace" (28) from women, and wanted to keep them "in a state of perpetual childhood" (13). Wollstonecraft says that what women have been taught is not only useless but also destructive.

In *Rights of Woman*, Wollstonecraft discusses about the discriminatory education system of men and women. For the subordination of women, she blames women's lack of education and the education system proscribed by men. She regards the prevalent education system as a conspiracy by men to suppress women and to make them appear less reasonable and weaker than they really are. She maintains that such faulty education of women needs to be changed. Therefore, she proposes the establishment of a national system of education, that is, co-education which would instruct boys and girls together. Irrespective of rich and poor every student will wear similar uniform and abide by the same rules. The education will be wholesome, that is, the instruction and achievement of knowledge will develop and strengthen both the body and mind.

For the emancipation of women, Wollstonecraft emphasizes on the economic independence and solvency. Independence, says Wollstonecraft, is derived from the ability to earn one's living (Brody, "Introduction" lviii). She believes that if women remain financially insolvent, they will always be dependent on, and controlled by men. She opines that economic independence allows women to develop virtue and self-respect. "It is vain," says Wollstonecraft, "to expect virtue from women till they are, in some degree, independent of men" (*Rights of Woman* 176). Therefore, to secure the rights of women in truest sense of the term, she strongly demands for the economic independence of women.

On the other side, Rokeya dreamt of upgrading the socio-political and economic status of women and emphasized on female education to ensure women's economic independence and

their empowerment. She understood that education is the power which can show women the way, help to be self-reliant, conquer the groundless fear of false prejudicial belief and establish them in the society as proper human beings. She believed that to save women from this misery, three things should be ensured– firstly, women should be aware through female education, secondly, women must be financially independent, and thirdly, women must be empowered through establishing equal rights between men and women. In her writings, Rokeya shows how the patriarchal society is depriving women from their due rights and talks about the education through which women can get rid of their misery and indignity as well as retain their rightful position in the society. She depicts the picture of an imaginative land where women have been equal to men in knowledge, intelligence, vision, thinking, etc. and in achievements sometimes excel men and these women are established on respective positions for their merits (See *Sultana's Dream* and *Padmarag*).

If we evaluate the first part of *Motichur*, we find that all the essays are about awakening of the secluded Bengali Muslim women. She pinpoints the illiteracy, ignorance, prejudices and wretched conditions of women. She portrays how the inhuman seclusion has maimed the womenfolk and gives her opinions about what should be the roles of women for the overall development of the society. In *Matichur II*, Rokeya tells that in every culture and society women are oppressed by the patriarchy. She urges women to receive education and create an environment of sympathy and solidarity to fight the injustices against women.

In *Sultana's Dream*, Rokeya shows what happens when women receive education. In the text, she depicts the dream which she envisioned about women's emancipation and their awakening all through her life. Here she shows a "Ladyland" where women enjoy all fundamental human rights and they have developed their mental faculties to such an extent that in their country virtue and peace reign. The "driving force behind the success of the utopian feminist country of Ladyland is women's education. Rokeya lays particular emphasis on the importance of women familiarizing themselves with the world of science and is unconventional in her condemnation of male militarism" (Bagchi xii). The women of the Ladyland which Rokeya envisioned, are independent in every sense, they are free from seclusion.

In *Padmarag*, Rokeya just enlarges the canvas of "Sultana's Dream". She describes a women-founded and women-administered community where women of diverse religions, regions and ethnicities with unhappy histories of patriarchal oppression improve their lot by concrete social action. In the novel the authoress describes the ideal of her personal life, modus operandi of running schools, and education which are in fact flawless and these methods should be the ideals of human life. Both *Padmarag* and *Sultana's Dream* discuss in lighthearted, charming, and intelligent ways the question of female education.

In the Western feminist thoughts, Wollstonecraft was the pioneer to establish the socio-economic and political rights of women in the 18th century Europe. Afterwards, from her thoughts, feminism evolved and developed all over the world including Europe. She reasoned that if women become economically solvent, they can be powerful in the political arena and this can help them decrease the differences between men and women in the society and establish equal rights. On the other hand, in the Indian society, for the emancipation of women, Rokeya urged women to receive education, become financially solvent, attain citizen rights, contribute to the society equally with men and thereby create an environment that facilitates the empowerment of women. From this perspective, Wollstonecraft and Rokeya have much resemblance.

4. Role on the Elimination of Religious Bigotry

In the society, religious orthodoxy and prejudices play a vital role in the subjugation of women. Both of Wollstonecraft and Rokeya hold religious bigotry and prejudices responsible for the subjugation of women. In their writings, they show the influence of religious orthodoxy in the subjugation of women and say that if religious orthodoxy is eliminated from the society, women will enjoy their due rights.

For hundreds of years people had believed that God created woman as inferior to man. In the male-dominated society, women are suppressed in the name of religion. Wollstonecraft argues that religion does not differentiate between men and women; it is men who have created and perpetuated the discrimination for their own interest. She says, "God, has made all things right; but man has sought him out many inventions to mar the work" (*Rights of Woman* 41). God has created and ordered everything in perfect harmony. He has created both men and women and bestowed them with immortal souls. So, both of the sexes have capability to exercise reason. Therefore, asserts Wollstonecraft, women need to exercise reason to be effective and fair parents and to attain virtue. This will curb their impulses, help achieve their potentialities and free them from their shackles.

Wollstonecraft opined that the patriarchy has subjugated women in the name of religion and morality. As women did not have education, they were influenced by religious prejudices. They could not understand that civil and religious liberties were part of one's birthrights. As they were not aware of their rights, they took it for granted that the discrimination between men and women was natural and ordained by God. But Wollstonecraft showed that in religion there is no such discrimination. She reasoned that if women receive education, they will be financially solvent and the solvent women will not be influenced by religious orthodoxy and prejudices. So, for the progress of women, Wollstonecraft urged women to get rid of religious orthodoxy and prejudices.

However, even though Wollstonecraft spoke against the patriarchy and the religious hypocrites who misinterpreted religion for their own benefits, she was not against religion. She

accepted a religion which mingled faith with reason, morality with knowledge, and which placed no limits on human inquisition. "I submit to the moral laws which my reason deduces . . . it is not to an arbitrary will, but to unerring *reason*" (*Rights of Men* 25), said Wollstonecraft. She denied the view that the faculty of reason is entirely male attribute. She questioned, "Who made man the exclusive judge?" (*Rights of Woman* 5) She challenged the dogma and despotism of the English Church, criticizing "slavery to forms, which make religion worse than a farce" (198). She did not borrow any religious belief from others. She sensed the presence of the Almighty in nature and traced a mystical experience in which her "soul rested on itself, and seemed to fill the universe" (Wollstonecraft, *Maria* "Chapter 10"). She believed that "true grace arises from some kind of independence of mind" (*Rights of Woman* 117). Her religious beliefs were natural, as opposed to the revealed religion of more orthodox strains of Christianity.

On the other hand, during Rokeya's time the Muslim society did not feel the necessity of education for women. Society was entangled in superstition and religious prejudices. Rokeya criticized these prejudices and oppressive social customs forced upon women that were based upon a misled version of religion, asserting that women fulfilling their potential as human beings could best display the glory of the Almighty. In her writings she made women dream of a better world and tirelessly motivated them to materialize those dream.

In her writings, Rokeya repeatedly focused on the religious prejudices, evils of purdah, child marriages, polygamy and divorce, all of which left hundreds of powerless women in poverty and pain. She said that men have subjugated women manipulating the messages of religion. To keep control over women they have wrongly interpreted and corrupted the teaching of Islam. Rokeya observed the plight of the secluded women and tried to motivate them to seek knowledge, education, morals and freedom. In her essay "Subeh Sadek" (The Dawn), she urges women to wake up and prepare themselves. It is proper time to claim their rightful position in the society. "Dare say, mother! We are not animals; speak up sister. We are not furniture; speak out daughter. We are not any object like bejeweled ornaments to be confined into the iron chest; everyone speak out altogether, we are human beings! And show that actually we are the half of the best part of the whole creation. Indeed, we are the mother of the whole creation" (221).**

The patriarchy has always interpreted religion for their own interests. To spoil the independent spirit of women, they claimed that if women receive education, they will be unruly and it will create chaos in the society. But Rokeya protested against this propaganda. She said:

> The opponents of female education say that women will be unruly . . . fie! They call themselves Muslims and yet go against the basic tenet of Islam which gives equal right to education. If men are not led astray once educated, why should women? (Hossein, 694-95)

Rokeya argued that in Islam, there is no difference between men and women in terms of learning. In Islam, receiving education is compulsory for both men and women. The men who are depriving women education, they are acting against the principle of Islam. She further reasoned that as men do not go astray after they become educated, similarly, women will not go astray or become unruly whenever they are educated. In *Sultana's Dream* and *Padmarag*, Rokeya showed what the educated women can do when they are allowed to receive education.

5. Influence on the Women's Rights Movement of Bangladesh

It is evident that in the women's rights movement of Bangladesh, Mary Wollstonecraft does not have any direct influence. Being born in a very conservative society and for the lack of education, underdeveloped communication system, geographical distance, Rokeya was not able to access the thoughts and ideas of Wollstonecraft. The researchers of Rokeya do not have sufficient information as to what extent Rokeya knew about Wollstonecraft. Yet Wollstonecraft's feminist thoughts, writings and thinking about women's rights seem to have influence on Rokeya's writings. It can be said that though it is natural that there was no communication between them, as the British colonial rule was prevalent, as Rokeya knew English well, and as her husband had transferable job, Rokeya seems to have some knowledge about Wollstonecraft (Sultana 385). Whatever might be the case, there exists a strange resemblance in the thoughts of Wollstonecraft and Rokeya. If their resemblance is analyzed, it is said that Wollstonecraft has influence on Rokeya (385-86). And as most of the Bangladeshi people are familiar with the thoughts and ideas of Rokeya, it is said that Wollstonecraft and Rokeya's thoughts and ideas have a significant influence in the women's rights movement of Bangladesh.

Though in Europe, the feminist writings started to have influence in the 18th century, in India the feminist writings began to have its influence in the later part of the 19th century and the early 20th century. After the partition of India and the regime of Pakistan, in the independent Bangladesh, the feminist writings of the previous era started to have its influence. Though the aims and objectives (emancipation and independence of women) of the feminist movement are same in most countries of the world, there exist some disparities owing to the differences of social norms, customs and cultures. For this reason in various phases of the feminist movement, some dimensional differences are noticeable in claiming the rights of women. For the difference of norms, customs and cultures, Wollstonecraft had the opportunities to mix with various men. But for the socio-cultural difference, Rokeya did not have the opportunity to mix with other men except her husband. However, in the present feminist movement of Bangladesh both of these trends are noticeable. Some feminist activists marry and have children, some are unwilling to marry, and some marry out of the tradition but do not want to take responsibilities of the family.

Wollstonecraft wrote a book claiming the rights of women. In her *Rights of Woman*, she discussed about various aspects of women's rights and it created awareness among the activists of the feminist movement. From her writings, the latter feminist activists got food for their movement. It brought about a revolutionary change in the European society. For this reason, she is considered as a social reformer in Europe. On the other hand, through her writings Rokeya has created awareness among the women of Bengali society. She urged women to receive education and become aware of their rights. For this reason, she is also regarded as a social reformer.

In the present Bangladesh, Rokeya's influence is noticeable not only in the family level but also in the state level. In the family, most of the parents want that their daughters have the opportunity to receive education and become influential figure in the society. Most of the parents advise their daughters to follow the ideals of Rokeya. Nowadays, the importance of female education has increased as a result of the progress of feminist movement. For the expansion of female education the government has taken steps to make female education fees-less and is providing stipends to the girls. But Rokeya not only talked about primary education but also emphasized on higher education for women. In the present Bangladesh, women are receiving higher education, occupying important positions and contributing to the society. Besides, Rokeya is being officially evaluated by the government in Bangladesh. The government is awarding 'Begum Rokeya Padak' (Begum Rokeya Medal) every year for the pioneering contribution of an individual in empowering women and raising women's issues. In 1984-85, the road from Bijoy Sarani to Mirpur 10 Roundabout has been named Begum Rokeya Sarani (Begum Rokeya Road). In 2008, the 30th public university was established in Rangpur and it was named after Begum Rokeya. As a tribute to her works and legacy, the government observes 'Begum Rokeya Day' every year on 9th December.

Through their writings Wollstonecraft and Rokeya showed that the women need to change their attitudes and they themselves have to claim their own rights. "Unless we think for ourselves, no one else will think for us. Even if they do, it will not be altogether propitious for us" said Rokeya ("Istrijatir Abanati" 13). To organize women for claiming their own rights Rokeya established women's organization, "Anjuman-e-Khawatin-e-Islam", and wanted to regenerate women. The aim of the association was to offer financial assistance to poor widows, rescue and shelter battered wives, help poor families to marry their daughters, and above all help poor women to achieve literacy. In the present society, the feminist activists are seen to be active in various ways to assert their rights, and to claim their rights they are seen to be organized and to influence the government. For waging various protests, they are seen to arrange meeting, seminar, and conference and to make placards using the key quotes from Wollstonecraft and Rokeya. These incidents are nothing but the reflections of Wollstonecraft and Rokeya's thoughts.

Wollstonecraft and Rokeya emphasized on the economic solvency of women. By independence Wollstonecraft meant the ability to earn one's own living. She opined that economic independence allows women to develop virtue and self-respect. So, to secure the rights of women, she strongly demanded for the economic independence of women. Similarly, Rokeya said that the first condition of liberty is economic independence. Therefore, in her various writings, she heralded the message of economic independence. Rokeya said, "Groom them to enter professional life and let them earn their own livelihood" ("Istrijatir Abanati" 12). At present, as half of the total population is women in most countries of the world including Bangladesh, every country is giving special eye to the progress of women. In Bangladesh, it is noticeable that in many families both of the husband and wife are doing job. Nowadays, women's tendency to do job is not a fashion, but a responsibility to bring in solvency in the family. Through these examples, it is evident that Rokeya has been able to abolish the seclusion system and bring women outside home to be established in various fields. Today's enlightened women clearly manifest Rokeya's vision of a better society where women enjoy equal benefits like men.

Wollstonecraft and Rokeya talked about the political empowerment of women. In *Rights of Woman*, Wollstonecraft addressed the topic of female education, the flaws within the institution of marriage, and the injustice of excluding women from politics. She pointed out that instead of being sheer social ornaments, if women acquired valuable skills through exercising reason, the socio-political life of the nation would greatly improve (Taylor 32). So, she urged women to study politics, "They might, also, study politics, and settle their benevolence on the broadest basis" (*Rights of Woman* 184). Similarly, Rokeya also emphasized on the empowerment of women. She wanted that education which makes woman good citizens and helps them contribute to the society; and which also helps them become financially solvent and self-reliant without being parasites on others for food, clothing and shelter. Both of Wollstonecraft and Rokeya showed that if women attain political empowerment, they can contribute to the society and even to the state.

6. Similarity and Dissimilarity between Wollstonecraft and Rokeya

Though Wollstonecraft was born more than a century before Rokeya's birth, both of them were proto feminist and liberal feminist. They told men to help women get emancipated. There are much more similarities in them; and some noticeable disparities as well. The similarities are in their thoughts, position and emotion. In spite of being born in different countries and times, both of them were the first person in their respective societies to overcome the concept of conventional ideas and think of the problems of women with profound rational viewpoints. Thinking of the problems, they got surprised, offended, and became upset. During that time, there was no one to think like them. In Wollstonecraft's writings, Rokeya's unrevealed feelings are found:

> After considering the historic page, and viewing the living world with anxious solicitude, the most melancholy emotions of sorrowful indignation have depressed my spirits, and I have sighed when obliged to confess, that either nature has made a great difference between man and man, or that the civilization which has hitherto taken place in the world has been very partial. (*Rights of Woman* 11)

Like Wollstonecraft, Rokeya also understood that the degraded status of women are not natural, it is due to the social system which is created by men. She realized that women's lagging behind is not due to natural inferiority but lack of equal opportunities like men. There are many similarities between Wollstonecraft's *A Vindication of the Rights of Woman* and Rokeya's "Istrijatir Abanati". In her *Rights of Woman*, Wollstonecraft writes, "The conduct and manners of women, in fact, evidently prove that their minds are not in a healthy state" (*Rights of Woman* 11). In "Istrijatir Abanati", Rokeya also opines that women of this country are not in a healthy state. She writes, "Let alone a tiger or a bear, we are terrified at the sight of a cockroach or a leech. Some of us would even swoon at its sight . . . At whose feet have we sacrificed all our physical strength and mental courage?" ("Istrijatir Abanati" 10)

Wollstonecraft maintained that in the patriarchal social system women are groomed in such ways that without devoting their lives to great work or for the sake of society, they devote their lives to attract men with their external beauties. She writes, "The civilized women of the present century, with a few exceptions, are only anxious to inspire love, when they ought to cherish a nobler ambition, and by their abilities and virtues exact respect" (*Rights of Woman* 11). Likewise in "Istrijatir Abanati", Rokeya regards women's fascination for ornaments ignoring great works as a sign of their enslaved mind. She writes, "There is so much eagerness in the female race for this jewellery as if the happiness and prosperity of their whole life depends on it . . . The widow who has lost the right to wear bangles is wretched like none other on earth" (8). She explains these ornaments of beautification as "badges of slavery" (*7*). Like Wollstonecraft, Rokeya also realized that for renouncing their abilities and potentialities, women have lost their rightful position in the society. Too much unnecessary dependence on men has led women to a vulnerable condition. She writes, "Being constantly protected from the dangers and difficulties of society, we have lost our courage, confidence and will altogether . . . When we are faced with the slightest of difficulties, we rush into the house and start wailing at the highest pitch" (9).

Despite these similarities some discrepancies are also noticeable. Wollstonecraft came from a poor family, received education on her own efforts, opened girls' schools and wrote books on female education. She lived together with her lover out of the wedlock and gave birth to a baby unconventionally. She had been deceived by her lover; again fell in love with another man,

became pregnant and died after complications in childbirth only at the age of thirty-eight. She had the opportunity to socialize with the cultured men of the time. On the other hand, Rokeya came from a rich family; she passed her childhood in seclusion and could not receive institutional education. She was married to a man who was of her father's age and gave birth to two daughters who died in their infancy. Her married life lasted for eleven or thirteen years. She opened schools, formed organizations for women, wrote books supporting and demanding female education. While Wollstonecraft took writing as a profession and to support herself, Rokeya did not write for her living. Wollstonecraft was polygynous, did not believe in marriage, but Rokeya was monogamous and believed in marriage. In her *Vindication*, Wollstonecraft talked for the middle class women, she hated the aristocratic women. But Rokeya wrote for awakening all classes of women.

Humayun Azad, a Bangladeshi writer and critic, evaluates Rokeya saying that as a feminist Rokeya was much more radical than Mary Wollstonecraft (Azad 284). He regards Rokeya's "Istrijatir Abanati" as Wollstonecraft's *A Vindication of the Rights of Woman*. Azad opines, in "Istrijatir Abanati" Rokeya did not present an overall proposal for the emancipation of women, but in it she briefly described almost all aspects of the emancipation of women (285). There is another disparity between the thoughts of Wollstonecraft and Rokeya. The principles of Wollstonecraft's feminism were male rivalry, man-hatred. "Mary Wollstonecraft hated men. She had every personal reason possible known to psychiatry for hating them" (Lundberg, 145). But Rokeya was of the view that for the overall development of the society the women should try to attain the ability to play proper roles and work alongside men (Begum 76). "The interests of men and women," says Rokeya, "are not different, but the same. Whatever their aim or purpose in life is, so is ours" ("Istrijatir Abanati" 9). Rokeya tells women to come forward and urges men to educate both male and female. She compares men and women with two wheels of the same car. To run a car smoothly both of the wheels should be equal. "The vehicle which has one big wheel (husband) and another small wheel (wife) cannot proceed far. It will only move in one place (around the corner of home)." ("Ordhangi" 34)** So, the original development of the society means the development of both the male and female. In short, the motto of Wollstonecraft's feminism was to move forward avoiding men, and the motto of Rokeya's feminism was to move forward alongside men (Begum 76).

7. Conclusion

For the liberation of women, Wollstonecraft and Rokeya's contributions can be compared with two sides of the same coin. The role that Wollstonecraft played in a European context, the similar role was played by Rokeya in the Indian context. They considered women's lack of education as a great barrier to the way of their emancipation. As women were deprived

of education, they were deprived of their rights; instead of being self-dependent they were dependent on others. They could not do anything independently, and for this reason they were victims of exploitation, oppression and deprivation. Wollstonecraft and Rokeya said that unless women become aware of their situations and come out of these situations, the socio-economic development is not possible. For the development of the society and the state, women must be awakened. They must receive proper education. They need independent livelihood; they need equal opportunities like men. Almost half of the total population is women. Keeping this large number of population within the four walls in the name of customs and religion, the overall development of the society and the state is not possible. So, Wollstonecraft and Rokeya urged people to stop such misuse of religion and change the attitudes of the patriarchy. They said that once women get equal opportunities like men, receive proper education and become financially solvent, they can contribute to the overall development of the society and the state.

8. Works Cited

Azad, Humayun. *Nari (Woman)*. Third Edition. Dhaka: Agamee Prakashani, 2012. Print.

Bagchi, Barnita. "Introduction". *Sultana's Dream and Padmarag*. By Begum Rokeya. Trans. Barnita Bagchi. India: Penguin Books India Pvt. Ltd., 2005. Print.

Begum, Sufia. *Rokeya Theke Sufia: Bangali Narir Egiye Chola (Rokeya to Sufia: The Progress of Bengali Women)*. Dhaka: Parijat Prakashani, 2017. Print.

Brody, Miriam. "Introduction". *A Vindication of the Rights of Woman*. By Mary Wollstonecraft. Ed. Miriam Brody. London: Penguin Books Ltd., 2004. Print.

Curthoys, Ann. "Mary Wollstonecraft revisited". *Key Thinkers and Their Contemporary Legacy*. Ed. Ned Curthoys. *Humanities Research*, Vol. xvi, No. 2. Australia: The Australian National University Press, 2010. Print.

Hossein, Mrs R.S. "Bangiya Nari Shiksha Samiti Sabhapatir Adhibhashan" (Presidential Address Bengal Educational Conference). Saogat, 5:10, Asharh, 1333 BS. Print.

Lundberg, Ferdinand and Marynia F. Farnham. *Modern Woman: The Lost Sex*. New York: Harper & Bros, 1947. Print.

Richardson, Alan. "Mary Wollstonecraft on education". *The Cambridge Companion to Mary Wollstonecraft*. Ed. Claudia L. Johnson. Cambridge: Cambridge University Press, 2002. Print.

Rokeya, Begum. "Endi Shilpa". *Begum Rokeya Rachanabali (Complete Works of Begum Rokeya)*. Ed. Mostofa Mir. Dhaka: Bornayan, 2010. Print.

_____. "Istrijatir Abanati" (Woman's Downfall). Trans. Mohammad A Quayum. *Translation Literature*, 4.2 (2001). Web. 27 Apr. 2017.

_____. "Ordhangi (The Female Half)". *Begum Rokeya Rachanabali (Complete Works of Begum Rokeya)*. Ed. Mostofa Mir. Dhaka: Bornayan, 2010. Print.

_____. "Padmarag". *Begum Rokeya Rachanabali (Complete Works of Begum Rokeya)*. Ed. Mostofa Mir. Dhaka: Bornayan, 2010. Print.

_____. "Subeh Sadek (The Dawn)". *Begum Rokeya Rachanabali (Complete Works of Begum Rokeya)*. Ed. Mostofa Mir. Dhaka: Bornayan, 2010. Print.

Roy, Himadri Sekhar and Rashed Mahmud. "J. M. Coetzee's Lucy: An Archetype of Scapegoats on the Altar of Patriarchy". *Chaos - IUB Studies in Language, Literature and Creative Writing,* Vol. 3, No. 2 (Autumn 2015). Print.

Sultana, Farzana. "Praccha O Proticcher Naaribadi Darshan: Mary Wollstonecraft and Begum Rokeya (The Feminist Philosophy of the East and West: Mary Wollstonecraft and Begum Rokeya)". *Rokeya Chintar Uttaradhikar (Legacy of Rokeya's Thoughts)*. Ed. Anwarullah Bhuiyan. Dhaka: Rodela Prokashani, 2008. Print.

Taylor, Barbara. *Mary Wollstonecraft and the Feminist Imagination*. Cambridge: Cambridge University Press, 2003. Print.

Wollstonecraft, Mary. *A Vindication of the Rights of Woman*. London: Penguin Books Ltd., 1792. Print.

_____. *A Vindication of the Rights of Men. The Online Library of Liberty*. Indiana (1790, Online 2011). Web. 5 Apr. 2018.

_____. *Maria, or, The Wrongs of Woman* (1798, Online 2014). Web. 5 Apr. 2018.

Pattern of Levels in Rural Developments: A Case Study of Salingyi Township in Sagaing Region of Myanmar

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Abstract

The present paper is an attempt to show the spatial pattern of rural development in Salingyi Township. It is situated in Sagaing Region, Dry Zone of Central Myanmar. The spatial variation is determined with the help of five indicators such as cropping intensity, education, rural health care condition, transportation facilities and electricity supply. Collected data were organized and processed to classify the level of development indicators using statistical method. On the basic of composite score the village tracts have been classified into very high, high, medium, low and very low development categories. Out of 39 village tracts at study one village tract is under the categories of very high level of rural development. The very high development of village tract was found in Kyardet. It is located along the main road and good condition for other facilities. The very low development level was found in Duhtauk Village Tract. This village tract was found poor transportation and the lowest condition of other facilities. Level of rural development in Salingyi Township was mainly influenced by efficient of power supply, good transportation infrastructure, role of education and rural health care condition. As a result at the analysis shows that the fulfillment of power supply system, developed transportation system, rural health care condition and the role of education system have reciprocal relationship with rural development in the study area.

Keywords : Levels of Development, Five Indicators, Pattern of Levels of Rural Developments, Salingyi Township, Myanmar

1. Introduction

"Rural" means having features which are typical of areas that are for away from large towns or cities. "Development" is a process that creates growth, progress, positive change or the addition of physical, economic, environmental, social and demographic component. (Mar 11, 2018) "Development" is defined as the process of growth or new information or an event. "Rural development" is the process of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas. Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry (Wikipedia). Rural development is a dynamic process, which is mainly concerned with the rural areas. These include agricultural growth, putting up of economic and social infrastructure, fair wages as also housing and house sites for the landless, villages planning public health, education and functional literacy, communication etc...

2. Aim and Objectives

The main aim of this paper is to find out the potentiality of development in rural area of Salingyi Township. The objectives are;

- to study the agricultural land, public services and rural community
- to investigate social welfare improvement especially in health, education and lifestyle for rural people
- to examine local people for their own effort concern with the rural development.
- to provide feasible suggestions for future development

The Study Area

Salingyi Township is situated in Yinmarbin District of Sagaing Region, Myanmar. It is located between the North Latitudes 21°49' and 22°54' between East Longitudes 94°58' and 59°58'. It has an area of 260.04 square miles or 168,331 acres. The Chindwin River flows from north to south direction. Salingyi Township is composed of 39 village tracts as rural settlement. Settlements are supported by natural resources as water supply and good land resource. Salingyi Township received Tropical Steppe Climate (BSh) Type. The total population was 133,922 persons in 2019. The rural population was found 128,205 persons with amounted 95.54% of the total population. The urban population was found 5,717 persons with 4.46% of the total population. Therefore, rural population is greater than urban population.

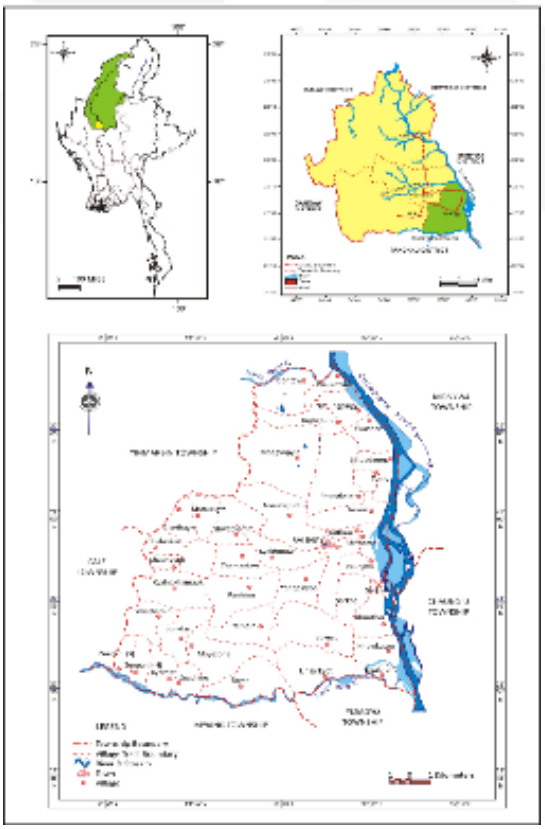

Figure 1 Location of Salingyi Township

Source: Agricultural land management and statistics, Salingyi

3. Methodology

In this paper, primary and secondary data are used. Primary data collection is made by questionnaries, interview and informal talks and photo copying. Secondary data were collected from governmental offices, such as Department of Geography, University of Monywa, Department of Agricultural Land Management and Statistics, Salingyi Township, General Administration Office, Salingyi Township and Education office, Salingyi Township. The primary and secondary data are used by Quantitative and Qualitative Method.

4. Results

Education

The status of education was a vital role for the rural development. Education was also importance for upgrading the knowledge and idea of the people. Moreover, education strengthens people's ability of meet their needs by increasing their productivity. The level of education was studied by type of schools, teachers, students and teacher and student ratio. In 2019 data, there were (113) schools in Basic Education of rural area of Salingyi Township. Among them six schools were in High School, five Sub State High Schools, (12) Middle Schools, (15) Sub Middle Schools,

(16) Post Primary Schools and (59) Primary Schools. There are (111) Senior Assistant Teachers (S.A.T), (470) J.A.Ts and (414) P.A.Ts. In rural area of Salingyi Township, the number of students were (20,656) students. Therefore, teacher and student ratio was about 1:20 in the study area. Level of school can be found as High School Level, Middle School Level and Primary School Level. According to the existing of different level schools, the education status can be classified into three levels: High level, Medium level and low level. There were nine village tracts tin High group level of school. These were Dontaw, Phongkatar, Nyaungpingyi, Kyaukmyet, Kyardet, Sarhtone, Sonetar, Tone and Sarkha Village Tracts. Most of the village tract5s were located in good transportation and other infrastructure. There were (17) village tracts in the medium group level of school. There were (13) village tracts in the low group level of school. Education status by village tract in Salingyi Township shown by Table (1) and Figure (2).

Table 1 Education status by village tract in Salingyi Township

No	Groups	Number of Village Tracts	Name of Village Tracts
1	High (S.H.S+Sub-S.H.S level)	9	Dontaw, Phongkatar, Nyaungpingyi, Kyaukmyet, Kyardet, Sarhtone, Sonetar, Tone, Sankha
2	Medium (S.M.S+Sub-S.M.S level)	17	Ywashee, Moegyopyin, Mataungta, Myaezone, Panhtoo, Linsarkyet, Thammataw, Shwethamin, Bokesu, Yonepinyoe, Ywathamin, Kyaingkhamauk, Zeepani (N), Zeechine, Paungwa, Nyaungpinto, Latpataung.
3	Low (Post S.P.S+S.P.S level)	13	Htanzin, Ngakhone, Tayar, Phalankan, Hnawkutoe, Khunthar, Kyekhotaw, Duhtauk, Yemain, Zeepani(S), Taungpalu, Chaungyoe, Bikethayet

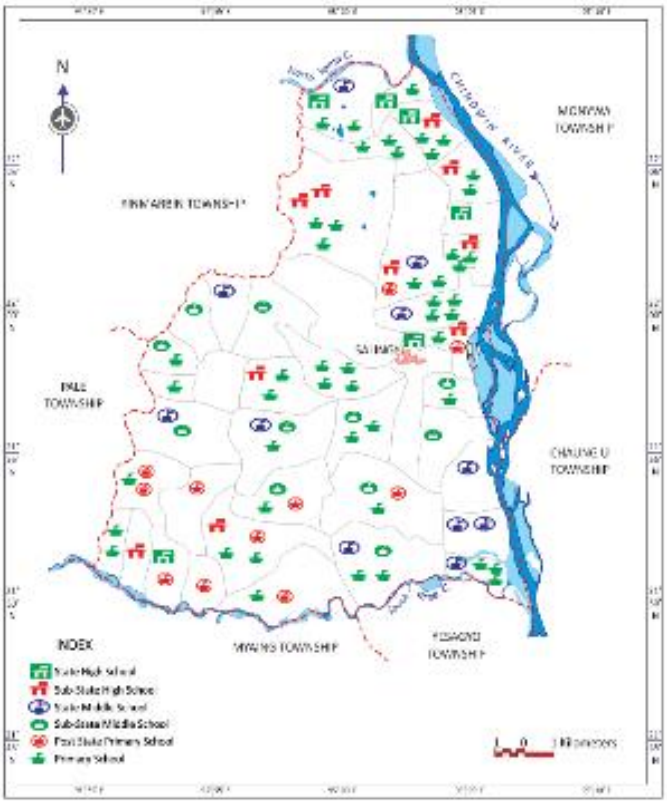

Figure 2 Distribution of basic education schools in Salingyi Township (2019)

Source: Education department, Salingyi

Health Care Service

For the health care of the people in the rural area of Salingyi Township, there were three integrated cycle hospital (16 bedded), six rural health centres and (30) sub rural health centres. The measurement of rural development can be assessed by integrated cycle hospital (High), rural health centre (Medium) and sub rural health centre (Low) for the health facilities. The distribution pattern of health facility in study area varied from place to place. (See Table 3) The integrated cycle hospitals (high) are found in Kyardet, Dontaw and Kyaukmyet Village Tracts. Kyardet, Taungpalu, Phalankan, Sarthone, Latpataung and Hnawkutoe Village Tracts are found in rural health centres (medium). Sub rural health centres (low) are occupied in (26) village tracts of the study area. In Salingyi Township, there are six doctors, 19 nurses, 30 midwives, and seven assistant health supervisors. In 2019, the doctor and population ratio was 1:22320. Nurse and population ratio was 1:7048. In the study area, fertility rate was 17.2 persons per 1000 persons and mortality was 9.5 persons per 1000 persons. The distribution of health center in rural area of Salingyi Township (2019) is described figure (4).

Table 3 Type of health centers in rural area of Salingyi Township (2019)

No	Type of Health Center	Number of Village Tracts	Wards and Village Tracts
1	Integrated Cycle Hospitals (High)	3	Kyardet, Kyaukmyet, Dontaw
2	Rural Health Centers (Medium)	6	Kyadet, Sarhtone, Taungpalu, Phalankan, Hnawkutoe, Latpataung
3	Sub Rural Health Centers (Low)	26	Myaezone, Tayar, Ywathamin, Zeepani (S), Yemain, Phongkatar, Htanzin, Nyaungpinto, Kyaukmyet, Nyaungpingyi, Moegyopyin, Dontaw, Panhtoo, Thamataw, Kyaingkhamauk, Yonepinyoe, Sonetar, Shwethamin, Mataungta, Paungwa, Ngakhone, Linsarkyet, Bokesu, Latpantaung, Ywashee, Tone

Source: Slingyi Township hospital

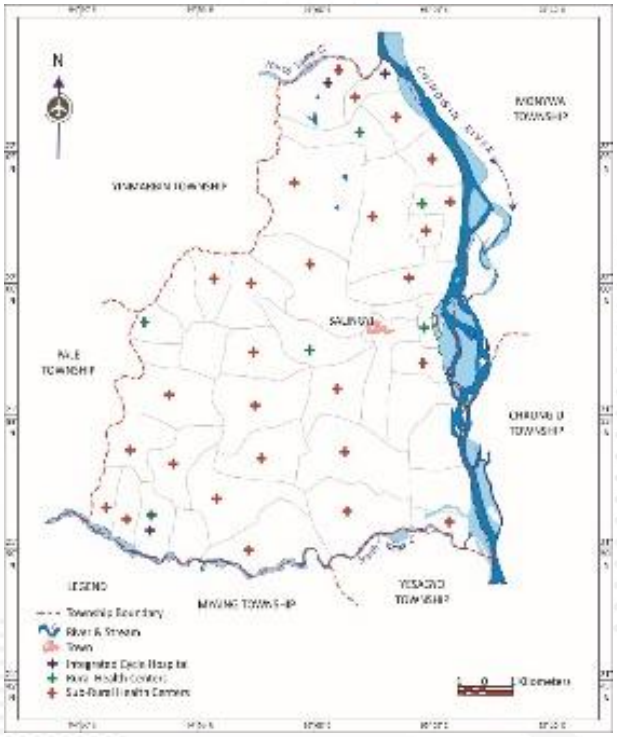

Figure 4 Health centers in rural area of Salingyi Township (2019)

Source: Township hospital, Salingyi

Cropping Intensity

Cropping intensity refers to the number of crops raised on a field during an agricultural year. Intensity of cropping, extent of maturity and increasing the yield from the existing cultivated area were problems of importance in the agricultural economy of a region.
It may be measured by the formula:

$$\text{Cropping Intensity} = \frac{\text{Gross Cropped Area}}{\text{Net Sown Area}} \times 100$$

The cropping intensity of the study area was uneven in accordance with irrigation, use of fertilizer and physical environment. Agricultural development was important for the rural development of each village tract in Salingyi Township. The more the intensity value the higher the agricultural income. Cropping intensity was classified into three categories; high, medium and low. The highest cropping intensity was found in (10) village tracts and they were Mataungta, Bikethayet, Kyardet, Ngakhone, Kyaukmyet, Ywashee, Latpataung, Zeepani (S), Zeepani (N) and Tome Village Tracts. These village tracts were found in the eastern and southern parts of the township. The medium cropping intensity was found in (16) village tracts in the study area. These village tracts are found in the central and eastern parts of the township. The low cropping intensity was occupied by (13) village tracts. These village tracts were found in the central and southern parts of the township. (See Table 4 and 5 and Figure 5).

Table 4 Percentage of cropping intensity in Salingyi Township (2019)

No	Village Tracts	Gross Cropped Area (Acres)	Net Sown Area (Acres)	Cropping Intensity (%)
1	Dontaw	941	754	124.8%
2	Phongkatar	3710	2093	17726%
3	Ywashee	1883	836	225.24%
4	Moegyopyin	4741	3490	135.84%
5	Nyaungpinging	3343	2105	158.81%
6	Kyaukmyet	1324	556	238.13%
7	Htanzin	2235	1631	137.03%
8	kyardet	6499	2611	248.91%
9	latpataunt	3552	1476	217.78%
10	Ngakhone	2470	1023	241.45%
11	Sarthome	2382	1261	188.98%

Table 4 (Continue)

No	Village Tracts	Gross Cropped Area (Acres)	Net Sown Area (Acres)	Cropping Intensity (%)
12	Mataungta	4523	1508	299.93%
13	Mayezone	7543	5986	126.01%
14	Panhtoo	7344	5602	131.10%
15	Linsarkyet	5090	4517	112.69%
16	Phalankan	10210	5509	185.33%
17	Tayar	4828	3185	151.59%
18	Sonetar	8436	4494	187.72%
19	Tone	2357	1152	204.60%
20	Thamantaw	6978	4452	156.74%
21	Shwethamin	6094	3365	181.10%
22	Bokesu	6244	5174	120.68%
23	Yonepinyoe	4723	3111	151.82%
24	Hnawkutoe	3631	1908	190.30%
25	Ywathamin	7232	3864	187.16%
26	Kyaingkhamauk	10580	5618	188.32%
27	Sarkha	941	487	193.22%
28	Zeepani (N)	4102	2001	205.00%
29	Khunthar	2819	2643	106.66%
30	Kyekhotaw	3519	2516	139.86%
31	Duthauk	2477	2008	123.36%
32	Zeechine	1045	723	144.54%
33	Paungwa	2761	1417	194.85%
34	Yemain	6851	4720	145.15%
35	Zeepani (S)	4219	2000	210.95%
36	Taungpalu	2408	1207	199.50%
37	Naungpinto	5218	4563	114.35%
38	Bikethayet	5055	1825	276.99%
39	Chaungyoe	1219	803	151.81%

Source: Based on agricultural land management and statistics, Salingyi

Table 5 Spatial distribution of cropping intensity by village tracts in rural area of Salingyi Township (2019)

No.	Group	Number of Village Tracts	Name of Village Tracts
1	High Above 200	10	Mataungta, Bikethayet, Kyardet, Ngakhone, Kyaukmyet, Ywashee, Latpataung, Zeepani (S), Zeepani (N), Tone
2	Medium Between 150 and 200	16	Taungpalu, Paungwa, Sarkha, Hnawkutoe, Sarhtone, Kyaingkhamauk, Ywathamin, Phalankan, Shwethamin, Phaungkatar, Sonetar, Nyaungpingyi, Thanmataw, Yonepinyoe, Chaungyoe, Tayar
3	Low Below 150	13	Yemain, Zeechine, Kyekhotaw, Htanzin, Moegyopyin, Panhtoo, Myaezone, Dontaw, Duhtauk, Bokesu, Nyaungpinto, Linsarkyet, Khunthar

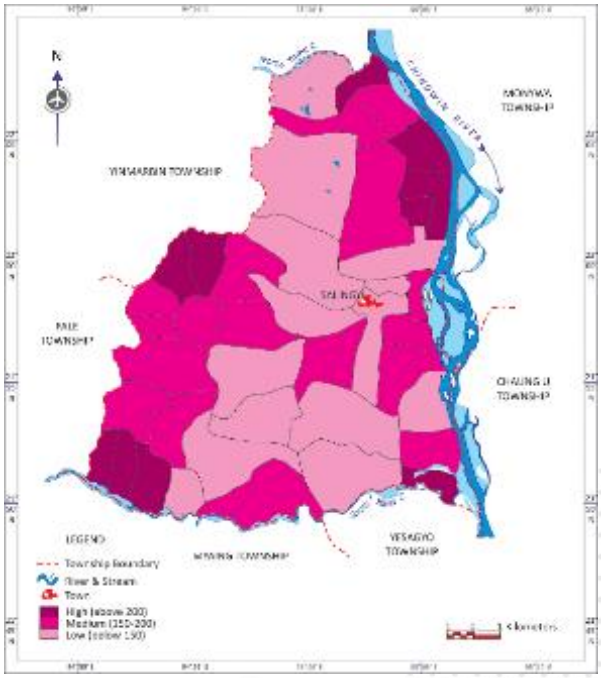

Figure 5 Spatial distribution of cropping intensity by village tracts in rural area of Salingyi Township

Transportation

Development of a region depends mainly on the transportation infrastructure for commodity flow and trading. Besides, development in a rural area can be assessed by transportation facilities. Accessibility to other regions connecting with network of land and water transportation may facilitate the rural development. There are two major transportation systems in

Salingyi Township. These are roads and water ways. (See Table 6 and Figure 6). There are some earthen roads linking from one village to another in Salingyi Township.

Table 6 Junction road with another township in Salingyi Township (2019)

No	Road	Salingyi Township		Length	
		From	To	Mile	Furlongs
1	Pakokku-Monywa Road	Nyaungpingyi	Zeechine	25	-
2	Salingyi-Lenyauk Road	Salingyi	Lenyauk	9	6
3	Kyardet-Pale Road	Kyardet	Pale	5	-
4	Monywa-Gangaw Road	Nyaungpingyi	Tapingan	7	3
5	Pathein-Monywa Road	South Yama Chaung	North Yama Chaung	23	2

Source: Township general administration departments, Salingyi Township

The facility and accessibility of transportation in Salingyi Township was classified into three groups based on the type of roads. Village tracts possess tarred roads are defined as good facility and accessibility of transportation. Village tracts experienced gravel roads are demarcated as medium facility and accessibility of transportation. They were good, medium and poor transportation line. There were (18) village tracts with good transportation. The medium transportation connected with gravel roads were occupied by 7 village tracts. The poor transportation connecting with earthen roads were occupied by 14 village tracts. Transportation facilities in study area was shown in Table 7 and Figure 6.

Figure 6 Transportation network of Salingyi Township (2019)

Source: Township administrator office, Salingyi

Table 7 Transportation facility by village tracts in rural area of Salingyi Township

No	Level	Number of Village Tracts	Name of Village Tracts
1	Good (Tarred Road)	18	Dontaw, Yonepinyoe, Taungpalu, Nyaungpingyi, Ywashee, Tone, Phongkatar, Sarhtone, Paungwa, Shwethamin, Mataungta, Bikethayet, Chaungyoe, Kyardet, Ywathamin, Zeechine, Panhtoo, Myaezone
2	Medium (Gravel Road)	7	Htazin, Sonetar, Yemain, Tayar, Sarkha, Khunthar, Ngakhone
3	Poor (Earthen Road)	14	Latpataung, Thanmataw, Duhtauk, Kyaingkhamauk, Phalankan, Linsarkyet, Bokesu, Moegyopin, Kyekhotaw, Nyaingpinto, Zeepani (S), Zeepani (N), Hnawkutoe, Kyaukmyet

Source: Township administrator office, Salingyi

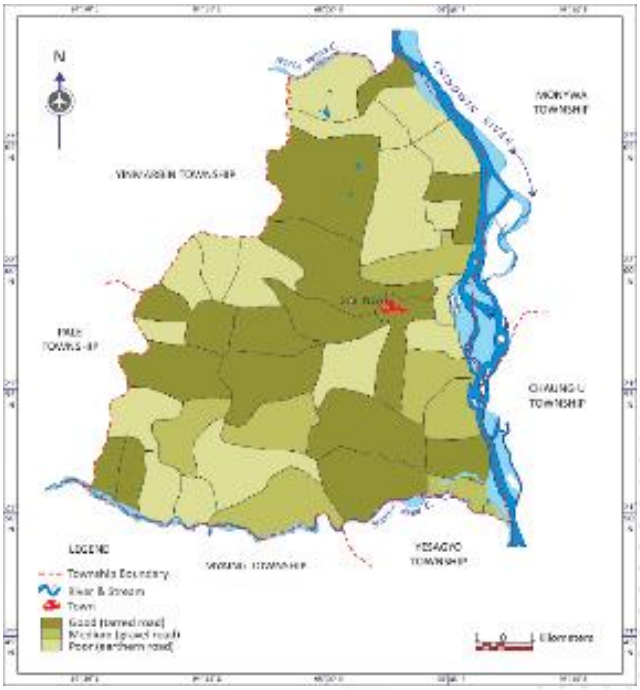

Figure 6 Transportation facility by village tracts in rural area of Salingyi Township

The Use of Electric Power

The supply of electric power plays an important role in the progress and development of rural area. Electric power was upgraded gradually stage by stage in Salingyi Township. The improvement of the use of power was a very important factor for the development of rural area.

As the determinant of rural development, the high percentage of rural household with electricity tends to be a high rural development level in this investigation. The condition of electric power use was classified by the type of power use such as electricity, diesel engine, and solar battery. Under the high condition of power use was defined by the use of electricity with installed meter. While, the medium condition was found as the use of diesel engine power use and the low condition was marked by the use of solar battery. Most of the village tracts are having high percentage of rural households with installed meter. There were (30) village tracts high in percentage of rural household with installed electric meter. Diesel engine power was used in five village tracts and four village tracts used only solar battery power. (See Table 8, 9 and Figure 7)

Table 8 Different means electric power use by village tracts in rural area of Salingyi Township (2019)

No	Village Tracts	Number of villages use of Electric Power	Number of Villages Installed Electric Meter	Number of villages used Diesel Engine	Number of Villages Used Solar Battery
1	Dontaw	3	3	-	-
2	Phongkatar	8	8	-	-
3	Ywashee	7	7	-	-
4	Moegyopyin	9	7	2	-
5	Nyaungpingyi	7	7	-	-
6	Kyaukmyet	8	4	-	-
7	Htanzin	7	6	1	-
8	Kyardet	3	3	-	-
9	Latpatauung	9	6	-	3
10	Ngakhone	4	-	3	1
11	Sarthome	5	5	-	-
12	Mataungta	2	1	-	1
13	Mayezone	5	3	2	-
14	Panhtoo	5	4	1	-
15	Linsarkyet	3	1	1	1
16	Phalankan	3	3	-	-
17	Tayar	5	4	1	-
18	Sonetar	3	3	-	-
19	Tone	6	5	1	-
20	Thamantaw	3	2	1	-
21	Shwethamin	2	2	-	-

Table 8 Different means electric power use by village tracts in rural area of Salingyi Township (2019)

No	Village Tracts	Number of villages use of Electric Power	Number of Villages Installed Electric Meter	Number of villages used Diesel Engine	Number of Villages Used Solar Battery
22	Bokesu	2	-	1	1
23	Yonepinyoe	4	-	1	3
24	Ywathamin	4	-	1	3
25	Kyaingkhamauk	2	1	-	-
26	Sarkha	1	1	-	-
27	Hnawkutoe	5	-	5	-
28	Zeepani (N)	3	3	-	-
29	Khunthar	1	1	-	-
30	Kyekhotaw	5	2	-	3
31	Duthauk	6	-	1	5
32	Zeechine	2	2	-	-
33	Paungwa	2	2	-	-
34	Yemain	2	-	1	1
35	Zeepani (S)	2	2	-	-
36	Taungpalu	2	2	-	-
37	Naungpinto	2	-	1	1
38	Bikethayet	1	1	-	-
39	Chaungyoe	1	-	1	-

Table 9 Levels of use of electric power by village tracts in Salingyi Township

No.	Level	Number of Village Tracts	Name of Village Tracts
1	High (Use of Electric Power)	30	Dontaw, Phangkatar, Ywashee, Nyaungpingyi, Kyaukmyet, Kyardet, Sarhtone, sonetar, Phalankan, Shwethamin, Sarkha, Zeepani (N), Khunthar, Zeechine, Paungwa, Zeepani (S), Taungpalu, Bikethayet, Moegyopyin, Htanzin, Latpataung, Myaezone, Panhtoo, Tayer, Tone, Thanmataw, Linsarkyet, Kyekhotaw, Mataungta, Kyaingkhamauk.

Table 9 Levels of use of electric power by village tracts in Salingyi Township

No.	Level	Number of Village Tracts	Name of Village Tracts
2.	Medium (Use of Diesel Engine Power)	5	Ngakhone, Hnawkutoe, Yemain, Nyaungpinto, Chaungyo.
3.	Low (Use of Solar Battery Power)	4	Bokesu, Yonepinyoe, Ywathamin, Duhtauk

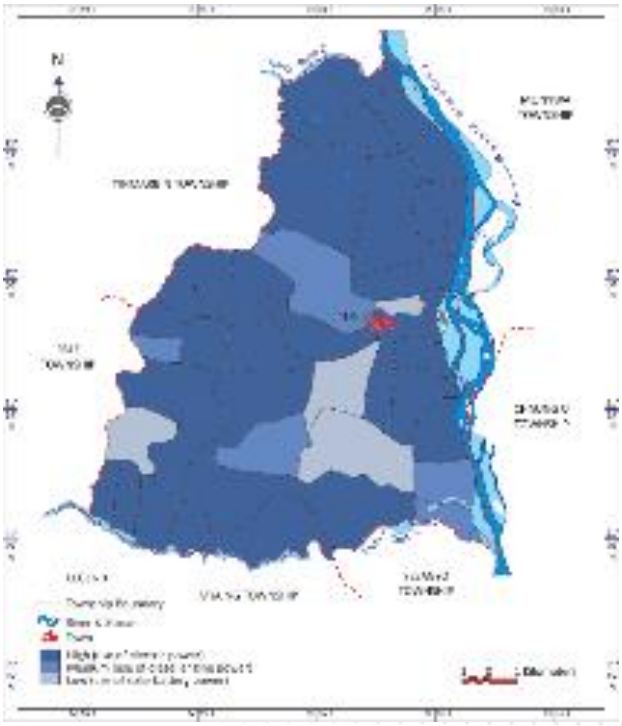

Figure 7 Levels of use of electric power by village tracts in Salingyi Township

Assessment of the development potentiality in the rural area can be analyzed by various ways based on the different indicators. The analysis of the potential rural development in the study area by using it can be composed by group in village tract level. There were five indicators of assessment in the study area of rural development. By studying the rural development potentiality in Salingyi Township, the very high development of village tract was found in Kyardet. It is located along the main road and good condition for other facilities. The high developments of village tracts were found in (12) village tracts. These were Dontaw, Phangkatar, Ywashee, Nyaungpingyi, Kyaukmyet, Latpataung, Sarhtone, Mataungta, Sanetar, Tane, Shwethamin and Paungwa. The medium development levels were found in (18) village tracts. These were Ngakhane, Myaezone, Panhtoo, Phalankan, Tayar, Thanmataw, Yanepinyoe, Ywathamin, Kyaingkhamauk, Sarkha,

Hnawkutoe, Zeepani (N), Khunthar, Zeechine, Zeepani (S), Taungpalu, Bikethayet and Chaungyoe Village Tracts. The low development levels consist of eight village tracts. The very low development level was found in Duhtauk Village Tracts. This village tract was found with poor transportation and the lowest condition of other facilities. Therefore, all of the village tracts in rural area of Salingyi Township may be development potentiality by the fulfillment of power supply system, developed transportation system, rural health care condition and the role of education system. The level of rural area for each village tract in Salingyi Township are shown in Table 10 and 11 and Figure 8.

Table 10 Level of five indicators and development potentiality in rural area of Salingyi Township (2019)

No	Village Tracts	Educational Factors	Health Care Center	Cropping Intensity	Transportation	Electric Power	Rural Development Potentiality
1	Dontaw	H	H	L	H	H	H
2	Phongkatar	H	L	M	H	H	H
3	Ywashee	M	L	H	H	H	H
4	Moegyopyin	M	L	L	L	H	L
5	Nyaungpingyi	H	L	M	H	H	H
6	Kyaukmyet	H	H	H	L	H	H
7	Htanzin	L	L	L	M	H	L
8	Kyardet	H	H	H	H	H	VH
9	Latpatauung	M	M	H	L	H	H
10	Ngakhone	L	L	H	M	M	M
11	Sarthome	H	M	M	H	H	H
12	Mataungta	M	L	H	H	H	H
13	Mayezone	M	L	L	H	H	M
14	Panhtoo	M	L	L	H	H	M
15	Linsarkyet	M	L	L	L	H	L
16	Phalankan	L	M	M	L	H	M
17	Tayar	L	L	M	M	H	M
18	Sonetar	H	L	M	M	H	H
19	Tome	H	L	H	H	H	H
20	Thamantaw	M	L	M	L	H	M
21	Shwethamin	M	L	M	H	H	H
22	Bokesu	M	L	L	L	L	L
23	Yonepinyoe	M	L	M	H	L	M

Table 10 Level of five indicators and development potentiality in rural area of Salingyi Township (2019)

No	Village Tracts	Educational Factors	Health Care Center	Cropping Intensity	Transportation	Electric Power	Rural Development Potentiality
24	Hnawkutoe	M	L	M	H	L	M
25	Ywathamin	M	L	M	L	H	M
26	Kyaingkhamauk	H	-	M	M	H	M
27	Sarkha	L	M	M	L	M	M
28	Zeepani (N)	M	-	H	L	H	M
29	Khunthar	L	-	L	M	H	M
30	Kyekhotaw	L	-	L	L	H	L
31	Duthauk	L	-	L	L	L	VL
32	Zeechine	M	-	L	H	H	M
33	Paungwa	M	L	M	H	H	H
34	Yemain	L	L	L	M	M	L
35	Zeepani (S)	L	L	H	L	H	M
36	Taungpalu	L	M	M	H	H	M
37	Naungpinto	M	L	L	L	M	L
38	Bikethayet	L	-	H	H	H	M
39	Chaungyoe	L	-	M	H	M	M

Source: Compiled by Researcher

VH=Very High, H=High, M=Medium, L=Lowm VL=Very Low

Table 11 Development potentiality by village tracts in rural area of Salingyi Township (2019)

No.	Level	Number of Village Tracts	Name of Village Tracts
1.	Very High	1	Kyardet
2.	High	12	Dontaw, Phangkatar, Ywashee, Nyaungpingyi, Kyaukmyet, Latpataung, Sarhtone, Mataungta, Sonetar, Tone, Shwethamin and Paungwa.
3.	Medium	18	Ngakhane, Myaezone, Panhtoo, Phalankan, Tayar, Thanmataw, Yanepinyoe, Ywathamin, Kyaingkhamauk, Sarkha, Hnawkutoe, Zeepani (N), Khunthar, Zeechine, Zeepani (S), Taungpalu, Bikethayet and Chaungyoe
4.	Low	7	Moegyopyin, Htanzin, Linsarkye, Bokesu, Kyekhotaw, Yemain and Nyaungpinto
5.	Very Low	1	Duhtauk

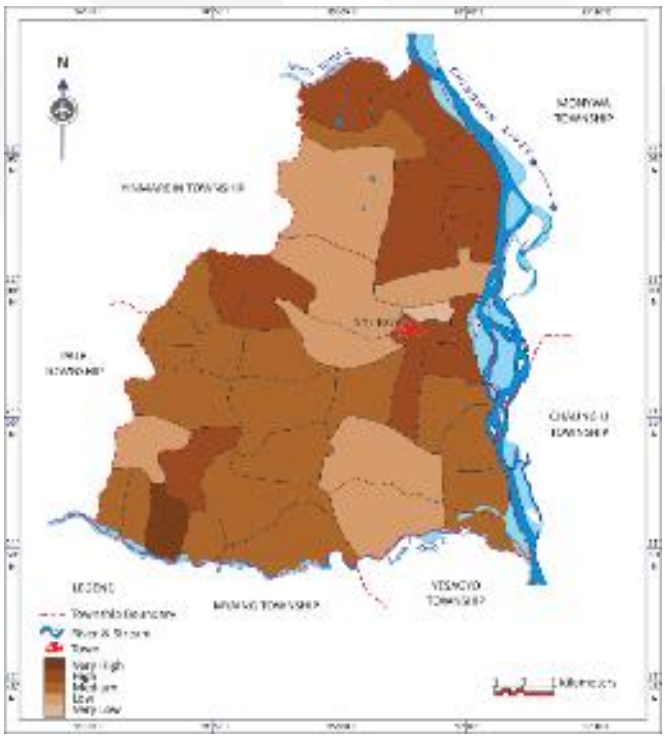

Figure 9 Distribution pattern by level of rural development potentiality in rural area of Salingyi Township

5. Discussion

Salingyi Township is situated in Yinmarbin District, Sagaing Region, Myanmar. It is located between the North Latitudes 21º 49' and 22º 54' and East longitudes 94º 58' and 95º 58'. The total area has 263.02 square miles. It consists of (39) village tracts. In Salingyi Township, the total population was 133,922 persons in 2018. The rural population was found (128,205) persons with amounted 95.54% of the total population. In rural area of Salingyi Township, there were six High Schools, five Sub State High Schools, (12) Middle Schools, (15) Sub Middle Schools, (16) Post Primary Schools and (59) Primary Schools. There were nine village tracts in high group level of school. Medium group level of school was found (17) village tracts. There were (13) village tracts in the low group level of school. The integrated cycle hospitals (high) are found in Kyardet, Dontaw and Kyaukmyet Village Tracts. There were six village tracts in rural health centre (medium) and (26) village tracts in sub rural health centre (low).

The highest cropping intensity was found in (10) village tracts. The medium cropping intensity was found in (16) village tracts. The low cropping intensity was occupied by (13) village tracts. There are roads and water way transportation system in Salingyi Township. There were (18) village tracts with good transportation. The medium transportation connected with gravel roads were occupied by seven village tracts. The poor transportation connecting with earthen roads were included in (14) village tracts.

There were (30) village tracts high percentage of rural household with installed electric meter. Diesel engine power was used in five village tracts and four village tracts used on solar battery power. There were five indicators of assessment in the study area of rural development. In Salingyi Township, the very high development of village tract was found in Kyardet. It is located along the main road and good condition for other facilities.

The high developments of village tracts were found in (12) village tracts. The medium development levels were found in (18) village tracts. The low development levels consist of eight village tracts. The very low of development level was found in Duhtauk Village Tracts. This village tract was found with poor transportation and the lowest condition of other facilities. Therefore, all of the village tracts in rural area of Salingyi Township may be development potentiality by the fulfillment of power supply system, developed transportation system, rural health care condition and the role of education system.

6. References

Ashok Gulati & Peter Hazell: *Indian Agriculture and Rural Development*, NW. Wachington, DC, www.ifpri.org

Hla Tun Aung, U (2003): *The Study of Processes and Patterns*, Natural Centre for Human Resource Development, Yangon, Myanmar.

Kyi Kyi Mar, (Ma) (2017): *A Geographical Analysis of Rural Development in Ayadaw Township*. (Ph.D Dissertation), Department of Geography, University of Mandalay, (Unpublished)

Lwin Lwin Khaing, Ma (2004): *Comparative Study of Development in Chaung-U Township*, M.Res Thesis, Department of Geography, University of Mandalay, (Unpublished).

Norendrasinh B. Chauhan Dr. *Rural Development*, B.A College of Agriculture, AAV, Ananl.

Rangnekar, D.K: *The Politics of Poverty, Planning India's Development*, SAGE Publications India Pvt Ltd, New Delhi, www.sagepub.in

Singh Jasbir & Dhillan S.S (1994): *Agricultural Geography*, Tata Mc Graw-Hill Publishing Company Limited, New Delhi.

Zin Mar Win, Ma (2015): *A Comparative Study of Rural Developments in Ayadaw Township*, (M.A Thesis), Department of Geography, Monywa University (Unpublished)

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A Comparative Study of Economic Attractions between Indawgyi Lake and Inlay Lake in Myanmar

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Abstract

The main aim of this research is to analyze the differences of economic attractions between Indawgyi Lake and Inlay Lake in Myanmar. Indawgyi Lake is one of scenic destinations and many tourists visit and enjoy its views. It is the largest lake in Myanmar and extends for 24 km (15 miles) from north to south and 10 km (6.2 miles) from east to west at its maximum width. It is surrounded by hills and mountains. The plains fringing the lake are agricultural lands of paddy. In the lake basin there are 30 villages, most of which are near the lake shore. The Inlay Lake, the second largest one in Myanmar is located on the western part of the Shan Highland. It stretches about 9 miles in north-south and 3.5 miles in east-west direction. Along its shores lie small villages with Buddhist temples, one-hut schools and bustling markets. Many houses settle above the waterline. The natural environment of Lake Region generates various economic activities for the people living around the lake. Natural environment is a major source that provides economic opportunities in the study area. Quantitative and Qualitative Methods and SWOT analysis are applied in this paper.

Keywords : Economic Attractions, Indawgyi Lake, Inlay Lake, Myanmar

1. Introduction

Lake can be defined as an enclosed body of freshwater surrounded by land with no direct access to the sea (Thomas, Meybeck and Bein, 1996). Lake may occur anywhere within the river basin. They originate as a product of geological Processes. The mechanisms of origin are numerous and are reviewed by Hutchinson (1957), who differentiated 11 major lake types. Indawgyi Lake is tectonic lake formed by differential movement of the earth's crust. It generally has elongated form, steep side and great depth. It has lazy "s" shape and lies on fault line. Inle Lake was formed from tectonic lake to Solution Lake. Due to the tectonic process of uplift between Taunggyi and Mawsan, two significant faults, the study area appeared. So the lake is surrounded

by two parallel ranges of Taunggyi–Sintaung in the east and Letmaungkwe-Thandaung in the west. (Bo Bo Lwin, 2006)

The natural environment of Lake Region generates various economic activities for the people living around the lake. Natural environment is a major factor for socio-economic opportunities in the study area. Major economy supporting the study area is agriculture and fishing. Based on these, the social functions like education and health, transportation and communication, and trade have developed. Special attention is paid to the development of agriculture, which was not only the backbone of economy but also the chief occupation of the people. In the environment areas of these lakes, rice, crop, vegetable and fruits are cultivated depending on soil, water, and climate. There are a number of economic activities which attract tourists for traditional cultures, local natural scenes and landscapes.

2. Research Objectives

Main aim is to examine the differences of economic opportunities based on the nature of Lake Environment. Objectives are as follow;

2.1 to study geographical bases of lakes environment area,

2.2 to compare the economic activities between these two lakes and

2.3 to evaluate important factors affecting upon economic attraction of each lake.

3. Research Methodology

Primary and secondary data are used in this research. Primary data are collected by interviewing with local peoples and questionnaires. The secondary data was collected from books, official documents, reports, journals, newspapers and articles. The collected data processed and finally analyzed by using Quantitative and Qualitative Methods and SWOT analysis.

3.1 Data Analysis

3.1.1 Geographical background of the Indawgyi Lake and Inlay Lake

Indawgyi and Inlay Lakes are natural fresh water lakes in Myanmar. In the lakes there are a plenty of flora and fauna resource. Most human communities living in the surrounding depend heavily on Lake Biodiversity for their water, food and way of life. As seasonal fluctuations of rainfall and temperature, the widths and water levels usually change, leading to seasonal migration of birds.

Indawgyi Lake is the largest inland lake in Myanmar. It is located in Mohnyin Township, Northern Myanmar. It lies between latitudes 25° 5′N and 25° 20′ N and between longitudes 96° 18′E and 96° 23′ E. It extends about 24 km with a width of 10 km, covering an area of about 120 km^2. The catchments area of the lake is about 1,218 km^2. Depending on the lake environment, 37 villages of 11 village tracts are established, with a total of 7,500 households

and of 49,845 settlers of national tribes such as Shan, Kachin, Bamar and Kadu. The lake stands at 565 feet above sea level. The maximum depth is 75 feet at the southern part of the lake. The lake occupies a depression hemmed in by low ranges of thickly wooded hill. The area has sub-tropical monsoon climate. The mountain and its rims have dense forests.

Inlay Lake is the second largest natural inland lake, located in the south-western part of Southern Shan State in Myanmar. It is located between the latitudes 20° 18′ N - 20° 53′ N and between the longitudes of 96° 50′ and 96° 57′ E. The lake is nearly 14.5 km long from north to south and 5.5 km wide from east to west. Lake surface area is measured as 23.42 sq miles (75.4 sq miles). There are 194 villages in and in its surrounding areas, of which 169 villages are in the lake. More than 130,000 people live around the lake vicinity. The people living in the lake are *Inthar* (Lake people) who are the descendants of Bamar tribe left behind. It is a shallow lake with an average depth of 7 feet and not more than 18 feet at its deepest. In the dry season, it is only 12 feet deep, and 20 feet in the rainy season. The shape of the Inle Lake is elongated. Inlay region has a temperate climate with low temperature in hilly areas.

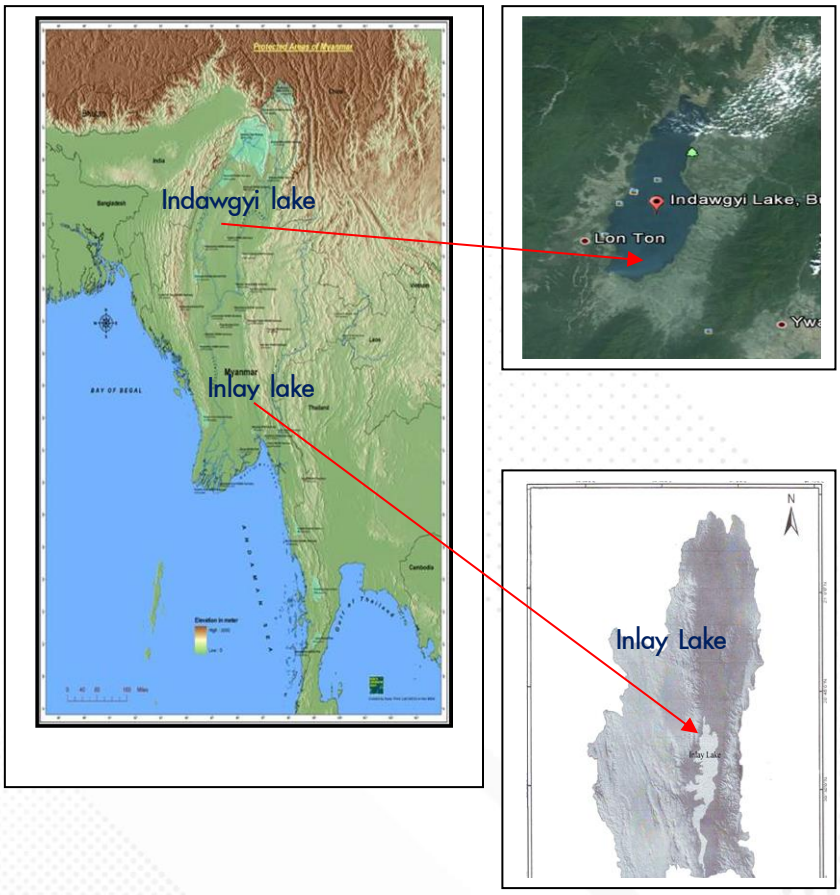

Figure 1 Location Map of the Study Area

3.1.2 Attractions of Indawgyi lake

Indawgyi Lake is the tectonic lake (Myitkyina University, 2003:7; Myanmar pedia), in geologic time scale of pre-Pleistocene Period, which means that detached from Gondwanaland in the late Jurassic (Dumont & Green, 2005).

Indawgyi Lake is still largely pristine and serves as an important resort for Arctic and northern water birds, as well as globally threatened species and is currently developed as a Ramsar Site by Flora and Fauna International (FFI) in close collaboration with the Forest Department of Myanmar. Present threats to the lake are a few. Relatively population is low. It is accessible by road to Mandalay and Myitkyina through Hopin and Mohnyin, nearest towns to the lake. Indawgyi Lakes has several habitats; hill and evergreen forest, streams, water, marsh and rice paddy. These habitats play an important role in a diversity of wildlife. There is main office of Indawgyi Wildlife Sanctuary in Mohnyin Township, headed by a warden. Its Front Office is at Lon Ton village lying at its southeastern shore. The warden administers the Sanctuary through its 3 guard posts. The lake has two major ecosystems; forests and wetlands. The settlements and cultivated area lie in the out-bound area of the Sanctuary. The Sanctuary was established in 1999. In 2004, the Sanctuary was recognize as one of the Heritage area included in the Asian Heritage Park. The Sanctuary has the total area of 314 sq. miles. It has two major ecosystems; terrestrial and wetland area. Wetland area includes the entire area of Indawgyi Lake.

About 80% of the population is farmers and grow rice both high yielding and total varieties of rice under the rain-fed condition. Produced rice is sufficient for the area and the surplus is exported to Hopin, and Mohnyin towns. The farmers also practice integrated rice-fish farming. On the basis of water availability, the farming system of the area can be divided into two categories: wet farming and dry farming. Dry farming includes home garden and shifting cultivation, whereas wet farming includes mainly rain-fed rice cultivation. When the water level of the likes rises up onto the ground, transplanting system of rice from the nursery is practiced.

The indigenous peoples clear the trees and bush, burn them and hoe the land for one to two successive years. Then land is left fallow and farmers move to another areas. This is known as shifting cultivation. Generally they follow the rotation system of 4-6 years. More than half of the farmers do shifting cultivation. Home garden, also called kitchen garden, is a common practice in the region. Both of Shan and Kachin farmers set a piece of land for their gardens. Vegetables, tobacco, tea, papaya and sugarcane are grown in the home garden. In addition to farming, livestock is secondary but important activity in the region. Livestock are kept only at the subsistence level. Cattle, buffalo, pigs and chicken are the common livestock breeding. Cattle and buffalos are raised, for drought, milk and meat.

Fishing is the second important economic activity and the source of cash in the region. The lake is rich in micro flora and is good for aquatic fishes for spawning, nursery and

feeding. Total of 64 species of fishes have recorded in the lake and in the surrounding streams. Fishermen set nets always in the afternoon from 3-5 pm and collected them at midnight. The fishermen never fish in day time and use only non-motorized boat for fishing.

Teaks are abundant available in the region. The most common forest products are hardwood, fuel wood, charcoal, bamboo, resin and honey.

The major cultural attraction at Indawgyi Lake is Shwe Myitzu Pagoda, located on the lake itself, linked to the shore by a walkway which is submerged except in the drier months. Shwe Myint Zu Pagoda is famous in Myanmar and attracts more than 100,000 of visitors for the festival, held on the full-moon day of April. The festival is a religious, cultural, social as well as transaction event. During the festivals, boat races and boat festivals are organized, which also attracts a large number of visitors. In April, water level recedes and people can walk along the causeway. Fishing is not allowed within one mile from the Pagoda, or the hunting of birds as well. But visitors can feed birds and fishes.

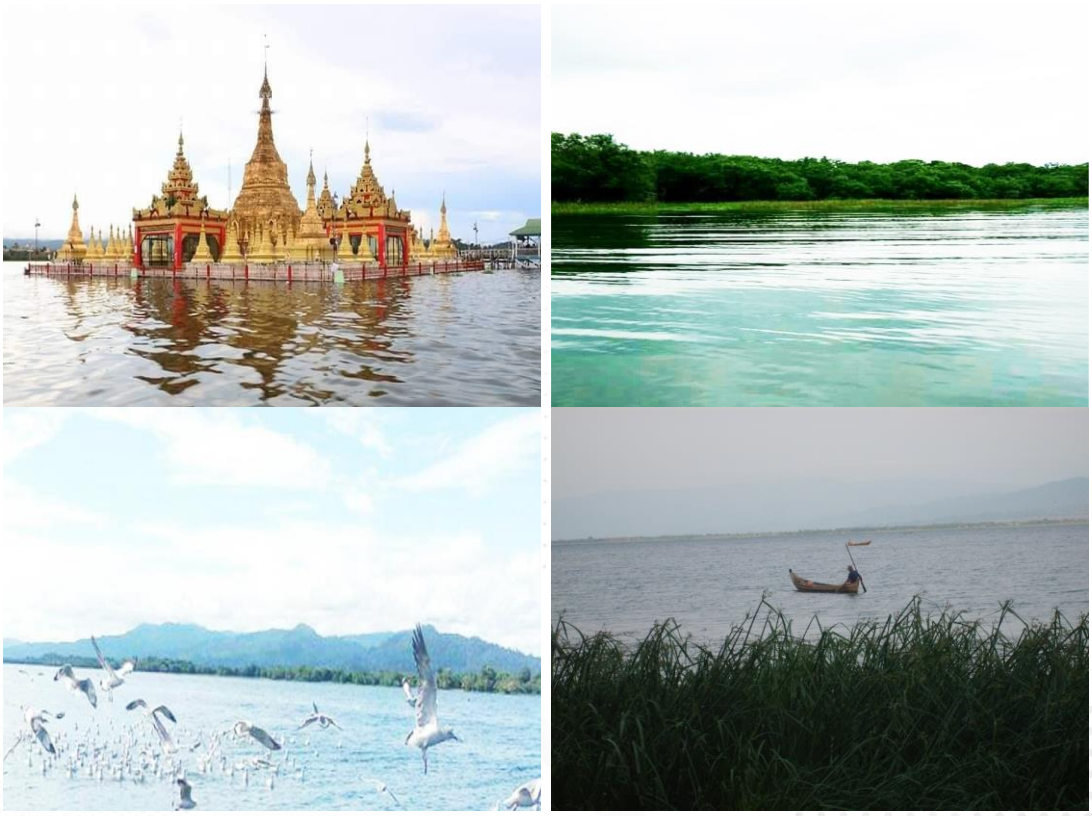

Figure 2 The Natural beauty of Indawgyi Lake

3.1.3 Attractions of Inlay lake

The Inlay Lake is located in Nyaung Shwe Plane of Nyaung Shwe Township, lying in the southern part of the Shan State. It is 660 km from Yangon and 330 km from Mandalay by road and also accessible by flights from both Yangon and Mandalay. Inlay Lake is shallow, 22 km long and 10 km wide, 1300 meters above the sea level among the hazy Blue Mountains. The most unusual feature is its extraordinary 'leg-rowing fishermen' who have developed an original, eccentric method of rowing their small boats with one leg. Floating gardens are built-up from strips of water hyacinth and mud, dredged from the lakebed. Villages, farms and monasteries perch over the water on stilts. Inlay Lake is largely associated with the floating garden industry and increased tourism (Su and Jassby, 2000). The large amount of aquatic vegetation growing on the lake bottom is testament to current eutrophication within Inlay Lake. The expanding aquaculture within Inlay Lake itself contributes significantly to lake degradation via sedimentation and turbidity, eutrophication, and pollution (Myo Myint, 2000). The people of Inlay Lake are called Intha. They are living in numerous villages along the lake's shore and on the lake itself. The majority of population consists of Intha together with others; Shan, Taungya, Pa-o, Danu, Kayah and Bamar.

Economic activities of *Intha* national who are originally industrious, has gained progress since 1990 when Market Economic System was first introduced in Myanmar. Visitors may observe in the Inlay Lake region are Agriculture, Fishing industry, Weaving and Textile Industry, Goldsmith, Silversmith and Brassware Production, Blacksmith and Handicraft, Boat-building and Repairing.

The Inlay Lake Region of the Southern Shan State is the only place where floating-garden agriculture has been practiced on the floating-islands. Floating islands can be classified into two types such as (i) natural floating islands and (ii) manmade floating island. The swampy area covered by reeds, weeds and long grasses in the near-shore areas of the Inlay Lake can be regarded as "natural floating island". The area of floating islands on the east, west and south of the lake is about 600 acres, 1200 acres, 700 acres respectively. Floating gardens are based on floating, man-made islands composed of decayed grasses, reeds and marsh plants. The islands (locally known as Ye-chan) are typically about 2 m wide and 40 m long. Cultivated crops on the floating island include pulses, garlic, chilli, betlevine, mustard, cabbage, cauliflower, gourd, vegetable and variety of flowers, Garlic and vegetable are commonly grown and they have total sown area of 1300 acres.

Fish are caught in the vicinity of villages and floating-island. The same species of fish are caught in large volume, particularly in the middle portion of the Inlay Lake proper due to it greater depth there. By construction ponds for fish culture in the lake, the state has undertaken the production of fish. Weaving has been practiced by the local populace since the ancient times.

Annually the Inlay Lake region produced Inlay shoulder bags, textile called pinni and silk scarfs. Both goldsmith and silversmith activities have been practiced since the ancient time. Environmental conversation measures for the Inlay Lake region have been mainly implemented by the Ministry of Forestry and Ministry of Agriculture and Irrigation. In addition, the United Nation Agencies like UNDP, FAO and Japanese NGO have also actively cooperated with the Myanmar Government for sustainable development of the Inlay Lake and its environments.

Inlay Lake Sanctuary was officially delineated by the State on January 30, 1985. It has an area of 248 square miles. This sanctuary is the place which constitutes a suitable habitat not only for the domestic birds but also for those birds from the other origins that come during winter period, It has been designated as a bird sanctuary by the International Wildlife Conservation Society. The Department of Forestry has been conducting exploratory works and necessary actions within this sanctuary.

Phaungdaw Oo Pagoda is one of the famous principal shrines in Myanmar. This pagoda houses five small Buddha images. The Lights Festival and Phaungdaw Oo Pagoda festival is held from end September to early October. The festival revolves around the procession of four sacred images, which usually reside with a fifth image at Phaungdaw Oo Pagoda for worship by the faithful all year round. For 18 days, the four images are taken out of Phaungdaw Oo Pagoda and carried in a spectacular procession around the 200 villages dotting Inlay Lake, with an overnight stop at a pagoda in one of the villages.

Tourism sector in Myanmar has experienced sustained growth over the last few years and has brought benefits surprisingly and Inlay Lake is one of the amazing tourist attractions in Myanmar and the local people, with their living societies based entirely on the lake. Therefore, the environmental management and conservation of the lake has been critical for not only the livelihood of the people but also promoting and generating the income of tourism (Bo Bo Lwin, 2006). This lake is well-known because of floating villages, gardens and markets, stapes galore, monasteries along with traditional hand-woven textiles and the unique way of life of the local people. Tourist industry is the second source of largest income after floating-garden agriculture.

Figure 3 The Natural beauty of Inlay Lake

4. Research Result

Strengths, Weakness, Opportunities, and Threats

Indawgyi lake and Inlay lake are studied comparative by using SWOT analysis. The analysis show that the needs of strategies to achieve sustainable development in Lake Environment areas are as follow:

4.1 Natural Landscape (Indawgyi Lake)

Strength	Weakness
➢ Indawgyi Lake is largest inland lake in Myanmar, with large freshwater area of 120 km2 ➢ It is surrounded by mountain with large plain. ➢ Attract tourism Landscape and Outdoor recreation ➢ Large plain area serve as natural water filter ➢ Water quality was fit according to WHO standard and suitable for drinking domestic use agricultural use and industrial use.	➢ Noisy mining truck routed through Indawgyi ➢ Inadequate transportation infrastructure ➢ Poor structure on waste disposal System ➢ Waste disposal on the lake edge, no waste management system in place. ➢ Lack of environmental awareness
Opportunities	**Threats**
➢ Potential for Rural Development planning, ➢ Human resource development and opportunities ➢ Produced rice is sufficient for the area and the surplus is exported to other region ➢ Attraction for bird-watching destination ➢ (160 bird species recorded) ➢ Has large area for producing of humid temperate cash crops.	➢ Overuse of chemical fertilizers and pesticide can cause irreparable damage to the lake. ➢ Deterioration of the natural landscape ➢ Possible health risks to local people and diversity of wildlife ➢ Decreased abundance of wetland resources

4.2 Natural Landscape (Inlay Lake)

Strength	Weakness
➢ Inlay Lake is the second largest natural inland lake. Lake surface area is s 23.42 sq miles. ➢ Beauty of lake with open water surface and it is flanked by mountain ranges in the east and west. ➢ Flat plain adjacent to the lake are cultivated ➢ There are 194 villages in and its surrounding areas, of which 169 villages are in the lake	➢ Human Impact on lake environment and in the lake.(People living on and around the lake) ➢ Decreased abundance of wetland resources ➢ Dump sewage directly into the lake ➢ Water pollution, aggravated by the run-off of untreated waste and chemicals washed from the surrounding households and farmlands into the lake
Opportunities	**Threats**
➢ Rural Development planning, Human resource development and opportunities ➢ Transportation and infrastructure development ➢ Development of agricultural products from the floating garden industry.	➢ Overuse of chemical fertilizers and pesticide can cause irreparable damage to the lake. ➢ Destroyed the natural situation ➢ The large amount of aquatic vegetation growing on the lake bottom is leading to current eutrophication. ➢ lake degradation via sedimentation, pollution and turbidity ➢ Due to deposition ,water surface area become narrower

4.3 Cultural Attraction (Indawgyi Lake)

Strength	Weakness
➢ Shwe Myint Zu Pagoda is famous in Myanmar and other places attract incoming of tourist. ➢ The festival is a religious, Shan cultural, and social as well as transaction festivals, boat races and boat festivals. ➢ High Cultural Value and Low human impact	➢ No bus services available to Indawgyi and noisy truck routed through Indawgyi ➢ Handicrafts, special foods none currently available for sale ➢ Very little was noted in the way of cottage industries or possible souvenirs at Indawgyi Lake.
Opportunities	**Threats**
➢ Human resource development and opportunities ➢ Transportation and infrastructure development	➢ Overuse of chemical fertilizers and pesticide can cause irreparable damage to the lake. ➢ Destroyed the natural situation ➢ Transportation and infrastructure development

4.4 Cultural Attraction (Inlay Lake)

➢ Strength ➢ The Inle Lake is one of the places for tourism attraction with open water surface. ➢ High population density, diversification of livelihood and Cultural Value. ➢ Many places attracting tourist:	**Weakness** ➢ Human Impact (People living on and around the lak) ➢ Decreased abundance of wetland resources ➢ Handicrafts, special foods none currently export quality for sale ➢ Little cottage industries were noted at Inlay Lake.

➢ Beautiful landscape, Pleasant weather condition, Floating garden and Floating market, Leg rowing, Phaungdaw Oo Pagoda.	
Opportunities ➢ National heritage due to its unique ➢ Human resource development and opportunities ➢ Transportation and infrastructure development. ➢ Telecommunication is high because local people are using internet	**Threats** ➢ Overuse of chemical fertilizers and pesticide can cause irreparable damage to the lake. ➢ Transportation and infrastructure development ➢ Gradually destroying of traditional culture with imitation of foreign style.

4.5 Economic Attraction (Indawgyi Lake)

Strengths ➢ Indawgyi Lake is one of scenic destinations and many tourists visit and enjoy its views. ➢ Living together in Unity of local ethnic people, Shan, Kachin and Burma. ➢ The mountain and its rims have dense forests products, medicine herbs, mineral resources particularly amber and jade. ➢ Large plain area for agriculture. ➢ Tourism is still less but the lake has extremely high tourism potential. ➢ Good climate and good environment for plenty of aquatic biodiversity.	**Weakness** ➢ Still lack of transportation to Indawgyi Lake. ➢ Lack waste management system in place. ➢ Limited hotel accommodation. ➢ Safety and security risks limit some tourism activities such as trekking and overnight trips. ➢ Lack Tourism awareness trainings (who are tourists, what are the impacts). ➢ Lack of development of marketing plan.
Opportunities ➢ Potential for handicrafts made from water hyzine, local honey production. ➢ Jewellery production with gemstones/ jade from Hpakant. . ➢ Handicrafts, speciality foods for sale. ➢ Job opportunities relating tourist industry. ➢ Development of transportation plan and waste water management plan.	**Threats** ➢ Deterioration of natural forest and lake environment. ➢ Limited infrastructure. (road and electricity) ➢ Shifting cultivation in watershed area. ➢ Environmental degradation.

4.6 Economic Attraction (Inlay Lake)

Strengths ➢ Plenty of aquatic biodiversity and rich natural resource. ➢ Providing a very important watershed system for local people's livelihood. ➢ Inlay Lake is largely associated with the floating garden industry, Fishing, Tourism ➢ Recreation, Hotel and Restaurant ➢ Cottage industry and Human settlement.	**Weakness** ➢ Lack of environmental awareness. ➢ Limited for agricultural land extension. ➢ Decreased abundance of wetland resources. ➢ Increased utilization of fuel wood. ➢ Dump sewage directly into the lake. ➢ Fresh water pollution by local people.

Opportunities	Threats
➢ Provide marketing economy ➢ The benefits from the development of agro based economy and especially to tourism sector. ➢ High quality of the transportation infrastructure and tourist industry infrastructure ➢ Good electricity supply and communication system	➢ Growing tourism industry ➢ Water pollution from economic activities. ➢ Less education awareness about pollution. ➢ Leading to eutrophication. ➢ Decreasing in biodiversity. ➢ Deforestation in watershed area. ➢ Environmental degradation. ➢ Deposition by stream and by human in lake area gradually abandonment.

5. Suggestion

Indawgyi Lake and Inlay have a number of attractions and many tourists seem content to spend enjoying the lake views, the mountains, the fields and the relative cleanliness. The lake area is drained and fed by many streams and gullies flowing into it. These lakes are surrounded by high mountain ranges, especially on the eastern and western sides. The Lake is also known as a wildlife sanctuary and there is a valuable experience for visitors and that is to see thousands of water-birds. Most of birds are found there and birds seem as migratory bird. The various villages around the Lake and in the lake are a current attraction for tourists visiting the lake. Several of the villages are especially picturesque and will continue to impress tourists into the future. However, the main factor of tourist interest currently is the extremely welcoming nature of the villagers, which is due largely to the fact that local people have seen so few tourists. Tourism provides the need for construction of hotels especially near the various attraction sites in order to accommodate the tourists visiting the areas. Increased tourism could actually contribute to this natural environment degradation because of human impact.

6. Conclusion

Myanmar is one of the ASEAN countries. It is rich in natural resources and biodiversity due to its difference topography and weather conditions. Among the famous ecological sites, the Indawgyi Lake and Inlay Lake are well known for their beautiful landscape. The lake and its environs is a habitat for a large variety of migrating water fowl and other birds. Local people at the Indawgyi Lake are predominantly ethnic Shan, but there are also ethnic Kachin and Burmese living there. The various villages around Indawgyi Lake are a current attraction for tourists visiting the lake. There was noted that locally produced handicrafts were bamboo mats, hats and Rice wine at Indawgyi Lake. The major cultural attraction at Indawgyi Lake is Shwe Myitzu Pagoda. Overall, Indawgyi Lake is very attractive natural inland lake with an untouched natural features, beautiful pretty villages and honest local people.

Due to its unique mountain lake environment and with cultural heritages, Inlay Lake has been one of the famous tourist destinations from both local and international. The lake itself is an integral part of the livelihood of the local Intha people, who fish in its waters and cultivate a variety of crops on its floating islands. The tourism industry generally overuses water resources for hotels, swimming pools and personal use of water by tourists. This can result in water shortage and degradation of water supplies as well as generating a greater volume of waste water. Social and cultural sustainability of these Lake areas possess a unique culture that is difference characteristic between them. Diversifications of livelihood depend upon single income source. Agriculture, the main livelihood in this watershed area, is one of the most important factors affecting on the lake's ecosystem. The sustainability of the Lake mainly depends on the local people's behavior and their awareness.

There is important wet land economy implication that can be derived from the result of the SWOT analysis. This analysis reveals several factors with natural attraction, cultural attraction and economic attraction. Particularly important factors were exiting natural lake's resources, infrastructures and private investments. The development of economic opportunities in lake environment area with agroeconomic and ecotourism development can bring several additional benefits in term of job creation, attraction of investments and economic revitalization in the study area.

7. Recommendation

The following are some recommendations based on the research results.

7.1 Environmental awareness of local resident plays a vital role effecting on the lake ecosystem.

7.2 Local residents do need to know and participate for lake resources management and conservation plan.

7.3 Awareness of the water pollution, role of importance of agro-biodiversity and wildlife in ecosystem and natural resource management should be intensively upgraded.

7.4 These Lake need to be managed for water quality and biodiversity, and water treatment, especially for agricultural drainage.

7.5 Adequate sanitation promotion is strongly recommended to protect both health and environment.

7.6 More research on lake resources can be carried out especially in the environmental conservation and sustainability of natural wetland environment in Myanmar.

8. References

Bo Bo Lwin (2006). *Environmental awareness and farming behavior of farmers in Inle Lake Nyaung Shwe Township, Myanmar*. AIT Master Thesis, No. NRM-02-06,Bangkok, Thailand.

Bishnu B. Bhandari, Hidetsugu Nakamura, Shiina Suzuki (2015). *Indawgyi Lake, The One and Only Tectonic Lake in Myanmar*, Ramsar Center Japan.

Khin Win (2017). presented a research paper regarding on Analysis of water from Indawgyi lake in Mohnyin Township (Kachin state). Department of Chemistry, Yadanabon University, Myanmar.

MCDP report no. 31, (2013). *Ecotourism for wildlife conservation in Indawgyi lake wildlife sanctuary: actions and recommendations*, Yangon, November.

Myo Myint (2000). *Report of study on pesticide use control in Inlay Lake*. UNDP/FAO Report MYA/99/007, Yangon.

Naing Naing Latt (2009). Preliminary Study on the Holocene Climate Environments of Indawgyi Lake Basin in Myanmar, *Dagon University Research Journal*, Vol.2.

Naing Naing Latt, Daw Kyu Kyu Thin and. Seng Aung (July 2010) presented a research paper regarding the geographical and socioeconomic condition of the Indawgyi Lake environ.

Roy C. Sidle Æ Alan D. Ziegler Æ John B. Vogler (2007): *Contemporary changes in open water surface area of Lake Inle, Myanmar*, Integrated Research System for Sustainability Science and Springer.

Su M, Jassby AD (2000) *Inle: A large Myanmar lake in transition*. Lakes Reserv Res Manage 5:49–54.

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A Geographical Assessment of Quality of Life in Rural Area : A Case Study of Lezin Village, Sagaing Region in Myanmar

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Abstract

Quality of life is normally taken to mean the general well-being of people and the quality of the environment in which they live. The main aim of this research is to assess the quality of life in rural environment in order to determine their level of well-being. Study area is Lezin village, Sagaing Region in Myanmar. Quality of life is defined as an interaction of social, health, economic and environmental conditions that have an impact on the development of the individual and society. Quality of life is emphasized as being related to individual perceptions and senses. Quality of life in a residential environment is more related to a group of people who are sharing the common physical, social and environmental conditions. Measurement of the level of quality of life can be provided through the scaling of the factors which affect the 7 indicators of Quality of Life. Accordingly, the scale range determined as good-moderate and poor, the level can be measured by checking the number of factors in poor condition, moderate condition and good condition. Result from the assessment show that each of quality of life components was interrelated with other component.

Keywords : Geographical Assessment, Quality of Life, Rural Area, Myanmar

1. Introduction

Quality of Life may be defined as subjective well-being. Assessment carried out in rural area, Sagaing Region in Myanmar. Dimensional structures for quality of life research using indicators are derived either from primary field surveys or from analysis of secondary, normally census-based data sets. Quality of life can be measured through the evaluation of social and economic environment conditions. These indicators will help to determine the level of quality of life in a residential environment. Questionnaires were delivered in study area to quest social attributes, standard of living, environmental health, economic condition and happiness. Questionnaires were composed of two parts. In the first part questions were related to demographic

structure, socio-cultural and socio-economic characteristics of the inhabitants as well as human behavior. And the second part was related to the satisfaction from the neighborhood.

2. Research Objectives

The aim of this study is to assess the quality of life of rural people in a residential environment in order to determine their level of health and well-being.

The researchers have tried to assess the following objectives:

2.1 To study geographical bases of study area

2.2 To examine the livelihood and economic development of rural people

2.3 To assess the rural development and sustainable development

3. Research Methodology

Primary data were collected by interviewing with local people in Lezin Village. The secondary data were collected from Lezin Village Administration Office, Headmistress Office (Lezin Village), Rural Health Care Center (Lezin Village), Meteorology and Hydrology Department and Land Records Department (Monywa). The collected data were processed into the necessary from such as tables and figurers and then analyzed by using graphs and percentage methods. In addition, Subjective approach (objective QOL needs to be measured separately) and combination of qualitative and quantitative methods has been done.

3.1 Data Analysis

The effect of physical attributes on the quality of life can be measured by the assessment of physical environment and their housing condition. Physical health, clothing and physical appearance, number of family members or employment are the factors which affect the standard of living. Besides analysis of the physical characteristics, an assessment of socio-economic condition within the place helps to determine the standard of quality of life.

3.1.1 Background of the Study Area

Lezin village is located in Monywa Township, Monywa District in Myanmar. It is located at the intersection of north latitude 22^{o} 05' 18'' and 95 ^{o} 11' 21'' east longitudes. With a total area of 92.96 acres, it is 250 feet above sea level. Lezin village lies in the Dry Zone Belt of Myanmar. The average annual rainfall was 28.02 inches. The average maximum temperature of the study area is 95.06^{o}F and the average minimum temperature of 68.28^{o}F. It also receives the average mean temperature of 81^{o}F.

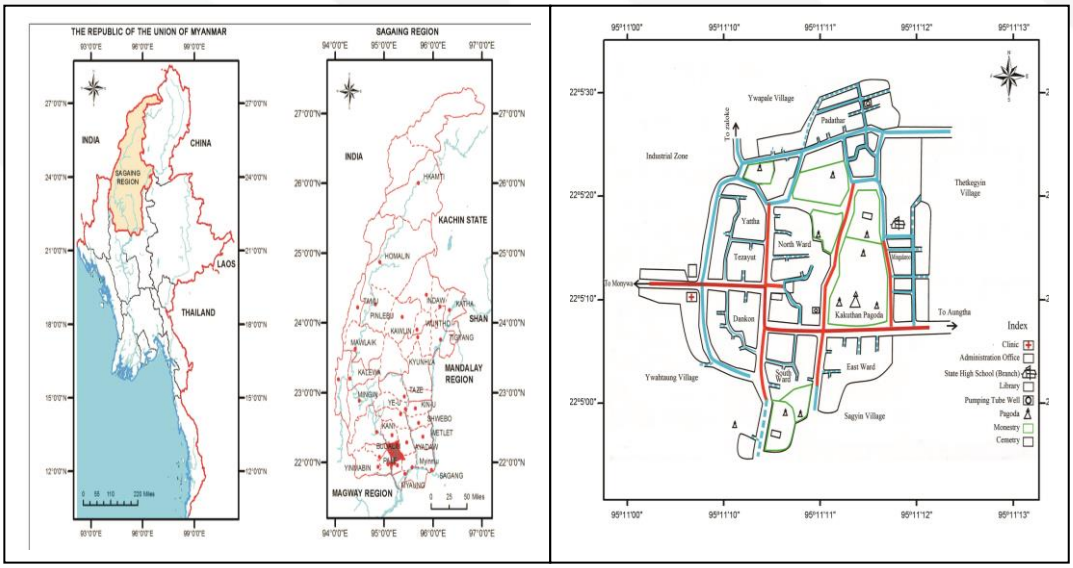

Figure 1 Location of Lezin Model Village, Source: Land Records Department, Monywa

Sources: Agricultural land management and statistics, Monywa in Myanmar

Generally, the north-south extent of Lezin Village is longer than that of the east-west, and thus it takes a compact irregular shape of rectangle. Common soil of village is meadow alluvial soil which is suitable for Ya crops. In the village, 3539 persons lived in 570 houses with 608 households in 2019. In population, there were 559 persons younger than 15 years, 65 persons older than 65 year, and 2,915 persons in the age between 15 years and 64 years. Thus dependency radio is 21.40%.It show that the ratio of unemployed persons and working population is 1: 5. It indicates that labour force of Lezin Village is high and the dependency rate is low.

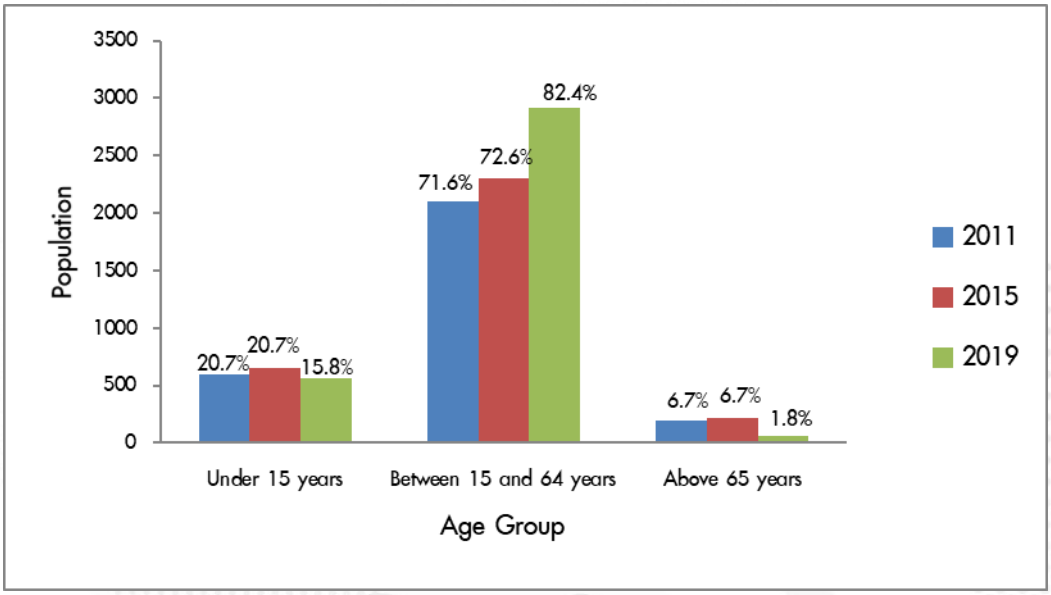

Figure 2 Age-group of lezin village, Monywa Township (2011-2019)

According to 2019 data, the population of study area was 290 children (8.19 percent of the total population) in the age group of 0 to 4 years, 859 persons (24.27 percent) in the schooling age group, area, 2127 persons (60.10 percent) in workable population group, and 263 persons (7.44 per cent) in the aged group. Population density of the village is lower than that of urban.

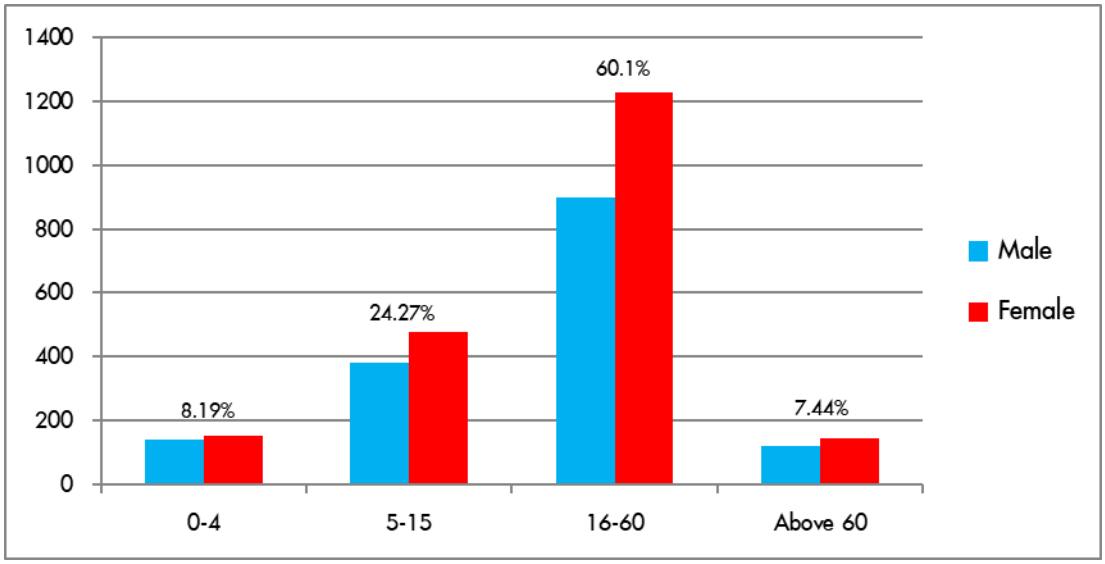

Figure 3 Age-group of Lezin village, Monywa Township (2019)

All people of the village are Buddhists in religion and Burma nationals. In the village, there are five monasteries: two in the east, another two in the north and one in the south. Other religious buildings are Kaut-Ka-than, an ancient pagoda lying in the eastern portion of village, and 13 temples. The pagoda festival is annually held in Myanmar month of Tazaungmone.

3.1.2 Education Status

There is one state primary school in Lezin village and it was upgraded to state Middle school (Affiliated) in 1985and then to the state High school in 2015. The campus of the school is 6.38 acres wide and it comprises 24 lecture halls. Within the campus there exist two storey brick buildings, one brick hall, one brick wall hall, one wood matting hall, three bamboo buildings halls, a school playground and fly-proof latrine. The school gets sufficient water supply. Regarding Education Sector in Lezin village, students from Lezin and neighbouring villages have opportunity to learn basic education from primary level to high school level as Lezin High School was opened in 2015. Teacher- Student ratio in primary level is good because it is 1:34. And also 1: 20 is found in middle level and 1: 19 in high level.

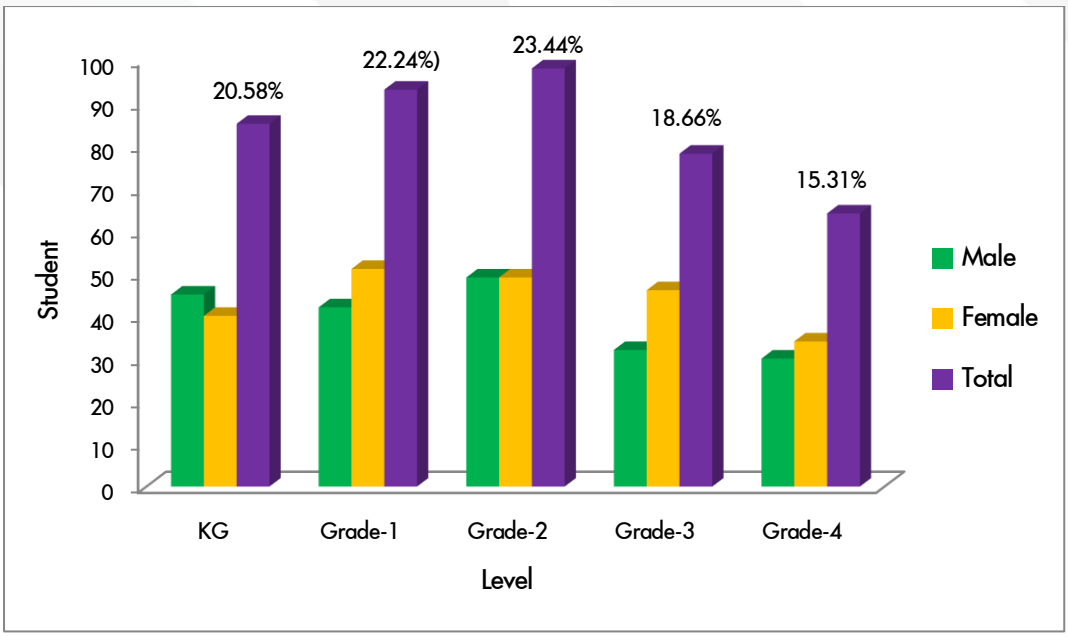

Figure 4 Strength of the state primary school students of Lezin village (2019)

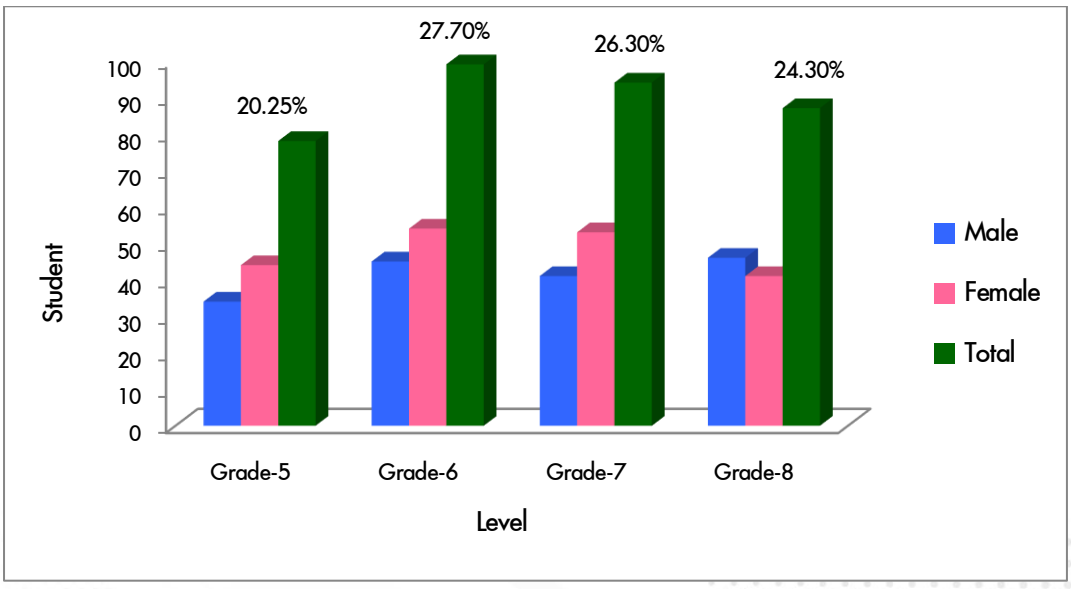

Figure 5 The strength of the middle school Students of Lezin village (2019)

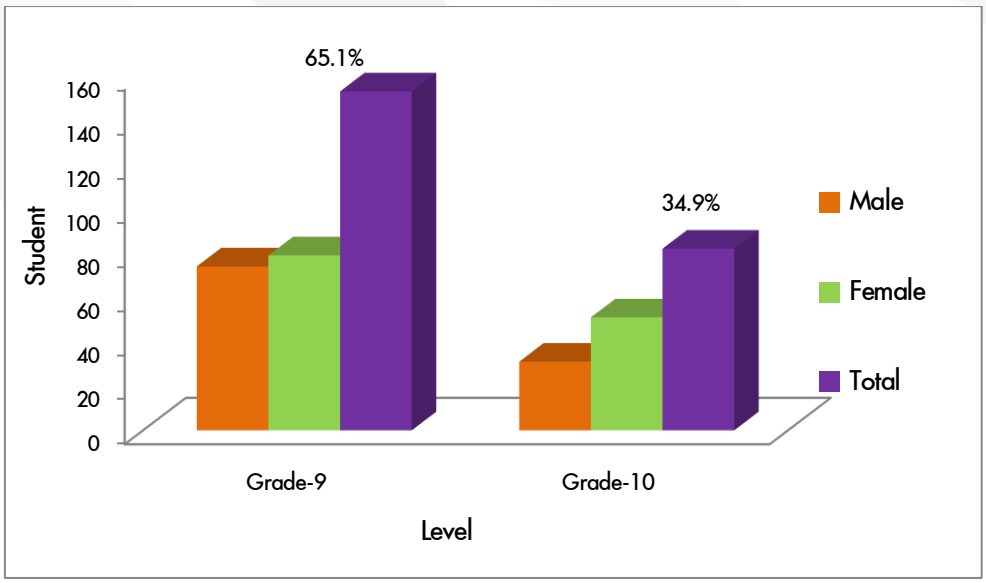

Figure6 The strength of the high school students of Lezin village (2019)

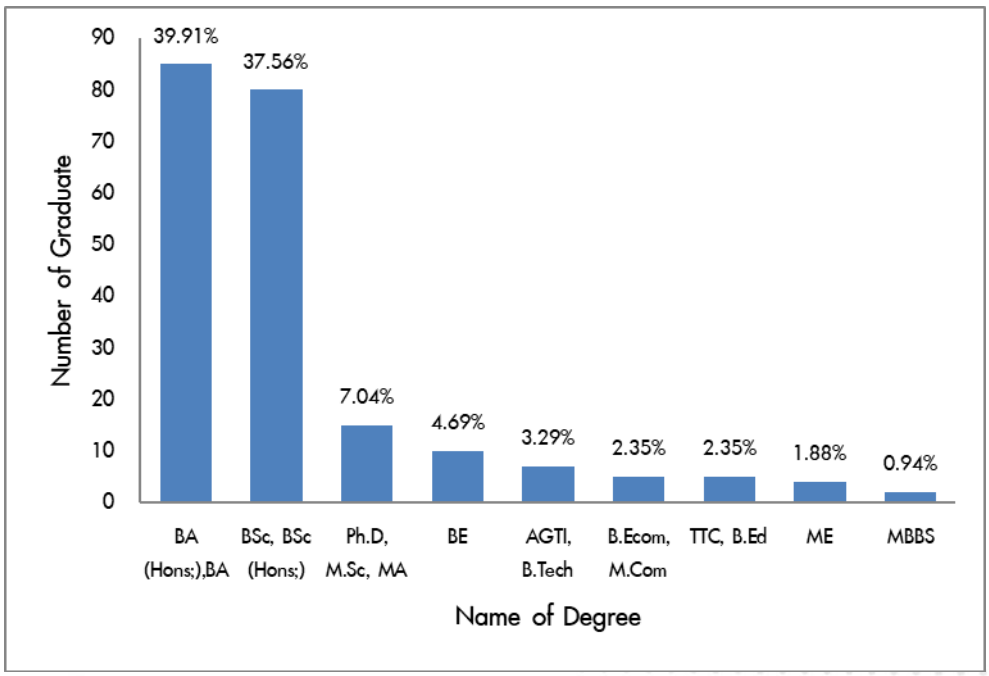

Figure7 University graduates in Lezin village (2019)

3.1.3 Health Status

A rural health care center was opened in Lezin village in 1981, with one midwife and five health workers and then health care of local people has been being taken. Moreover ,as the study area is quite close to urban area and it has a good transportation, rural health care conditions in the village are found better than other rural area.

3.1.4 Economic Status

Lezin village is developed by supporting of sufficient health and education services as well as electricity. Similarly, communication of the village is also developed in accord with better transportation.

There are four types of land use and Ya land occupies the largest acres, accounting for (613.04) acres or 80.9 percent of the total (Myint Ohnmar Hlaing. Ma (1997). The second largest acres occur in residential land amounting to 92.96 acres or 12.3 percent of the total. The third largest land use is found in religious, cemetery and other land amounting to 30 acres or 3.9 percents of the village area. The remaining area 22 acres or (2.9) percent is used as road land. General land use of the study area is shown in the table (1).

Rural areas have predominantly primary activities, whereas urban areas have domination of secondary and tertiary activities. There were (613.04) acres for cultivated land. Agriculture is the main economy of Lezin village. The main crops are cotton, sesamum, pesigon (pigon pea), wheat, maize, sunflower and bean. In Lezin village, qualified seeds, fertilizer, pesticide, advanced cultivation methods are utilized to increase production. Plantation of betel is another important income of Lezin village.

Cotton is grown as the first priority and gram for the second priority. Betel plantation is the third priority. The remaining crops are grown according to the market demands and seasonal amount of rainfall.

In agriculture sector, Ya crops such as cotton and gram are widely grown. Betel plantation is found successful. Geographical features are suitable for betel plantation. Therefore, other businessmen from neighboring areas come to do betel plantation. Betel leaves are used not only for chewing betel but also for medicinal herb for traditional medicine. There are a large number of general workers working in Monywa Industrial Zone .As a result, local people can travel easily to other regions and regional products and commodities can flow swiftly to other regions and states. Because of easy and convenient transportation the structure of economic, social, education and health situation can be vividly seen in Lezin village. Farmland holding and occupational structure are shown in figure (9 and 10).

Livestock breeding is only for food supply and agriculture in Lezin village. Poultry such as chicken, pigs, ducks, cows, goats and lambs were kept in Lezin village. They keep drought animals to plough the land, to draw the carts and horses for pony-carts.

In 2005, Iron grill was established in the north western part of Lezin village. It has an area of 18.64 acres. Although iron grill is located in Lezin I village, it managed under Monywa industrial zone. Another cottage industry is groundnut grinding and its products can flow swiftly to other regions and states.

Table 1 General landuse of Lezin village (2019)

No.	Types of Land use	Acre	Percent
1	Village Land	92.96	12.3
2	Road Land	22	2.9
3	Religious, Cemetery and other land	30	3.9
4	Ya Land	613.04	80.9
Total		**758**	**100.00**

Source: Agricultural land management and statistics, Monywa

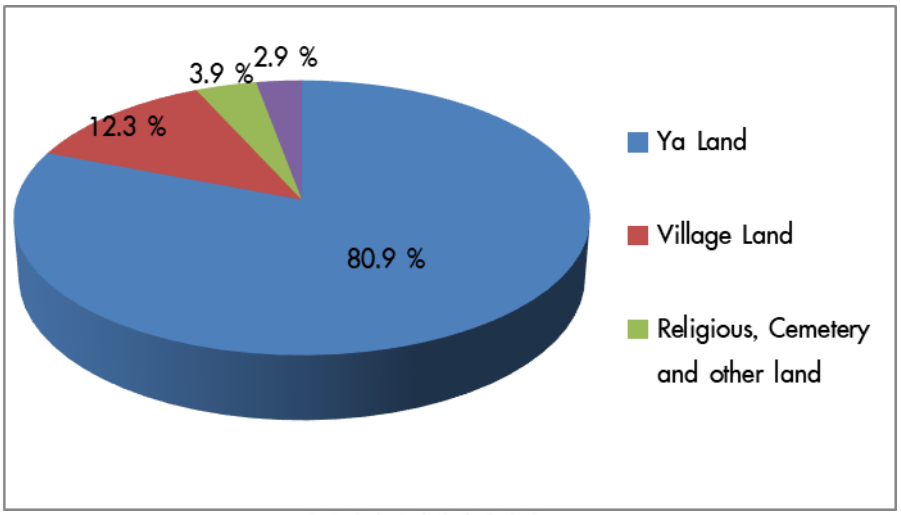

Figure 8 General land use of Lezin village (2019)

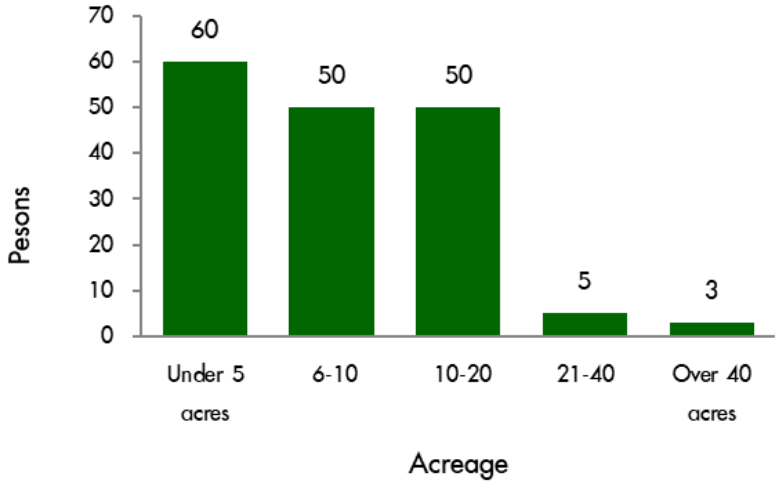

Figure 9 Farmland holding (2019)

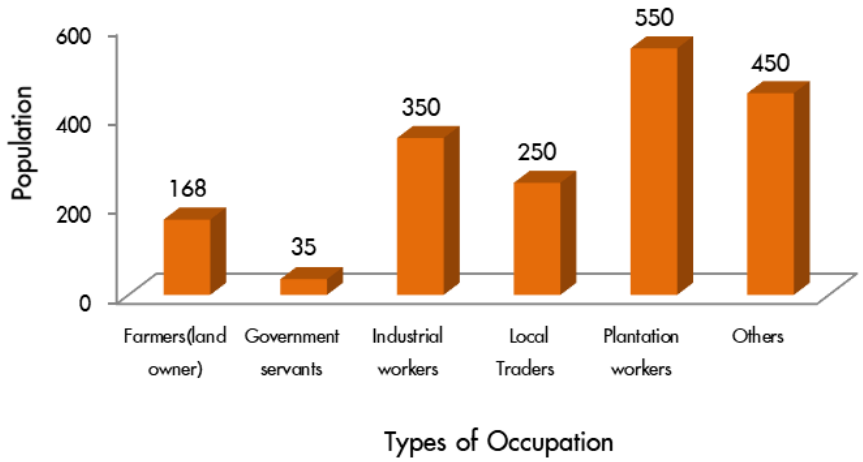

Figure 10 Occupational Structure (2019)

4. Research Result

The level of quality of life was determined through the quest of indicators mentioned above through physical status, social status and economic status in the area. In order to access the quality of life in rural area , questionnaires were distributed to 200 households. On the other hand, 50 questionnaires were done in the study area to quest social attributes, standard of living, environmental health, and economic condition. Questionnaires were composed of two parts. In the first part questions were related to demographic structure, socio-cultural and socio-economic characteristics of the inhabitants as well as human behavior. And the second part was related to the satisfaction from the neighborhood and environmental conditions.

At first, physical attributes have been analyzed by looking at the physical characteristics of the building interiors and exteriors, physical characteristics of public open spaces, and attractiveness of the place. Timber or wooden wall houses have been common in the study area because woods are available in abundance there.10 houses are modern type rural house with brick make flat and smooth roof in the form lintel mixed with iron rods and cement. There are 150 buildings made up brick wall with zinc roof structure; 300 houses are wood wall building with zinc roof and others are bamboo houses with zinc roof. In general, they are good structural condition with high level. The use of traditional building material is decreasing and it is being replaced by building material like, iron, tin sheets, cement, etc.

Solar systems have played an important role in improving access to electricity, especially in the rural areas. In the study area, 75% of households are used electricity for lighting and household goods such as televisions; radios and rice cookers.25% are used solar system to light their home. Access to water and sanitation are key determinants of public health. Water is a fundamental input to household health for drinking, cooking and washing, among other domestic

uses. There has the private expansion of bottled water and piped and groundwater sources. Every household has toilet.

On the other hand, there are 100 feet earth road in this village. Motorcycles are used as common in study area. There has seen at least one phone lived in households since 2010.In some public open spaces in various size attached to the street spaces .The assessment on functional attributes, quest the functional diversities through the determination of variety of functions in the area. Study area is rich in terms of functional diversity. There are many different uses in the area such as; residential, commercial, recreational, administrative, educational and cultural.

Link with social environment social attributes are made to measure the level of quality of life. As a result of the interviews and questionnaire survey carried out in the area it is determined that people living in the study area have good links with the social environment since they have much connections and communication with people other than their close friends and neighbors. Additionally, they know their living environment and also about their immediate environments.

Assessment of standard of living which is one of the indicators to measure the level of Quality of Life carried out as a result of questioning the factors like employment, physical health, personal appearance and clothing (Nil Pasaoglulari Sahin et al) .Accordingly, it is interesting to say that most of male inhabitants are employed in his farm and female are also working together. Additionally, some are working at temporary jobs and less number have permanent jobs. Generally 4 or 5 people are living in one house. People's physical appearance is good in terms of clothing and personal hygiene is high. And most of the children are looking healthy and happy.

When environmental health is surveyed, it is observed that somewhere, there is a bad smell from rubbish left on the streets which can also affect the personal health. There have literacy rates of 99 percent and 89 percent of its 15-16 years old population going to high school or above, and 96 percent of its 10-14 years old population going to middle school or above. Mostly, local people are high income families which 30% have total income around 1000$ monthly salary, and only 20%% have more than 500$ monthly salary, and the others around 150$. This is a considerable factor that is effective on the good state of the physical environment and the personal health. Their income is sufficient their daily requirements.

Assessment of happiness and freedom analyzed through evaluations concerning the self and self-control, questioning person's fit with his/her environment, questioning connections of the person with his/her environment (home, neighborhood, school, work place, community, neighborhood). Accordingly, most of the local people are satisfied with their living environment since they have no alternative place to live. Although, majority of population is satisfied with their neighborhood, some rich people would like to live in urban area.

Table 2 Assessment results

Indicator	Method of assessment	Assessment-range (Good-Moderate-Poor)
Physical Attributes -Physical characteristics of building interiors and exteriors -Physical characteristics of public open spaces, Attractiveness of place	-Determining level of obsolescence	Moderate
	-Structural condition	good
	-Quality of construction material	Moderate
Functional Attributes (functional diversity)	Determining variety of functions in the area	good
Social attributes (links with social environment)	Questioning sense of acceptance by intimate others	good
	- family friends	good
Standard of living a(employment, physical health, personal hygiene, physical appearance and clothing of family members, purposeful activities to achieve personal goals)	-questioning place of employment	Moderate
	-observing general appearance, cleanliness, health	Moderate
	-determining of people living in one house	Moderate
	-questioning day to day actions (domestic activities, activities promote relaxation and stress reduction)	Moderate
	-cleanliness of the living area	Moderate
Environmental health and access to goods (presence of health and social)	-determining existence/proximity of health and social services	Moderate

Sources: Data collection from ground survey in 2019

5. Suggestion

As a result of the assessment it has been determined that in terms of Physical Attributes there is a moderate level in the physical and structural conditions of the buildings. Only few of the buildings physical condition are good. There is a kind of introvert living of the families since they are just visiting the close friends and close neighbors.

Standard of living determined as moderate since they have moderate income, they have good appearance in terms of clothing, in some cases there are 8 family members living in one house and most of them have not more than 8 persons. There are any purposeful activities that might increase their standard of living. There is good environmental hygiene in the area and sufficient income, although inadequate number of health services. These are considerable factors

for the personal health that affects the quality of life in the area positively in terms of environmental health and economic conditions.

6. Conclusion

The level of Quality of Life in the study area can be determined through the evaluation of results of the assessment carried out in the area according to the 7 indicators-Physical Attributes, Functional Attributes, Social Attributes, Standard of Living, Environmental Health and access to goods, Economic Condition, Happiness. In the study area, there have over 200 educated persons. Educated people tend to be healthier, for example. Healthier people are better able to work and thus become wealthier, while rich people have more money to spend on health. The positive feedback between education and income is also well recognized.

7. Recommendation

The following are some recommendations based on the research results.

7.1 Lezin village has good environmental hygiene area and sufficient income for their needs, although inadequate number of health services.

7.2Labor force of Lezin Village is high and the dependency rate is low. People's physical appearance is good in terms of clothing and personal hygiene is high. And most of the children are looking healthy and happy.

7.3 Majority of population is satisfied with their neighborhood, some rich people would like to live in urban area. Most of the local people in the village are satisfied with their living environment since they have no alternative place to live.

8. References

Arthur Gelis, Judith Getis and Jerome D. Fellmann (2006): *Introduction to Geography (tenth edition)*, New York: Published by Mc-Graw-Hill.

Asian Development Bank: (2018); *Key Indicators for Asia and the Pacific (49th edition).*

HlaTunAung (2003): *Myanmar; the study of Processes and Patterns*,Natural Center for Human Resources Development, Yangon, Myanmar.

MyintOhnmarHlaing. Ma (1997): *Land use of Monywa Township* (M.A Thesis), Department of Geography, University of Mandalay.

Nil PasaoglulariSahin et al.:*An assessment of quality of life in residential environments: case of selimiyequarter in walled city of 150icosia, north Cyprus.*

Roehlano M. Briones(2017):*Transformation and diversification of the rural economy in Asia*,Philippine Institute for Development Studies.

Ronald R. Boyce (1978): *The Bases of Economic Geography (second edition)*, printed in the United States of America.

World Bank (WB) and the United Nations Development Program (UNDP)(2017):*Myanmar Living Conditions Survey (MLCS).*

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The Impact of Leadership Dimensions on Student Outcomes : University Context of Myanmar

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Abstract

The purpose of this research is to examine the effects of leadership dimensions on student outcomes at university context of Myanmar. The methodology involved an analysis of interview data of the relationship between leadership and student outcomes. This research illustrates how successful leaders combine the practices of transformational and instructional leadership in different ways across different phases of their university's development. Empirical data were drawn from interview data that explored 21 university administrative officials and 100 key teaching staff's perceptions on practices of leadership in different ways in order to improve students' outcomes. The research is hoped to provide new empirical evidence of how university leader s directly and indirectly achieves and sustain improvement over time through combining both transformational and instructional leadership strategies. The findings show that University abilities to improve and sustain effectiveness over the long term are not primarily the result of the university leader s' leadership style but of their understanding and diagnosis of the university's needs and their application of clearly articulated, organizationally shared educational values through multiple combinations and accumulations of time and context-sensitive strategies and progressively embedded in the work, culture, and achievements. The survey items used to measure university leadership revealed five sets of leadership practices or dimensions: establishing goals and expectations; resourcing strategically; planning, coordinating, and evaluating teaching and the curriculum; promoting and participating in teacher learning and development, and ensuring an orderly and supportive environment. In the context of goal setting, this means that what university leaders need to focus on is not just leaders' motivational and direction-setting activities but on the educational content of those activities and their alignment with intended student outcomes. The data involved a comparison of the effects of five inductively derived sets of leadership practices on student outcomes. The comparisons between transformational and instructional leadership and between the five leadership dimensions suggested that the more leaders focus their relationships,

their work, and their learning on the core business of teaching and learning, the greater their influence on student outcomes. The research concludes with a discussion of the need for leadership practice to be more closely linked to the evidence on effective teaching and effective teacher learning. Such alignment could increase the impact of university leadership on student outcomes even further.

Keywords : Impact of Leadership Dimensions, Student Outcomes, University Context, Myanmar

1. Introduction

There is unprecedented international interest in the question of how educational leaders influence a range of student outcomes. A major reason for the interest in the links between leadership and student outcomes is the desire of policy makers in many jurisdictions to reduce the persistent disparities in educational achievement between various social and ethnic groups, and their belief that university leaders play a vital role in doing so. The confidence of the public and politicians in the capacity of university leaders to make a considerable difference to student outcomes is supported by qualitative research on the impact of leadership on university effectiveness and improvement. Most subsequent quantitative research has conceptualized the relationship between leadership and student outcomes as indirect, with leaders establishing the conditions (e.g., provision of teacher professional learning opportunities and forms of student grouping) through which teachers make a more direct impact on students. Marzano et al. (2005) reports an average effect between leadership and student academic outcomes. The analysis included both direct and indirect effects of leadership and because leadership effects are typically modeled as indirect. Thus, there seems to be a contradiction between the evidence that leaders have a weak indirect effect on student outcomes and the expectations of the public and policy makers that leaders make a substantial difference. As the purpose of this research is to address the overall impact of leadership on student outcomes, we focus on identifying the relative impact of different types of leadership. Heck et al (1990) present the 5 inductively derived leadership dimensions associated with their definitions.

Leadership Practice (Leadership Dimensions)

(i) Establishing Goals and Expectations

Goals provide a sense of purpose and priority in an environment where a multitude of tasks can seem equally important and overwhelming. Clear goals focus attention and effort and enable individuals, groups, and organizations to use feedback to regulate their performance.

It includes the setting, communicating and monitoring of learning goals, standards and expectations and the involvement of staff and others in the process so that there is clarity and consensus about goals. In universities, the goal focus is not only articulated by leaders but

embedded in university and classroom routines and procedures. Successful leadership influences both interpersonally and by structuring the way that teachers do their work (Ogawa & Bossert, 1995).

(ii) Strategic Resourcing

The word 'strategic' in the description of this dimension signals that this leadership dimension is about securing and allocating material and staffing resources that are aligned to pedagogical purposes, rather than leadership skill in securing resources. Thus, this measure should not be interpreted as an indicator of skill in fundraising, grant writing or partnering with business, as those skills may or may not be applied in ways that serve key pedagogical purposes. It involves aligning resource selection and allocation to priority teaching goals. This dimension includes provision of appropriate expertise through staff recruitment.

(iii) Planning, Coordinating and Evaluating Teaching and the Curriculum

It consists of direct involvement in the support and evaluation of teaching through regular classroom visits and provision of formative and summative feedback to teachers. This dimension includes direct oversight of curriculum through university-wide coordination across classes and year levels and alignment to university goals. Teachers in universities reported that their leaders set and adhered to clear performance standards for teaching and made regular classroom observations that helped them improve their teaching (Heck et al., 1990).

(iv) Promoting and Participating in Teacher Learning and Development

Such kind of leadership dimension not only promotes but also directly participates with teachers in formal or informal professional learning. The leader participates in the learning as leader, learner, or both. The contexts for such learning are both formal (staff meetings and professional development) and informal (discussions about specific teaching problems). With student background factors controlled, the more that teachers report their university leaders (usually the university leader) to be active participants in teacher learning and development, the higher the student outcomes (Bamburg & Andrews, 1991).

(v) Ensuring an Orderly and Supportive Environment

Leadership also includes creating an environment for both staff and students that makes it possible for important academic and social goals to be achieved. It protects time for teaching and learning by reducing external pressures and interruptions and establishing an orderly and supportive environment both inside and outside classrooms. Eberts & Stone (1986) state that an orderly and supportive environment is also one in which staff conflict is quickly and effectively addressed.

The Impact of Particular Leadership Dimensions

By focusing on types of leadership leaders' impact on student outcomes will depend on the particular leadership practices in which they engage. All survey items, regardless of the

underpinning leadership theory, were chosen to reflect common sets of leadership practices. Five groupings or leadership dimensions were applied and their relationship with student outcomes was calculated in this research. Moreover, Leithwood et al. (2004) organize their literature review on "How Leadership Influences Student Learning" under three headings: setting direction, developing people, and redesigning the organization. The task–relationship distinction has been eschewed here because relationship skills are embedded in every dimension. Effective leaders do not get the relationships right and then tackle the educational challenges — they incorporate both sets of constraints into their problem solving.

2. Research Methodology

This study examined leadership in university contexts, sixteen universities in upper Myanmar, and five in lower Myanmar. The first step in determining the relative impact of different types of leadership practice (henceforth called 'leadership dimensions') involved inductively deriving the relevant dimensions. This was done by using a questionnaire of leadership indicators (survey items). Five dimensions captured the common meaning of the components and indicators. The result was an average effect size for each of the five leadership dimensions, thus providing an answer to the question of the impact of different types of leadership on student outcomes. The results are presented through the analysis of the impact of particular leadership dimensions. It is worth noting that leadership effects are not always positive. The impact of specific sets of leadership practices, which we called leadership dimensions, proposed by are applied in this research.

Dimension 1: Establishing Goals and Expectations (Avg = 71.00%)

Goal setting, like all the leadership dimensions, has indirect effects on students by focusing and coordinating the work of teachers and, in some cases, parents. With student background factors controlled, leadership made a difference to students through the degree of emphasis on clear academic and learning goals (Heck et al., 1991). This effect was found even in universities where leaders did not make academic goals the top priority.

Table 1 Responses of the participants on Dimension 1: Establishing Goals and Expectations

Sr No	Statement	Responses (%)				
		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	Academic excellence was not one of the top goals in universities.	3.5	8.51	15.5	1.48	71.01
2	In universities, academic goal focus is both a property of leadership and a quality of university organization.	2.4	12.2	16.5	2.65	66.25

Table 1 (Continue)

Sr No	Statement	Responses (%)				
		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
3	If goals are to function as influential coordinating mechanisms, they need to be embedded in university and classroom routines and procedures.	3.2	7.7	15.5	3.58	70.02
4	Successful leadership influences teaching and learning both through face-to-face relationships and by structuring the way that teachers do their work.	1.2	13.7	16.5	5.27	63.33
5	Leaders in universities tend to give more emphasis to communicating goals and expectations, informing the community of academic accomplishments and recognizing academic achievement.	2.2	11.6	15.5	1.65	69.05
6	Goals provide a sense of purpose and priority in an environment where a multitude of tasks can seem equally important and overwhelming.	3.3	8.8	16.2	4.98	66.72
Avg		**2.63**	**10.42**	**15.95**	**3.27**	**67.73**
		13.05%		**15.95%%**	**71.00%**	

In this study, 71.01% of the participants found that academic excellence was not one of the top goals in universities, but the university leaders still gave it significantly more importance. It has been agreed by 66.25% of the participants, academic goal focus is both a property of leadership and a quality of university organization in universities. Moreover, 70.02% of the participants think that if goals are to function as influential coordinating mechanisms, they need to be embedded in university and classroom routines and procedures. Successful leadership influences teaching and learning both through face-to-face relationships and by structuring the way that teachers do their work (63.33%). The importance of relationships in this leadership dimension is apparent according to 69.05% of the participants that leaders in universities tend to give more emphasis to communicating goals and expectations, informing the community of academic accomplishments and recognizing academic achievement. Goal content is as important as the generic process of goal setting. The instructional leadership studies were more likely than transformational leadership to include leadership indicators that asked teachers to report the leaders' emphases on particular goals, rather than the extent to which the university leadership provided a generic direction. The greater alignment between leadership indicators and outcome variables in the instructional leadership research may partially account for its stronger leadership

effects in comparison to those of transformational leadership. They (66.72%) also found that goals provide a sense of purpose and priority in an environment where a multitude of tasks can seem equally important and overwhelming. Clear goals focus attention and effort and enable individuals, groups, and organizations to use feedback to regulate their performance.

Dimension 2: Resourcing Strategically (Avg = 49.19%)

This study provides evidence for how university leaders can influence student achievement through their decisions about staffing and teaching resources. There is some evidence in the following table that this type of leadership has a low indirect effect on students and that it may be particularly important in regions where there is a chronic resource shortage.

Table 2 Responses of the participants on Dimension 2: Resourcing Strategically

Sr No	Statement	Responses (%)				
		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	There was a relationship between leaders' ability to secure instructional resources and student achievement in universities	10.23	65.37	15.6	4.75	4.05
2	For university leaders with high academic goals, student achievement was higher where they themselves had appointed a greater percentage of their current staff.	1.54	13.56	16.1	1.25	67.55
3	More needs to be known about the knowledge and skills needed by university leadership to link resource recruitment and allocation to specific pedagogical goals.	4.4	10.5	15.1	3.66	66.34
Avg		**5.39**	**29.81**	**15.6**	**3.22**	**45.98**
		35.2%		**15.6%**	**49.2%**	

The findings suggest that this type of leadership has a small indirect impact 4.05% on student outcomes. In this study, there was a small relationship between leaders' ability to secure instructional resources and student achievement in universities. According to the 67.55% of the participants, for university leaders with high academic goals, student achievement was higher where they themselves had appointed a greater percentage of their current staff. These findings are sketchy and more needs to be known about the knowledge and skills needed by university leadership to link resource recruitment and allocation to specific pedagogical goals (66.34%).

Dimension 3: Planning, Coordinating, and Evaluating Teaching and the Curriculum (Avg = 63.03%)

Indicators of this dimension show that this type of leadership has a moderate impact on student outcomes. Dimension 3, "Planning, coordinating, and evaluating teaching and the curriculum," lies at the heart of university leadership. In universities, much of this leadership would be carried out by subject specialists such as heads of department and curriculum leaders. According to the data, leaders in universities were more likely to be involved with their staff in curriculum planning, visiting classrooms, and reviewing evidence about student learning.

Table 3 Responses of the participants on Dimension 3: Planning, Coordinating, and Evaluating Teaching and the Curriculum

Sr No	Statement	Responses				
		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	Leaders in universities have personal involvement in planning, coordinating, and evaluating teaching and teachers.	3.67	18.38	10.3	9.57	58.08
2	In Universities, the leadership was directly involved in coordinating the curriculum across year levels.	3.77	18.48	16.9	9.21	51.64
3	University leaders set and adhered to clear performance standards for teaching and made regular classroom observations that helped them improve their teaching.	2.89	20.01	8.1	9.67	59.33
4	There was also greater emphasis in universities on ensuring that staff systematically monitored student progress and that test results were used for the purpose of program improvement.	2.5	19.6	5.9	9.47	62.53
5	Teachers' use of data to evaluate student progress, adjust their teaching, plan their weekly program, and give students feedback was a strong indicator of university quality, and level of university quality had a significant influence on student achievement.	2.1	20.3	22.1	8.38	47.12
6	In sum, among universities, leaders work directly with teachers to plan, coordinate, and evaluate teachers and teaching.	3.2	19.68	23.95	13.73	39.44
	Avg	**3.02**	**19.41**	**14.54**	**10.01**	**53.02**
		22.43%		**14.54%**	**63.03%**	

According to 58.08% of the participants, leaders in universities have personal involvement in planning, coordinating, and evaluating teaching and teachers. Interrelated sub-dimensions are involved in this leadership dimension. It was mentioned by 51.64% of the participants, the leadership was directly involved in coordinating the curriculum across year levels in Universities. This included such activities as developing progressions of teaching objectives for reading across year levels. The degree of leader involvement in classroom observation and subsequent feedback was also associated with Universities. Teachers in Universities (59.33%) reported that their leaders set and adhered to clear performance standards for teaching and made regular classroom observations that helped them improve their teaching. There was also greater emphasis in universities on ensuring that staff systematically monitored student progress and that test results were used for the purpose of program improvement, said 62.53% of the participants. Teachers' use of data to evaluate student progress, adjust their teaching, plan their weekly program, and give students feedback was a strong indicator of university quality, and level of university quality had a significant influence on student achievement (47.12%). The present analysis found that leaders' oversight of teaching and the curriculum has more impact in universities. Clearly, this is an area in which further research, using identical indicators across universities, is needed. According to the 39.44% of the participants, in sum, among universities, leaders work directly with teachers to plan, coordinate, and evaluate teachers and teaching. They more likely think that teachers describe as useful and ensure that student progress is monitored and the results used to improve teaching programs.

Dimension 4: Promoting and Participating in Teacher Learning and Development (Avg = 82.44%)

Leaders in universities are also likely to be described by their teachers as participating in informal staff discussion of teaching and teaching problems (Heck et al., 1990; Heck et al., 1991). According to the perceptions of the participants, leaders' involvement in teacher learning provides them with a deep understanding of the conditions required to enable staff to make and sustain the changes required for improved outcomes. It is the responsibility of leaders at all levels of the system to create those conditions.

Table 4 Responses of the participants on Dimension 4: Promoting and Participating in Teacher Learning and Development

Sr No	Statement	Responses (%)				
		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	The university leaders are more likely to be seen as a source of instructional advice, which suggests that they are both accessible and more knowledgeable about instructional matters.	1.76	10.76	1.36	4.8	81.32
2	University leaders were significantly more likely to be nominated as sources of advice in universities.	3.12	13.42	10.5	21.63	51.33
3	Leaders who are perceived as sources of instructional advice and expertise gain greater respect from their staff and hence have greater influence over how they teach.	1.54	6.96	3.5	2.79	85.21
4	The university leaders' central position in university communication networks means that their advice is more likely to have a coordinating influence across the university.	2.9	9.62	4.8	3.21	79.47
	Avg	**2.33**	**10.19**	**5.04**	**8.11**	**74.33**
		12.52%		**5.04%**	**82.44%**	

The university leaders are also more likely to be seen by 81.32% of the participant as a source of instructional advice, which suggests that they are both accessible and more knowledgeable about instructional matters. University leaders were significantly identified by 51.33% of the teachers more likely to be nominated as sources of advice in universities. In contrast, the extent to which university leaders as close personal friends or as participants in discussions was not significantly related to university performance. The participants (85.21%) suggest that leaders who are perceived as sources of instructional advice and expertise gain greater respect from their staff and hence have greater influence over how they teach. In addition, 79.47% of the participants agree that university leaders' central position in university communication networks means that their advice is more likely to have a coordinating influence across the university.

Dimension 5: Ensuring an Orderly and Supportive Environment (Avg = 78.59%)

This dimension suggests that the leadership of effective university is distinguished by emphasis on and success in establishing a safe and supportive environment through clear and consistently enforced social expectations and discipline codes (Heck et al., 1991). Leadership that

ensures an orderly and supportive environment makes it possible for staff to teach and students to learn. Protection of teaching time from administrative and student disruption is one critical aspect of this dimension. Another is creating classroom and playground environments in which both staff and students feel respected and personally cared for.

Table 5 Responses of the participants on Dimension 5: Ensuring an Orderly and Supportive Environment

Sr No	Statement	Responses (%)				
		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	There were consistent reports across all three groups (teachers, parents, and students) of the extent to which they felt safe, comfortable, and cared for.	2.57	18.33	4.11	4.88	70.11
2	The more positive these reactions, the higher the university quality and the higher its achievement levels when student background factors were controlled.	2.99	8.11	3.13	11.24	74.53
3	An orderly and supportive environment is also one in which staff conflict is quickly and effectively addressed.	3.52	19.38	2.09	2.8	72.21
Avg		**3.03**	**15.27**	**3.11**	**6.31**	**72.28**
		18.30%		**3.11%**	**78.59%**	

In this study, 70.11% of the participants agreed that there were consistent reports across all three groups (teachers, parents, and students) of the extent to which they felt safe, comfortable, and cared for. The more positive these reactions, the higher the university quality and the higher its achievement levels when student background factors were controlled (74.53%). The leadership in universities is also judged by teachers to be significantly successful in protecting teachers from undue pressure from education officials and from parents (Heck, 1992; Heck et al., 1991). An orderly and supportive environment is also one in which staff conflict is quickly and effectively addressed (72.21%).

The Impact of Leadership on Student Outcomes

As a result of a detailed analysis of the research, we identified five leadership dimensions that had a particularly powerful impact on students. The five, along with brief descriptions, are listed in Table 6. The list of dimensions is unusual in that it does not include the typical distinction between leading tasks and leading people or relationships. The Leadership

Challenge: Improving learning in universities determining leadership type was grounded in particular leadership practices, as described by the survey items used in the relevant research, rather than in abstract leadership theory. In this research, the view of Leithwood et al. (2004) on "How Leadership Influences Student Learning" has been applied under the three headings: setting direction, developing people, and redesigning the organization.

Table 6 Comparison of the effects of five sets of leadership Practices on how leadership influences student learning in terms of responses

Sr No	Three headings on how leadership influences student learning	Statement	Responses (%)						
			Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Total	Avg
1	Setting Direction	Establishing goals and expectations	2.63	10.42	15.95	3.27	67.73	71.00%	33.10%
2	Developing People	Resourcing strategically	5.39	29.81	15.6	3.22	45.98	64.89%	30.25%
		Planning, coordinating, and evaluating teaching and the curriculum	3.02	19.41	14.54	10.01	53.02		
		Promoting and participating in teacher learning and development	2.33	10.19	5.04	8.11	74.33		
3	Redesigning the Organization	Ensuring an orderly and supportive environment	3.03	15.27	3.11	6.31	72.28	78.59%	36.64%

Even with all the complexities and difficulties associated with principal leadership and the varied practices of leadership models, Leithwood et al. (2004) stated that there is a body of common practices that principals can utilize, which "can be thought of as the 'basics' of successful leadership". These "basics" are setting directions, developing people, and redesigning the organization. According to the data, the teachers reasonably expect a single leader to demonstrate

high or even moderate levels of competence in all three basics. These practices aim to provide a mission or goal for the organization to follow, to increase the capacity and opportunities for members of the organization to act, and to develop systems that support or maintain high performance of all members of the organization. The participants of this research report that these "basic" practices of leadership are interrelated and form the foundation on which successful principal leadership rests.

3. Results

According to the data, leaders in universities are also more likely to be described by their teachers as participating in informal staff discussion of teaching and teaching problems. The university leader is also more likely to be seen by staff as a source of instructional advice, which suggests that they are both more accessible and more knowledgeable about instructional matters. University leaders and professors were significantly more likely to be nominated as sources of advice in higher achieving universities. In contrast, the extent to which teachers identified university leaders as close personal friends or as participants in discussions was not significantly related to university performance. The participants suggest that leaders who are perceived as sources of instructional advice and expertise gain greater respect from their staff and hence have greater influence over how they teach. In addition, the university leader s' central position in university communication networks means that their advice is more likely to have a coordinating influence across the university.

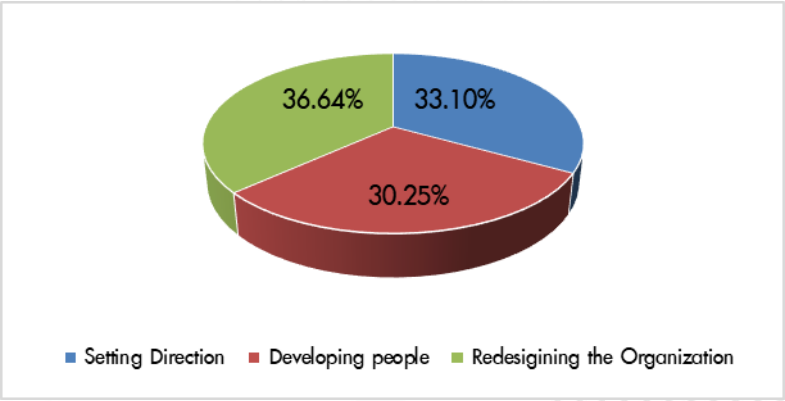

Figure 1 Comparison of the effects of five sets of leadership practices on how leadership influences student learning in terms of responses

Dimension 1: Establishing goals and Expectations

According to the data, indicators of this dimension yielded an average 71.00% of which can be interpreted as a moderately large, and certainly as an educationally significant effect. Goal setting, like all the leadership dimensions discussed, has indirect effects on students

by focusing and coordinating the work of teachers. The importance of goal setting is also suggested from findings of analysis of the research on the direct effects of leadership on students' academic achievements.

Dimension 2: Resourcing Strategically

In this research, some participants provided evidence for how university leaders can influence student achievement through their decisions about staffing and teaching resources. The indicators of this dimension yielded an average 49.19%, suggesting that this type of leadership has a small indirect impact on student outcomes. Some participants responded that there was a small relationship between leaders' ability to secure instructional resources and student achievement in Myanmar universities.

Dimension 3: Planning, Coordinating, and Evaluating Teaching and the Curriculum

Most of the participants (63.03%) think that this type of leadership has a high impact on student outcomes. Leaders in universities want to distinguish from their counterparts by their personal involvement in planning, coordinating, and evaluating teaching and teachers. Interrelated sub dimensions are involved in this leadership dimension. In Myanmar universities, the leadership was more directly involved in coordinating the curriculum across year levels. This includes such activities as developing progressions of teaching objectives for reading across year levels. Teachers' use of data to evaluate student progress, adjust their teaching, plan their weekly program, and give students feedback was a strong indicator of university quality, and level of university quality had a significant influence on student achievement. It has been also suggested that leaders' oversight of teaching and the curriculum has more impact in universities. In sum, among universities leaders work directly with teachers to plan, coordinate, and evaluate teachers and teaching.

Dimension 4: Promoting and Participating in Teacher Learning and Development

This leadership dimension is described by 82.44% of the participants as both promoting and participating because more is involved than just supporting or sponsoring other staff in their learning. Most participants responded that with student background factors controlled the more that teachers report their university leaders to be active participants in teacher learning and development, the higher the student outcomes.

Dimension 5: Ensuring an Orderly and Supportive Environment

In an orderly environment, teachers can focus on teaching and students can focus on learning. The average percentage of the indicators was high with 78.59%. These findings suggest that the university leadership is distinguished by emphasis on and success in establishing a safe and supportive environment through clear and consistently enforced social expectations and discipline codes.

Thus, the main conclusion to be drawn from the present research is that particular types of university leadership have substantial impacts on student outcomes. The more leaders focus their

influence, their learning, and their relationships with teachers on the core business of teaching and learning, the greater their likely influence on student outcomes. Leadership, as described by the five dimensions, makes an impact on students because it has a strong focus on the quality of teachers and teaching. These findings hold important challenges for both policy makers and educational leadership researchers. For educational leadership researchers, the challenge is to focus more closely on how leaders influence the teaching practices that matter. There is much to be gained from a closer integration of leadership theory and research with demonstrably effective pedagogical practices and teacher learning.

4. Discussion

The purpose of this study was to examine the impact of particular types of leadership on student outcomes. The analysis of the study provides essentially the answer that the closer educational leaders get to the core business of teaching and learning, the more likely they are to have a positive impact on students' outcomes. Before elaborating on these conclusions, we need to acknowledge some limitations of this study. Ideally, we would have conducted separate analyses of the impact of leadership on academic and nonacademic outcomes. We also find both moderate and strong effects for particular leadership dimensions reported by the participants. Findings from no effects to weak effects can be explained by the fact that educational leadership involves not only building collegial teams, a loyal and cohesive staff, and sharing an inspirational vision. It also involves focusing such relationships on some very specific pedagogical work, and the leadership practices. Student achievement was higher in those universities with higher integrated leadership. The analyses of leadership impact on pedagogical quality and student outcomes employed the combined integrated leadership measure and so no conclusions can be drawn about the relative contribution of each. Nevertheless, it has been suggested that the types of motivational, collaborative, and interpersonal skills are essential to leaders' ability to improve teaching and learning. The five leadership dimensions include leadership practices that require the integration of task and relationship considerations. Our findings about the relative impact of the five leadership dimensions provide detailed guidance about the types of leadership that make a difference to student outcomes. According to the results, in our own context, the leadership dimension that is most strongly associated with positive student outcomes is that of promoting and participating in teacher learning and development. Because the agenda for teacher professional learning is endless, goal setting should play an important part in determining the teacher learning agenda. According to the responses of the participants, the leaders participate in the learning as leader, learner or both. The contexts for such learning are both formal (staff meetings and professional development) and informal (discussions about specific teaching problems). This leadership dimension had a strong impact on universities performance. In Myanmar universities,

teachers report their university leaders to be more active participants in teacher learning and development. In our situation, according to the data, leaders are more likely to promote and participate in staff discussion of teaching and teaching problems. The university leader is also more likely to be seen by staff as a source of instructional advice, which suggests that they are both more accessible and more knowledgeable about instructional matters than their counterparts.

5. References

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1). Retrieved 20 April 2006, from http://epaa.asu.edu/epaa/v8n1

Hallinger, P. (2005). *Instructional leadership and the university leader: A passing fancy that refuses to fade away*. Leadership and Policy in University, 4(3).

Heck, R. H., Larsen, T. J., & Marcoulides, G. A. (1990). Instructional leadership and university achievement: Validation of a causal model. *Educational Administration Quarterly*, 26(2).

Leithwood, K., & Jantzi, D. (2005). *A review of transformational university leadership research 1996 – 2005*. Leadership and Policy in University, 4(3).

Genge, M. (1996). *Transformational university leadership*. In K. Leithwood, J. Chapman, D. Corson, P. Hallinger, & A. Hart (Eds.), International handbook of educational leadership and administration.

Ogawa, R. T., & Bossert, S. T. (1995). *Leadership as an organizational quality*. Educational Administration Quarterly, 31.

Witziers, B., Bosker, R. J., & Krüger, M. L. (2003). Educational leadership and student achievement: The elusive search for an association. *Educational Administration Quarterly*, 39 (3).

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Email Communication within Commercial Organizations in Myanmar

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Abstract

Email communication is used by businesses to promote products and services. Email is helpful to manage communication in the business network. Sharing and collaboration can be done through email. Notification and important updates are informed by business to its customers. Email (Electronic mail) is the widely used technology communication tool and it plays a significant role in working life. Therefore, analysis of e-mails sent at work from two working communities will identify the individual stylistic choices of types of e-mails sent at work. This paper focuses on investigating the efficient transmission of information in the e-mail medium to communicate successfully among colleagues at work. E-mail data were voluntarily submitted by participants and analyzed using discourse analysis techniques. A combination of methods, including discourse analysis and framing strategies, is used in this research to analyze data according to the audience participation. Therefore, this research applies a framing analysis to e-mail from discourse analysis point of view to identify additional or possibly unique strategies used to communicate among colleagues in two organizations is used to examine 357 e-mail messages sent at work among a community of practice in order to identify which framing strategies are mostly used by the participants when they have to write emails. The reference (reference cohesion) is the most used elements in the five discourse markers, follows by lexical cohesion and conjunction respectively. Sentences that provide thematically reinforcing clusters of facts or judgements are the highest use among the five framing devices. Findings suggest that people change their message style and language use depending on the receivers of the message.

Keywords : Discourse Analysis, E-mails, Framing Strategies, Message Style, Language Use

1. Introduction

People are increasingly using mediated forms of communication to interact and connect with others. Ever since the invention of writing, forms of technology have mediated speech by transferring the spoken words to other media. Growth and advances in telecommunications, computer and networking technologies have created electronically mediated environments where

nearly instantaneous dialogue is possible among remotely located individuals and groups. The resulting new forms of textual communication, such as e-mail, electronic messaging and instant chat, presents individuals with unfamiliar communicative environments where they must determine what combinations of oral and written communicative strategies work best to convey meaning and intent through the electronic medium. As this paper is designed to examine electronic language in the communicative environment of e-mail sent among colleagues at work, the framing approach from discourse analysis point of view is presented and the concept of framing is used as a way of understanding language and human interaction.

2. Objectives of the study

1. To explore the message style and organizational frames in e-mails sent at work.

2. To identify framing devices by which participants structure and organize their e-mail discourse.

3. To investigate features of discourse which are parts of the total communicative activities.

Literature Review

Communicating by email is almost instantaneous, which enhances communications by quickly disseminating information and providing fast response to customer inquiries. It also allows for quicker problem-solving and more streamlined business processes. As a result, small business owners can accomplish more in less time. Email reduces geographic and time zone barriers for businesses. Employees or contractors from around the world can communicate, regardless of their location. Likewise, customers can send sales questions and support requests by email based on their own time zone schedules.

Importance of Email in Business Communication

The fact that email has great importance in modern business communication is undeniable. Every day, millions of emails are sent from companies to customers and suppliers, from employees to their managers and from one coworker to another. There are several reasons for the preponderance of email when compared to other methods of communication. Email allows companies to efficiently and effectively spread information about their products and services, both to existing customers and potential ones. For example, a clothing company could set up an email list to which anybody can subscribe, then send weekly emails to everybody on the list detailing new additions to the catalog. Similarly, a company specializing in business software might contact other companies directly by email to inquire whether they may find their services useful.

E-mail and Electronic Devices

E-mail (short for electronic-mail) is text message that may contain files, images or other attachments sent through a network to a specified individual or group of individuals. E-mail is a

natural and perhaps inevitable use of networked communication technology that developed along with the evolution of the internet.

One of the major questions asked about electronic language is whether it is more similar to speaking or writing. Electronic correspondence has its own discourse peculiarities which affect the text's purpose, structure and writing process. Crystal (2001) as well as Elerring (2004) regards the language of email as something genuinely different in kind consisting of "speech + writing + electronically mediated properties. According to Pardubová (2006), emails are influenced both by speech and writing. In many respects, emails resemble traditional letters (structure, possibility of editing, rereading...). On the contrary, they also share many similarities with speech (e.g. high level of informality, assumed fast responses...) and therefore, it is difficult to classify language of emails within the traditional frame of spoken and written language.

The first e-mail was sent by Ray Tomlinson in 1971. By 1996, more e-mails were being sent than postal mail. Below is an example and breakdown of an internet e-mail address.

support@computerhope.com

Discourse analysis

Discourse analysis (DA) can be defined in three ways according to Halliday and Hasan (1976): (1) an analysis of language beyond the level of a sentence, (2) an analysis of language behaviours linked to social practices and (3) an analysis of language as a system of thought. Discourse analysis or discourse studies are a general term for a number of approaches to analyze written, vocal, or sign language use or any significant semiotic event. The objects of discourse analysis— discourse, writing, conversation, and communicative event— are variously defined in terms of coherent sequences of sentences, propositions, speech, or turns-at-work. Discourse analysts will look at any given text, and this just means anything that communicates a message, and particularly, how that message constructs a social reality or view of the world.

Computer-mediated discourse (CMD) is the communication produced when human beings interact with one another by transmitting messages via networked computers. The study of CMD is a specialization within the broader interdisciplinary study of computer-mediated communication (CMC), distinguished by its focus on language and language use in computer network environments, and by its use of methods of discourse analysis to address that focus. Most CMC currently in use is text-based, typically by a person or persons at a different location from the message sender. Text-based CMC takes a variety of forms (e.g. e-mail, discussion groups, real-time chat, virtual reality role-playing games) whose linguistics properties vary depending on the kind of messaging system used and the social and cultural context embedding particular

instances of use. However, all such forms have in common that the activity that takes place through them is primarily— in many cases, exclusively— by visually-presented language. These characteristics of the medium have important consequences for understanding the nature of computer-mediated language. They also provide a unique environment, free from competing influences from other channels of communication and from physical context, in which to study verbal interaction and the relationship between discourse and social practice.

Linguistic Elements in Discourse or Discourse Markers

Based on Brinton (1996), Muller (2005) makes a list of discourse markers performing different functions in the texts. According to this list, discourse markers are used to: a) initiate discourse, b) mark a boundary in discourse, c) preface a response or a reaction, d) serve as a filler or delaying tactic, e) aid the speaker in holding the floor, f) effect an interaction or sharing between speaker and hearer, g) bracket the discourse either cataphorically or anaphorically, and h) mark either foregrounded or backgrounded information.

Cohesion

The coherent texts are sequences of sentences or utterances which seem to hang together— contain what are called text-forming devices. Halliday and Hason (1976) identified five different types of cohesion: (i) reference or referential cohesion, (ii) substitution, (iii) ellipsis, (iv) conjunction and (v) lexical cohesion.

There are two different ways in which reference items can function within a text. They are anaphoric and cataphoric ways. Anaphoric reference points the reader or the listener backwards to a previously mentioned entity, process or state of affairs. Cataphoric reference points the reader or the listener forward. Halliday and Hasan (1976) also identified three sub-types of referential cohesion: (1) personal reference (pronouns and determiners), (2) demonstrative reference (determiners and adverbs) and (3) comparative reference (adjectives and adverbs). Substitution occurs when some essential structural element is substituted. There are three types of substitution according to Halliday and Hasan (1976). They are: (1) nominal substitution, (2) verbal substitution and (3) clausal substitution.

Ellipsis occurs when some essential structural element is omitted from a sentence or clause and can only be recovered by referring to an element in the preceding text. There are three types of ellipsis according to Halliday and Hasan (1976). They are: (1) nominal ellipsis, (2) verbal ellipsis and (3) clausal ellipsis.

Conjunction signals relationship that can only be fully understood through reference to other parts of the text. There are four different types of conjunction: (1) adversative, (2) additive, (3) temporal and (4) causal.

Lexical cohesion occurs when two words in a text are semantically related in some way— in other words; they are related in terms of their meaning. According to Halliday and Hasan (1976), the two major categories of lexical cohesion are reiteration and collocation.

Coherence

The term 'coherence' is regarded as the link in a text that connects ideas and makes the flow of thoughts meaningful and clear for readers (Castro, 2004). Pearson, Roland & Speek, Barry Pennock (2005) states that coherence is an umbrella term for many aspects, such as the sequencing of events covered in the text, completeness of the actions or concept laid out in it and whether the text conforms to what we would expect from a piece of writing belonging to a given genre.

Framing Theory

Framing theory and the concept of framing bias suggests that how something is presented (the "frame") influences the choices people make. This idea is important because it is contrary to the central concept of rational choice theory. Communication itself comes with a frame. The elements of the communication frames include: a message, an audience, a messenger, a medium, images, a context, and especially, higher-level moral and conceptual frames. The choice of language is, of course, vital, but it is vital because language evokes frames — moral and conceptual frames. Frames form a system. The system has to be built up over time. It takes a long-range effort.

Concept of Framing

According to Reese (2007) , the value of the framing concept is to deliver a model that bridges parts of the field that need to be in touch with each other: quantitative and qualitative, empirical and interpretive, psychological and sociological, and academic and professional. If the most interesting happens at the edge of disciplines [...] then framing certainly has the potential to bring disciplinary perspectives together in interesting ways. Domingo and Heinonen (2008) define framing analysis as a research approach that analyzes message content in order to ascertain how the media represent a certain topic. They refer to frames as "conceptual tools which media and individuals rely on to convey, interpret, and evaluate information." Entman (1993) refers to this phenomenon as "cultural stock of frames." This has to be kept in mind by journalists or other individuals who apply frames in order to convey a certain messages. Framing devices include the word choice, metaphors, exemplars, descriptions, arguments and visual images. According to Robert Entman (1993), frames are manifested "by the presence or absence of certain keywords, stock phrases, and stereotyped images, sources of information and sentences that provide thematically reinforcing clusters of facts or judgements."

Framing Analysis as a Discourse Method

Frame analysis is a discourse analysis method that is principally concerned with dissection how an issue is defined and problematical, and the effect that this has on the broader discussion of the issue. Thus, framing analysis is a careful examination of the way concepts are associated within discourse.

Framing in CMC

Duranti (1986) looked at e-mail messages in order to investigate the problem "of achieving discourse continuity" and found that framing devices are used in the openings and closings of the messages in order to achieve inter-domain continuity, that is, "a concern for constructing a universe of discourse that would be linked to other domains of interaction, through other media (e.g. face-to-face conversation), and to other aspects of the social identity of the parents involved." Thus, Duranti (1986) found that "framing devices are used as a way to connect the immediately produced e-mail messages to the larger knowledge structures." The use of framing in language seems to be an especially useful method of understanding interaction in CMC.

3. Research Methodology

Data Collection and Data Analysis

Three hundred and fifty-seven e-mails received from two non-government working organizations were used for a data analysis. Data were classified into a correlation between participation structure and message style, identifying two distinct styles— public and private— as well as transitional style, termed "overhearing." A message is categorized as a public if it was sent to the entire team or to all but one member of the group. A message is classified as overhearing if there were two or three message recipients. Then, a message is considered as private if it was sent to only one individual. Table (1) shows the breakdown of data messages into public, overhearing and private addressed messages.

Table 1 Message Address Structure

Public	Overhearing	Private	Total
51	77	229	357
14%	22%	64%	100%

E-mail data from two non-government working organizations were voluntarily submitted by participants. All messages (public, overhearing and private addressed messages) were analyzed by the framing theory from the discourse analysis point of view by Halliday and Hasan (1976). In order to examine the use of discourse elements in e-mails, e-mail data were collected

sentence by sentence using five discourse elements of Halliday and Hasan (1976) and all the results were analyzed in term of percentage distribution.

4. Findings

This paper is aimed to explore the message style and organizational frames in the three types of e-mails (public, overhearing and private) sent at work. It is also aimed to identify the framing devices used in structuring and organizing e-mails and to investigate features of discourse which are important parts of the e-mail communication. All the results of this paper are analyzed in percentage distribution and are shown as follows:

1. The Message Style in E-mails Sent at Work

Table 2 The Use of Discourse Elements in E-mails

No.	Discourse Elements	Public		Overhearing		Private	
		Frequency	%	Frequency	%	Frequency	%
1	Reference	222	12	589	33	995	55
2	Substitution	-	-	-	-	-	-
3	Ellipsis	20	21	25	26	51	53
4	Conjunction	33	13	132	51	92	36
5	Lexical Cohesion	137	11	569	44	581	45

The amount of the use of reference in private messages style is the highest, 55%, 33% in overhearing style, and 12% in public style respectively. The participants use ellipsis mostly in creating private style (53%), 26% in overhearing style, and 21% in public style. The amount of the use of conjunction is the highest in overhearing style (51%), and 36% and 13% in private and public ones. The use of lexical cohesion is the highest in creating private message style (45%), 44% in overhearing message style, and the least in public one (11%). Surprisingly, the use of substitution is not found in all kinds of e-mails.

In order to examine the use of framing devices in e-mails, data were analyzed sentence by sentence by the use of the five framing devices by Entman (1993) and all the results were analyzed in term of percentage distribution.

2. The Framing Devices Used in in E-mails Sent at Work

Table 3 The Use of Framing Devices in E-mails

No.	Framing Devices	Public		Overhearing		Private	
		Frequency	%	Frequency	%	Frequency	%
1	Keywords	48	29	71	43	45	28
2	Stock Phrases	23	26	15	17	51	57
3	Stereotyped Images	134	14	375	40	432	46
4	Information Sources	38	10	238	60	117	30
5	Sentences that provide thematically reinforcing clusters of facts or judgements	141	11	446	36	655	53

The amount of the use of keywords is the highest in overhearing message style (43 %) and nearly the same amount in public and private ones, 29% and 28% respectively. The stock phrases are used mostly in creating private messages (57%), 29% in public style, and the least in overhearing one (17%). The participants use the highest amount of stereotyped images in writing private messages (46%), followed by the overhearing (40%) and the public ones (14%) respectively. The amount of information sources is 60% in overhearing messages, 30% in private and 10% in public ones. Fifty percent of sentences provide thematically reinforcing clusters of facts or judgements in private style, 36% in overhearing style, and 11% in public style.

The language use of the messages were identified according to the receivers, thus only overhearing and private messages were analyzed by the discourse features, as public messages mean the e-mails sent to all colleagues in a working organization. Therefore it is impossible to know both the e-mail recipients and their positions. In order to examine the use of discourse elements in e-mails depending on the receivers of the messages, all the data on the use of discourse elements depending on the receivers of the messages were analyzed in term of percentage distribution.

3. The Message Style of E-mails sent at Work Depending on the Receivers of the Messages

Table 4 The Use of Discourse Elements Depending on the Receivers of the Messages

No.	Discourse Elements	Manager to Manager		Manager to Assistant/ Supervisor		Assistant/Supervisor to Manager	
		Frequency	%	Frequency	%	Frequency	%
1	Reference	1537	97	26	2	21	1
2	Substitution	-	-	-	-	-	-

Table 4 (Continue)

No.	Discourse Elements	Manager to Manager		Manager to Assistant/ Supervisor		Assistant/Supervisor to Manager	
		Frequency	%	Frequency	%	Frequency	%
3	Ellipsis	76	100	-	-	-	-
4	Conjunction	218	97	6	3	-	-
5	Lexical Cohesion	1129	96	24	3	2	1

As the table above shows, the amount of the use of most discourse elements: reference, ellipsis, conjunction and lexical cohesion are the highest in the emails sent between managers to managers 97%, 100%, 97% and 96% respectively. In e-mails sent between managers to assistants/ supervisors, the amount of the use of reference is 2% and 3% for conjunction and 3% for lexical cohesion. There is no use of ellipsis in the messages of this kind. Only 1% of reference and 1% of lexical cohesion in the messages sent between assistant and supervisor to manager are found. The use of ellipsis and conjunction is not found in this message type. Substitution is not used in all types of emails.

5. Discussions

In this paper, the differences between the uses of discourse elements (discourse markers) have been investigated.

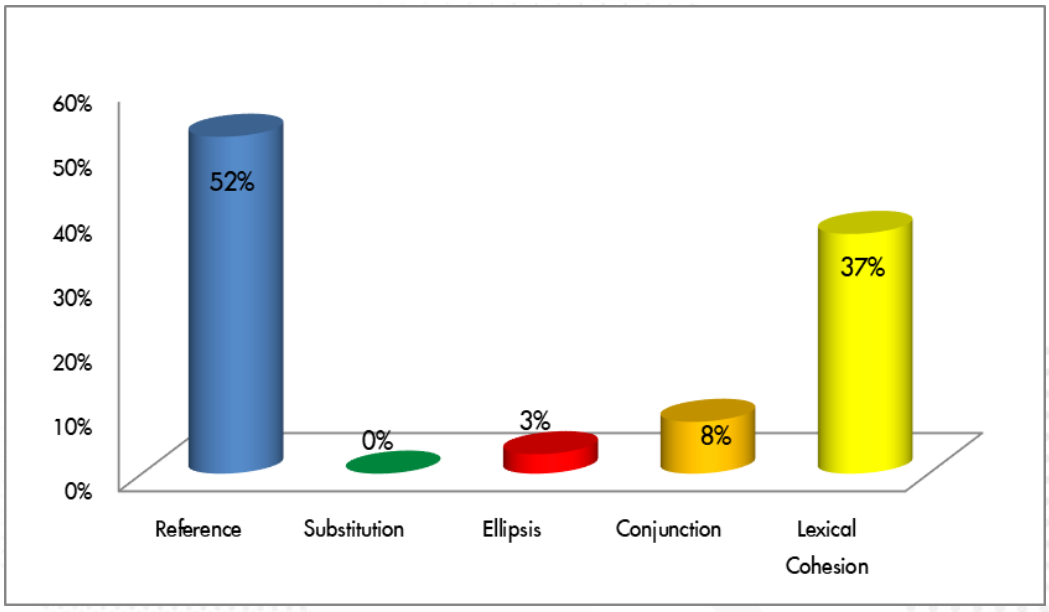

Figure 1 The Use of Discourse Elements in E-mails

The figure mentioned above (Figure 1) shows that among the three types of e-mails sent at work (public, overhearing and private), the amount of the use of reference (referential cohesion) is the highest because the senders want the massage receivers to understand their messages well and clearly. The second highest use is the amount of the use of lexical cohesion because lexical cohesion can provide an easy-to-determine context to aid in the resolution of ambiguity and in the narrowing to a specific meaning of a word. The use of conjunction is the third highest in e-mails because the use of conjunction can provide the message receivers with information with interpretation of the utterance. The use of ellipsis is found the least in all e-mails because the use of it can make the message-receivers to understand the meaning of the message contextually and mutually. Surprisingly, there is no use of substitution in all e-mails. Not using substitution can avoid missing information.

The use of five framing devices is also analyzed to know how the participants organize and structure their e-mails.

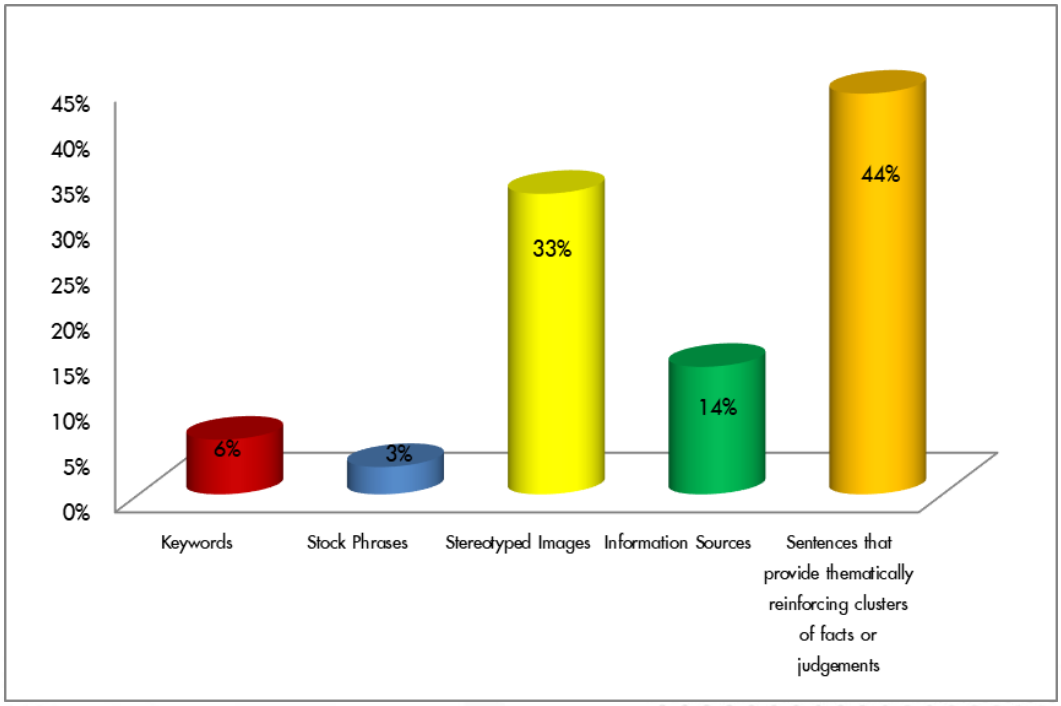

Figure 2 The Use of Framing Devices in All Types of E-mails

Figure 2 shows the use of framing devices in all types of e-mails (public, overhearing and private). Keywords, stock phrases, stereotyped images, information sources and sentences that provide thematically reinforcing clusters of facts or judgements are used in e-mails. These framing devices are used in writing e-mails to make the message receivers easier in interpreting the messages.

Once the participants have established attention to the audience, they proceed to pay attention to the social relationship by choosing to compose the messages in a particular style, appropriate to the message recipient structure.

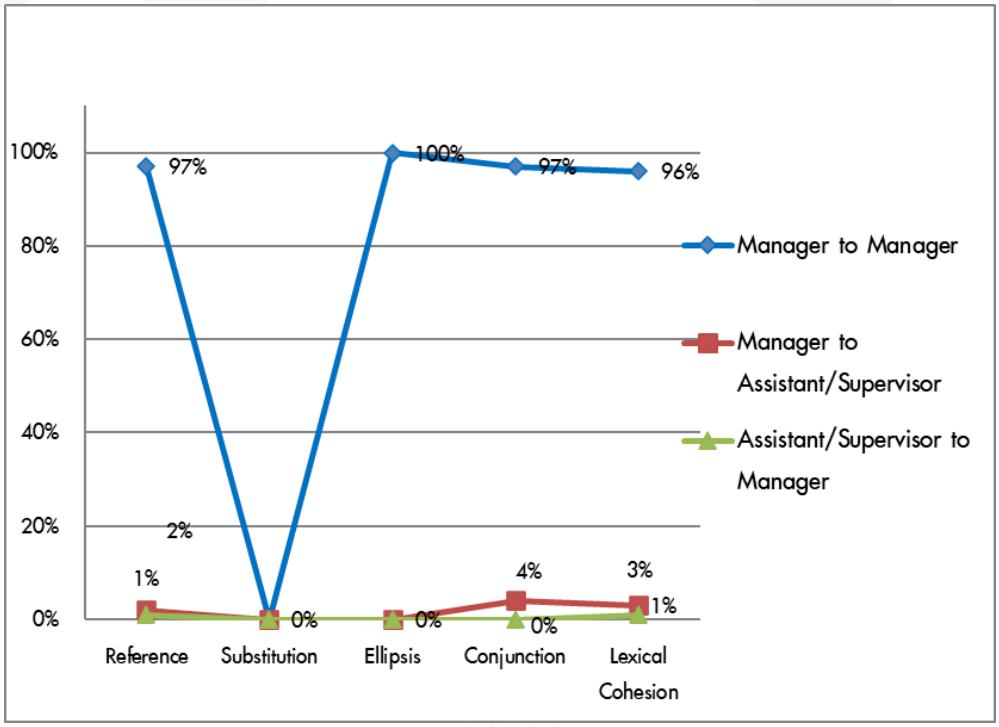

Figure 3 The Use of Discourse Elements depending on the Receiver of the E-mails

The participants sent more e-mails to those of the same rank than other ranks. It means managers mostly send e-mails to managers, and send only few of e-mails to their assistants/supervisors and vice versa. Also, the language use and style of the e-mails are used depending on the audience of the message. The messages sent among the same rank (between managers to managers) contain the largest amount of discourse markers (reference, ellipsis, conjunction and lexical cohesion).

6. Conclusion

Based upon the framing theory as a discourse method, structural components of e-mails sent among two working communities are analyzed organizationally in order to frame the content of the messages. There are stylistic differences between three types of messages (public, overhearing and private) depending on the amount of the use of discourse elements (reference, substitution, ellipsis, conjunction and lexical cohesion). This finding shows the use of e-mails to correspond on a daily basis at work and what elements are used most to create different types of e-mails (public, overhearing and private). There are differences between the uses of framing

devices in each e-mail types. The overhearing messages contain the highest of two framing devices: the use of keywords and sources of information. And the use of the rest: stock phrases, stereotyped images and sentences that provide thematically reinforcing clusters of facts or judgements are used the most in private e-mails.

The stylistic differences that appear to correlate with the participation framework depending on the audience of the message indicate that the e-mail senders are paying closely attention to the social relationship underlying the e-mails they sent. This demonstrates that even among the same group of people, e-mail writers change their message style and the language use according to the audience of the message. And the e-mail senders send most of their e-mails to those who have the same rank with them. An awareness of the message styles and organizational styles in e-mails can possibly promote effective language use at work. A discourse analysis of e-mails sent at work can highlight prominent features which can also assist in language studies for teachers and students of English.

7. References

Brinton, L.J. (1996*). Pragmatic markers in English: Grammaticalization and discourse functions*. Berlin & Newyork: Mouton de Gruyter.

Castro, C.D. (2004). *Cohesion and the Social of Meaning in the Essay of Philiphine College Students' writing in L2/English*. Asia Pacific Education Review//5 (2). pp. 215-225

Crystal, David (2001). *Language and the Internet*. Cambridge: Cambridge University Press

Domingo, David & Heinonen, Ari (2008). *Weblogs and Journalism. A Typology to Explore the Blurring Boundaries*. In Nordicom Review, 29 (2008) 1, pp. 3-15.

Duranti, A. (1986). Framing discourse in a new medium: Openings in electronic mail. *The Quarterly Newsletter of the Laboratory of Comparetive Human Cognition*. (pp. 64-71)

Entman, R. (1993). Framing: Toward clarification of a fractural paradigm. *Journal of Communication.*

Halliday, M. A. K. and R.Hason. (1976). *Cohesion in English*. London: Longman.

Müller, S. (2005). *Discourse markers in native and non-native English discourse*. John Benjamins Publishing. Retrieved from: https://benjamins.com/catalog/pbns.138

Pardubová, K. (2006). *Language of the Emails: Forms of Spoken and Written Language*. Masaryk University in Brno Faculty of Arts Department of English and American Studies. Retreived from: https://is.muni.cz/th/e7bb5/Bakalarska_prace._Language_of_the_Emails.pdf

Pearson, Roland, and Speck, Barry Pennock. (2005). *Coherence in English Essay Written by NonNative Students of Sociology*. Quarders de Filologia Estudies Linguistics. Vol. 10. pp. 261-278

Reese, S. D. (2007). *The framing project: A bridging model for media research revisited*. Journal of Communication, 57, pp. 148–154.

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Motivational Strategies Used by EFL Teachers in Myanmar

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Abstract

In the twenty first century, the use of motivational strategies in the EFL classrooms plays a pivotal role for teachers in many contexts worldwide. The inability of many EFL learners to motivate themselves or to be motivated by their teachers can be attributed to many factors that are beyond the control of the individual learner. Nowadays, many researchers had conducted many researches related to analyzing the importance of the use of motivational strategies for motivating learners to learn their lessons in their classroom. In order to stimulate learners' motivation in their learning processes, the motivators or teachers across the world had been utilizing a wide range of motivational strategies based on the needs of learners. This paper was to explore the familiarization of EFL teachers with a set of strategies for motivating foreign language learners. In the present study, there was seventy-six participants rated the fourty eight strategies comprising ten clusters according to a modified replication of Cheng and Dornyei's (2007) study. The research reveals that the teachers did not effectively utilize motivational strategies, except for proper teacher behaviour, recognition of students' effort, promotion of learners' self-confidence and presenting tasks properly. Finally, teachers' motivational strategies were shown to be grounded in traditional teacher-centered approaches rather than the promotion of learners' ownership of learning. Moreover, the most favored strategies among EFL teachers in Myanmar are mainly related to the teacher's personal performance in the classroom.

KeyWords : Learners' Motivation, Motivational Strategies, EFL Teachers' Motivational Strategies

1. Introduction

Motivation has been regarded as one of the most important factors which affects in teaching learning a foreign language or determines learners' language learning achievement. Most of the teachers or motivators believed that without sufficient motivation, materials, and methods, teaching or learning will not be successful in their classroom practices. So, it is responsible for a teacher to generate learners' learning engine smoothly, coherently, and successfully. According to Dornyei, 2001, Pg. 27, motivational strategies are techniques that promote the

individual's goal-related behaviour. There are many diverse ways to motivate learners' involvement in the classroom practices. Additionally, the teachers, the learners, and the materials are the most indispensable elements in teaching a foreign language. A number of studies analyzed and described motivational strategies concerning the practices of EFL teachers in classroom. This paper presents the results of obtaining data on motivational strategies employed by EFL teachers in Myanmar context.

1.1 Motivational Strategies

Motivation has a significant role in the L2 learning process (e.g., Dornyei, 1994), leading many researchers to investigate the strategies which might generate and maintain learners' motivation in EFL classrooms. Many previous studies of motivational strategies have examined the views of either EFL teachers or learners and the relationship between teachers' use of such strategies and learners' motivated behaviour. According to Al-Mahrooqi, Abrar-ul-Hassan, & Asante (2012), EFL practitioners often employ traditionally recognized motivational strategies in the classroom, although there is no limited theory to the number of possible strategies. Based on the background of the learners and teachers' professional experiences, a teacher would employ strategies that are appropriate for his/her language classroom, or even to the teaching of any subject. Sometimes, the use of motivational strategies available for EFL teachers are formulated from research findings. Learner motivation becomes one of the best sources to move forward language-learning mechanism coherently.

1.1.1 Setting Proper Teacher Behaviour (Source: Cheng & Dornyei, 2007)

Education goal is not to produce higher exam scores, but to educate learners to become responsible people with good character and well-developed mind. In relation to such fact, the teacher-learner interaction in connection to teacher's behaviour in learners' motivation practice is particularly important. The teachers should perform positive roles in motivating the learners during classroom interaction. In order to motivate learners, teachers should be a role model for them by showing them that they care about their learning progress, demonstrating enthusiasm for teaching and cultivating rapport with them.

1.1.2 Recognizing Students' Effort and Celebrating their Success (Source: Cheng & Dornyei, 2007)

Believing in learners and letting them know teachers have confidence in their ability can be one of their greatest motivations. Celebrating learners' success not only makes learners feel good but also significantly impacts on their memory, learning, motivation, and other cognitive functions. When learners receive positive feedback for something that they have performed, it is essentially a signal to their brain saying, 'do it again'. A teacher's recognition of learners' effort and celebration of their success shows how much she/he cares about their progress and helps establish good rapport. It is also a duty for a teacher to recognize learners' effort constantly inside

or outside of the classroom. Having a good rapport between teachers and learners is an essential need for teaching learning context.

1.1.3 Promoting Learners' Self-confidence (Source: Cheng & Dornyei, 2007)

Self-confidence was found to be positively and significantly correlating with motivation to accomplish things, motivation to experience stimulation, regulation, identification, and introjection. Without having self-confidence, learners could not perform the classroom tasks successfully. For example: losing self-confidence means the ability of losing something to perform very well. Positive feedback lessens stress and encourages learners to learn harder. In order to help them try harder, teachers have to equip learners with the right strategies. Stressing positive feedback could lead to the impression that errors are viewed as a developmental stage in the learning process rather than as failure to learn. Thus, it is important to promote learners' self-confidence for a teacher in the classroom context.

1.1.4 Creating a Pleasant Classroom Climate (Source: Nunan, 1989)

When teachers create a positive classroom atmosphere, every learner learns their lessons better in the class in order for maximum learning to take place. A relaxed classroom environment does not just happen, but the teacher creates it. A motivating classroom environment of the learning context can be enhanced through the language teachers. Besides, well-designed tasks can serve this function. According to Nunan (1989), tasks have to be designed to involve the learner in risk-taking behavior and should have a built-in component of evaluation that allows learners to assess their own progress and success without depending on the teacher. In addition, making a pleasant and enjoyable classroom situation has a positive impact on enhancing learners' motivation.

1.1.5 Presenting Task Properly (Source: Kubanyiova, 2006)

Teachers can do so much to help learners increase their commitment to tasks. Sometimes, teachers are setting up their tasks quickly without much thought to learners' motivation. Presenting tasks in this way may seem a lot of work but getting learners to engage fully with one task can help improve their self-image as learners more generally and build motivation. Tasks are crucially important because they are the behavioral blueprints designed to elicit linguistic data (Singh, 2006). Hence, it is clear that presenting tasks in a meaningful and appropriate way plays a pivotal role in how students will tackle them.

1.1.6 Increasing the Learners' Goal-orientedness (Source: Hsieh, Cho, Liu, and Schallert, 2006)

One of the motivational factors that is presumed to be an important predictor of learners' learning processing is goal achievement orientation. Goal orientation is simply defined as a factor that reflects the reasons of learners to engage in learning achievement. Having examined the interaction effects between goal orientations and self-efficacy on middle school

students' science achievement when engaged in a technology-enhanced learning, Pei-Hsuan Hsieh, Cho, Min Liu, and Schallert (2006) revealed that students' performance and self-efficacy increased significantly while the performance-approach and performance-avoidance goals significantly decreased.

1.1.7 Making the Learning Tasks Stimulating (Source: Tremblay & Gardner, 1995)

Teachers all know that if they make lessons fun, enjoyable and interesting, they can help motivate their learners. This is because memories of enjoyable learning experiences help learners to predict positive outcomes. Motivational teaching is not about general principles, but about practical day-to-day steps which should take as teachers. And by understanding of the factors that lie behind motivation, teachers can create trusting classroom relationships with learners. Stimulating tasks take learners' interests into account, and learners' interests are closely connected to their lives. Engaging tasks are also adequately but not overly challenging.

1.1.8 Familiarizing Learners with L2-related Values (Source: Dornyei, 1990)

Primarily concerning the role of the teacher, the L2-related values play an important role in English language teaching (ELT). Familiarizing learners with L2-related values is suitable in contexts where integrative motivation to language learning is found among learners. However, the previous research in these contexts have shown teachers did not feel that this strategic area was very important. Also, a considerable proportion of teachers may have considered this aspect irrelevant to their learners' academic objectives, and hence could be less inclined or prepared to emphasize the cultural background of the target language. So, EFL teachers much more needed to introduce their learners to its cultural background associated with L2 by using various authentic materials or giving chance to get exposure with native speakers, etc. It is also important to enhance the awareness of values associated with the knowledge of L2 in some extent.

1.1.9 Promoting Group Cohesiveness (Source: Dornyei and Malderez, 1997)

In English language teaching, group cohesiveness has to do with the idea of creating a bond between learners, fostering a cooperative learning atmosphere, and encouraging learners to be performed to their own and their peers' learning. It is noted that it is difficult for language teachers to enhance group cohesiveness of learners at any situations, but it is possible to make it grow in some way. There is no definite formula to make a group cohesive. According to Dornyei and Malderez (1997), if utilized effectively in the language class, groups can have many advantages such as accomplishing tasks more effectively and adjusting the learners' behaviors and attitude by providing guidelines and standards against which group members may assess their beliefs and actions. Thus, teachers who are more conscious of the importance of groups are more likely to produce positive effects in language learning.

1.1.10 Promoting Learner Autonomy (Source: Gremmo & Riley, 1995)

Autonomy means the ability to take control of one's own learning, independently or in collaboration with others. Autonomy is related to student-centeredness where the teacher plays the role of facilitator and the learner is responsible for her/his own learning. Learner training in the classroom encourages autonomy and is an important element of language teaching. This is a goal that is becoming increasingly recognized in the contemporary EFL classroom. Moreover, EFL teachers much more needed to introduce their learners to its cultural background associated with L2 by using various authentic materials or giving chance to get exposure with native speakers, etc. It is important to enhance the awareness of values associated with the knowledge of L2 in teaching learning process.

1.2 Rationale of the Study

Positive attitudes to a target language have been associated with a strong impetus for language competence (Dornyei, 2001). In the EFL context of Myanmar, there are unique challenges that face the English language teachers with regard to learners' motivation. EFL learners normally learn English for utilitarian reasons such as meeting university requirements, university-admission requirements, or the increasingly competitive requirements of the private-sector jobs. On the other hand, the national language of Myanmar is indisputably Myanmar, which is held in very high esteem by the citizenry. Not only Myanmar is the official language of government business, but it is also the language spoken in Myanmar. It is the main failure of Myanmar EFL learners to achieve adequate levels of bilingual proficiency in Myanmar and English in terms of the two cultures as well as to linguistic differences between the two languages. Thus, it is important for a teacher to be a motivating learner with positive attitude in learning a second language. A good teacher recognizes that learner motivation is necessary for success of language teaching and learning process. All in all, the fact that teachers are in perfect position to improve learners' motivation and the motivating behaviours of English language teachers in Myanmar are examined in this paper is the main reason to conduct.

1.3 Aim of the Study

In dealing with the subject of motivation in the foreign language classroom, we will briefly examine a variety of strategies which teachers can employ in order to motivate their learners. As Dornyei (2001: Pg116) notes, "teacher skills in motivating learners should be seen as central to teaching effectiveness". Thus, our main goal is to explore the familiarization of EFL teachers with a set of strategies for motivating foreign language learners. Thus, the specific objective of this paper is to investigate to what extent EFL teachers used motivational strategies effectively and appropriately in their teaching practice.

2. Methodology

This study looked into English as a Foreign Language (EFL) teachers' use of their motivational practices in the actual classroom in Myanmar universities. A total of 76 (13 males and 63 females) teachers of English who are teaching in a variety of institutional contexts and 30 universities were selected for this survey from the various regions (upper and lower) of Myanmar. Participants filled out a questionnaire consisting of forty-eight motivational strategies in terms of ten clusters that were based on a five-point Likert scale by rating according to the options: (1=Never 2=Rarely 3=Sometimes 4=Often 5=Always). This was necessitated by the fact that an overwhelmingly large proportion of Myanmar learners attend government universities which follow the same curriculum as regulated by the Ministry of Education. Participants responded the questionnaire in the presence of the researchers or by e-mail. Their teaching experience ranged from 1 to above 35 years ago. In order to avoid confusion, the demographic data of participants is provided in Table 1.

Table 1 Demographic data of participants (n=76)

Sr No.	Universities	No. of Universities	Male	Female	No. of Participants
1.	Upper Myanmar	24	12	54	66
2.	Lower Myanmar	6	1	9	10
	Total	30	13	63	76

2.1 Research Instruments

The current study has attempted to avoid potential pitfalls through minor modifications to the original questionnaire used by Cheng and Dornyei (2007). For instance, there is a few modifications on 5-point Likert scale. Twenty EFL teachers participated in the pilot survey to test the validity of the questionnaire and elicit opinions about the clarity and comprehensibility of the questionnaire items, and their responses and comments were taken into account in modifying the questionnaire. The researchers also included a section which asked for participants' demographic information such as gender and years of teaching experience. Though this extra information was not a part of the original questionnaire, it is hoped that demographic data might have a positive relationship with the teachers' use of motivational strategies.

2.2 Procedure

The researchers retained all forty-eight items of each of the replicated study. Some modification was made from the instrument used in original one. Besides, participants were asked to rate the motivational strategies on a 5-point Likert-type scale. The researchers generate a standardized score to define the use of motivational strategies more clearly and distinctly on the

motivation Likert scales. So, it is important to note that the numbers (1-5) assigned to the response scales have their respective value. Individual responses would be given confidential.

2.3 Data Analysis

It should be recalled that this study seeks answers relating to the use of motivational strategies. The 48 strategies were put into 10 clusters which Cheng and Dornyei (2007) categorized according to content similarity. After collecting the data, the mean and standard deviation for each item was calculated by Microsoft Excel to obtain the outcomes of the use of motivational strategies. Besides, the data were analyzed by using standardized scores on a 5-point Likert scale developed by researchers to become more apparent. The following table 2 describes the data set of each motivational strategy and their related clusters of EFL teachers in Myanmar holistically. To be a better understanding, the following 48 motivational strategies are quoted as MS1 to MS48 respectively as follows in table 2:

Table 2 EFL teachers' responses towards the use of 48 motivational strategies (n=76)

Sr No.	Clusters	Strategies	Results Sorted (Largest to Smallest)			
			N	Mean	SD	Meaning
1	Proper teacher behaviour	MS47		4.08	1.02	Often
		MS 40		3.95	1.75	Often
		MS 17		3.92	0.98	Often
		MS 2		3.91	1.31	Often
		MS 23		3.50	0.90	Sometimes
		Total	5	19.36	5.95	
		Average Mean		3.87	1.19	Often
2	Recognize students' effort and celebrate their success	MS 46		4.09	0.91	Often
		MS 15		3.59	0.96	Often
		MS 8		3.36	0.97	Sometimes
		MS 42		3.18	0.90	Sometimes
		Total	4	14.22	3.74	
		Average Mean		3.56	0.93	Often
3	Promote learners' self-confidence	MS 34		4.09	1.79	Often
		MS 28		4.07	1.02	Often
		MS 11		3.54	0.99	Often
		MS 33		3.30	1.22	Sometimes
		MS 36		3.22	1.17	Sometimes
		Total	5	18.22	6.20	
		Average Mean		3.64	1.24	Often

Table 2 (Continue)

Sr No.	Clusters	Strategies	Results Sorted (Largest to Smallest)			
			N	Mean	SD	Meaning
4	Creating a pleasant classroom climate	MS 41		3.55	1.27	Often
		MS 21		3.47	0.73	Sometimes
		MS 30		3.38	1.08	Sometimes
		MS 1		2.96	0.72	Sometimes
		Total	4	13.37	3.80	
		Average Mean		3.34	0.95	Sometimes
5	Present tasks properly	MS 6		4.21	1.49	Often
		MS 25		3.36	0.73	Sometimes
		Total	2	7.57	2.22	
		Average Mean		3.78	1.11	Often
6	Increase learners' goal-orientedness	MS 10		3.85	1.27	Often
		MS 20		3.61	0.94	Often
		MS 26		2.93	1.20	Sometimes
		MS 31		2.46	1.02	Rarely
		Total	4	12.86	4.42	
		Average Mean		3.21	1.11	Sometimes
7	Make the learning tasks stimulating	MS 12		3.62	0.81	Often
		MS 13		3.50	0.80	Sometimes
		MS 45		3.42	0.96	Sometimes
		MS 27		3.14	1.19	Sometimes
		MS 18		3.12	0.88	Sometimes
		MS 43		3.05	1.09	Sometimes
		Total	6	19.86	5.74	
		Average Mean		3.31	0.96	Sometimes
8	Familiarize learners with L2-related values	MS 38		3.76	1.58	Often
		MS 4		3.67	1.13	Often
		MS 39		3.63	1.40	Often
		MS 9		3.47	1.02	Sometimes
		MS 32		3.03	1.16	Sometimes
		MS 7		2.33	1.13	Rarely
		MS 19		2.12	1.86	Rarely
		Total	7	22.01	9.28	
		Average Mean		3.14	1.33	Sometimes

Table 2 (Continue)

Sr No.	Clusters	Strategies	Results Sorted (Largest to Smallest)			
			N	Mean	SD	Meaning
9	Promote group cohesiveness and group norms	MS 44		3.71	0.85	Often
		MS 3		3.55	0.96	Often
		MS 5		3.21	0.93	Sometimes
		MS 35		3.20	1.23	Sometimes
		MS 16		2.59	1.27	Sometimes
		Total	5	16.26	5.24	
		Average Mean		3.25	1.05	Sometimes
10	Promote learner autonomy	MS 37		3.50	1.28	Sometimes
		MS 24		3.47	0.88	Sometimes
		MS 48		3.42	0.86	Sometimes
		MS 14		3.34	0.78	Sometimes
		MS 29		2.97	1.08	Sometimes
		MS 22		2.37	1.55	Rarely
		Total	6	19.08	6.43	
		Average Mean		3.18	1.07	Sometimes

Rating Scales: Always = 4.51-5.00, Often = 3.51-4.50, Sometimes = 2.51-3.50, Rarely = 1.51-2.50, Never = 1.00-1.50

Most of the motivational strategies are appropriately used only in sometimes. A significant finding is that, the teachers value the role of motivational strategies which create demonstrating proper teacher behaviour, presenting tasks properly and building their learners' self-confidence. The most interesting finding regarding this cluster "Proper teacher behaviour" (mean=3.87) ranked first in this study.

According to the responses on Cluster 3, learners are encouraged to communicate by providing them with positive feedback on their utterances. Among 10 clusters, cluster 4 "Creating a pleasant classroom climate" was a basic need for EFL teachers to motivate and stimulate learners' motivation. Making a pleasant and enjoyable classroom situation has a positive impact on enhancing learners' motivation. The importance of these characteristics appears to be endorsed by the participants in this study in spite of the cultural divide (Mean=3.34). Cluster 5 also ranked second highly in this study. In Cluster 5, participants responded that tasks are likely to motivate learners and encourage their language learning There was agreement among the teachers in Myanmar context regarding the importance of this strategy, despite the variety of participants, especially in Myanmar. Effective tasks can offer some challenge but arouse interest for learning. The Cluster 6 displays the class goals in a wall chart and review it regularly was ranked the

lowest in this cluster. In this study, this strategy on Cluster 8 is the lowest-ranked strategies. However, taking the mean value of this strategy into consideration (i.e., 3.14), we can easily see that the participants in the Myanmar context do not really regard the strategies as unimportant. In fact, the mean of this cluster is not very low. In terms of result, participants' responses indicate that it is important to enhance the awareness of values associated with the knowledge of L2 to some extent. After calculation, the overall outcomes of 48 motivational strategies comprising 10 clusters employed by EFL teachers in Myanmar, it was found that the overview outcome responses were "Sometimes" and "Often". Additionally, the only four items in the strategies which have the meaning "rarely" by the participants.

3. Results

In the current study, the data obtained yielded some interesting findings. The use of motivational strategies has been examined in the Myanmar university context with EFL teachers. The results show that the top three broad strategies include proper teacher behaviour (mean=3.87), presenting tasks in a motivational way (mean=3.78) and building self-confidence (mean=3.64) respectively. Familiarization of learners with L2-related values (mean=3.14), promoting learner autonomy (mean=3.18) and increasing learners' goal-orientedness (mean=3.21) are the least used in Myanmar context. The following figure 1 highlights the descriptive statistics sorted by the largest to smallest rank order of 10 clusters to have a clear and vivid understanding of the results.

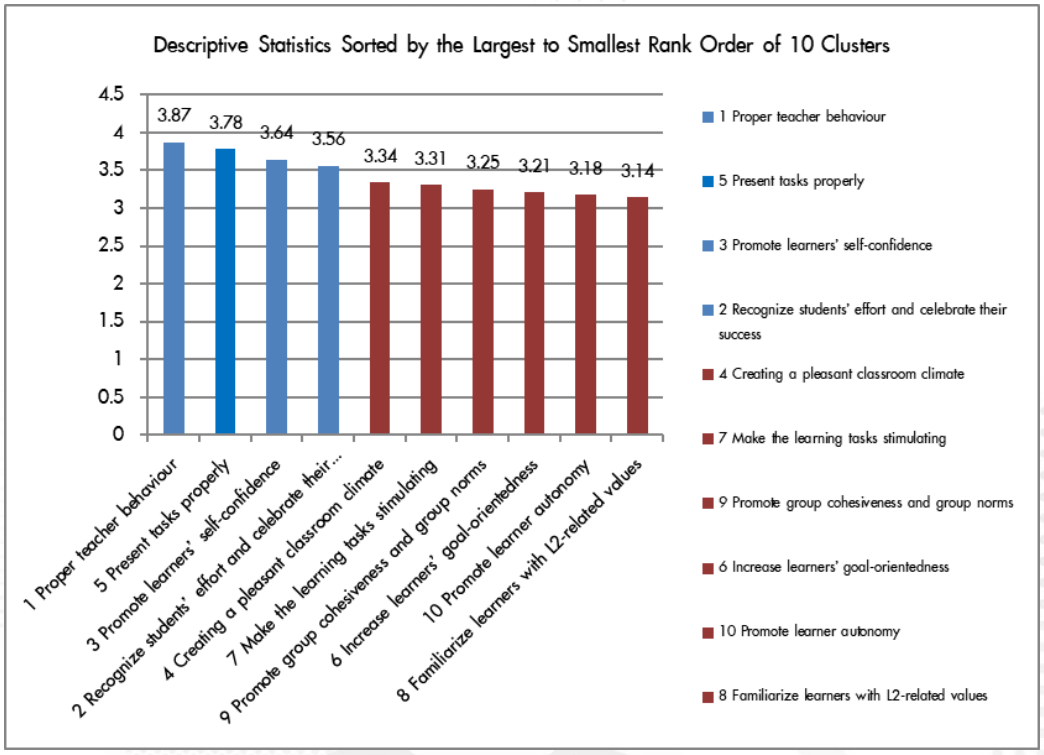

Figure 1 Descriptive statistics sorted by the largest to smallest rank order of 10 clusters

It was commonly found that EFL teachers in Myanmar were more or less utilizing motivational strategies in their classroom contexts. By regarding the data, EFL teachers in Myanmar knows the effect or role of using motivational strategies in their teaching context to achieve learners' motivation for their learning process. Teachers' behaviour have a great impact on the learners to develop their learning motivation in the classroom. According to the results, EFL teachers in Myanmar actually believed that selecting the tasks is very crucial one for the success of learners clearly. In terms of result, it is also recognized that it is important to enhance the awareness of values associated with the knowledge of L2 to some extent. The outcome shows that it is important to encourage learners to assess each other or allow learners' peer correction or peer teaching effectively in EFL context. EFL classes in Myanmar are more teacher-centred than student-centred, and most language learners are more dependent on the teachers in this culture.

4. Discussion

This study has attempted to shed some light on the extent to which motivational strategies that have been tried and employed by EFL teachers in Myanmar. The participants in this study were EFL teachers in selected Myanmar universities. It has explored to find the perceptions of the teachers about the use of specific motivational strategies which they employ in the classroom. The most prominent of the motivational strategies endorsed by EFL teachers in Myanmar are related to the teachers' personal performance in the classroom while "familiarise learners with L2-related values" was ranked as the least one by the participants. According to the results, Myanmar EFL teachers needed much more to introduce their learners to its cultural background associated with L2 by using various authentic materials or giving a chance to get exposure with native speakers, etc. Moreover, teaching a language and knowing its cultural background give learners a reason to study foreign language meaningfully. The outcome also shows that it is still needed to promote learners' autonomy by EFL teachers in Myanmar. In comparison with the previous studies, there are similarities between studies as well as some differences between strategies across the culture context or background situation of a classroom or a country. Through the pilot survey, their responses and comments indicate that in order to enhance EFL learners' motivation in the classroom practice fully, teachers should employ motivational strategies effectively and appropriately. In addition, demographic information suggests teachers' professional experience is considered as the main channel for providing enough guidance on the effective use of motivational practices in the classroom. The choice of motivational strategies used by teachers should depend on the learners' needs and some cultural background situation or individual experience of the teachers in the context. It is needed to help EFL teachers enhance the Myanmar EFL learners' motivation in teaching learning practice. Besides, the results point out that EFL teachers should be a good motivator to achieve learners' successful learning goal in their classroom context. According to the data,

teachers' use of strategies is still needed to achieve adequate level of learners who are well participated in their learning context for promoting a pleasant and supportive classroom atmosphere.

4.1 Limitations

In this paper, data collection method is based on self-reporting by the participants, and thus, participants are subject to the inherent limitations of self-reporting. A combination of questionnaires and observations of actual classroom practice could provide more reliable measurements with which teachers employ each strategy. Furthermore, it may never be known whether any of the participants could have been influenced by a desire to speak, and given high ratings to many of the strategies simply because the researchers might expect all EFL teachers to routinely employ them.

4.2 Implications for Classroom Practice

Some EFL teachers, especially novices, may be unaware of a wide range of potential motivational strategies and even those who are aware of these strategies are sometimes unsure which ones to choose. The present study has the potential to stimulate or increase the sensitivity of novice EFL teachers and teacher trainers, particularly in Myanmar, to these strategies, highlighting those considered used most frequently by a representative sample of EFL teachers. In the present study, the results found in this paper were showing that teachers care about learners, which highlights the importance of the teacher-learner relationship. The implication of this understanding is that teachers should demonstrate to learners that they care about their learning process. Also, the results give additional guidance higher education administrators and authorities that teacher-training programs need to emphasize this aspect and offer appropriate guidance to trainees. In addition, the researchers recommend that the further study dealing with learners' gender differences, levels and age which can impact on the use of motivational strategies in teaching learning environment should be conducted.

5. References

Al-Mahrooqi, R., Abrar-ul-Hassan, S. & Asante, C. (2012). Analyzing the use of motivational strategies by EFL teachers in Oman. *Malaysian Journal of ELT Research, Vol. 8 (1),* pp. 36-76. www.melta.org.my

Banya, K., & Cheng, M. (1997). Beliefs about foreign language learning: A study of beliefs of teachers' and students' cross-cultural settings. *Paper presented at the 31st TESOL Convention* (Orlando, FL, March 11-15, 1997).

Cheng, H. F., & Dornyei, Z. (2007). The use of motivational strategies in language instruction: The case of EFL Teaching in Taiwan. *Innovation in Language Learning and Teaching*, 1(1), 153-174.

Dornyei, Z. (1990). Conceptualizing motivation in foreign language learning. *Language Learning*, 40, 46-78.

Dornyei, Z. (1994). Motivation and motivating in the foreign language classroom. *The Modern Language Journal*, 78, 273-284.

Dornyei, Z., & Malderez (1997). *Group Dynamics and Foreign Language Teaching System*, 25(1), 65-81.

D**Ö**rnyei, Z. (2001). *Teaching and researching motivation*. Harlow, England: Pearson Education.

Gremmo, M. & Riley, P. (1995). *Autonomy, Self-direction and Self-access in Language Teaching and Learning: The History of an Idea. System*, 23(2), 151-164.

Kubanyiova, M. (2006). Developing a motivational teaching practice in EFL teachers in Slovakia: Challenges of promoting teacher change in EFL contexts. TESL-EJ, 10(2).

Nunan, D. (1989). *Understanding language classrooms: A guide for teacher-initiated action.* London: Prentice-Hall.

Pei-Hsuan Hsieh, P., Cho, Y.J., Liu, M., & Schallert, D.L (2006). Examining the interplay between middle school students' achievement goals and self- efficacy in technology-enhanced learning environment. *Journal of Interactive Learning Research*, 17(3), 225-242.

Singh, D. (2006). Critical task from creative texts. In J. Mukundan (Ed.) *Creative Writing in the EFL/ESL Classroom II.* Malaysia: Pearson Longman.

Tremblay, P., & Gardner, R. (1995). Expanding the motivation construct in language learning. *The Modern Language Journal*, 7(4), 505-518.

Perceptions of English Specialization Students and Teachers at Undergraduate Level on Classroom Assessment Practices in Myanmar

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Abstract

Using classroom assessment, in other words, providing faculty with information on what, how much and how well students are learning. Thus, this study sheds light on the extent to which the daily lessons and assessment approaches help students apply the concepts outside the walls of the university rather than the idea to teach students to the test. First, because students' perceptions of assessment will affect their learning approach (as argued in the literature) which will affect in turn the extent to which students are successful in their classrooms. Second, integrating teachers' perceptions will build a foundation and rationale for the assessment practice they use in their classrooms, through which one can learn to what extent and in what ways students' perceptions of classroom assessment impacts their learning. Thus, primary aim of this study is to explore students' perceptions of classroom assessment in Myanmar Higher Education context. A secondary purpose is to explore the faculty members' perceptions of classroom assessment and their expectations of students' learning. This study examines what assessment approaches are being used in Selected Higher Education Institution.

KeyWords : English Specialization Students, Teachers at Undergraduate Level, Classroom Assessment Practices, Myanmar

1. Introduction

Goodrum, Hackling, and Rennie (2001) assert that "an assessment is a key component of teaching and learning process" (p. 2). This means that teachers use "a very narrow range of assessment strategies and in practice; however, little evidence exist that teachers actually use formative assessment to inform planning and teaching" (Goodrum et al., 2005, p. 2). They state that, ideally, assessment "enhances learning, provides feedback about student progress, builds

self-confidence and self-esteem, and develops skills in evaluation" (p. 2). Since limited literature exists about students' perceptions of assessment, this study contributes to the area of classroom assessment, particularly, in the context of Myanmar. The study contributes to the area of teaching and assessment, exploring various approaches of assessment in relation to students' learning; raising awareness about different paradigms of classroom assessment, in particular introducing a shift from conventional approaches to the alternative methods; and advocating for students' involvement in the process of developing assessment tools/instrument. This study sought to understand the meaningfulness of classroom assessment through students' lenses, as well.

1.1 Classroom Assessment

Assessment labeled as the outcome of the 20th century, has been defined variously in the literature. Among the many, Linn and Miller (2005) define assessment of student learning as a systematic process of collecting information about student progress towards the learning goals. Similarly, Dhindsa et al. (2007) characterize assessment as a key component of teaching and learning, "a systematic process of data gathering" about students' progress (p. 1261). They maintain that students' performance can be measured in various ways, including "traditional paper and pencil tests, extended responses (essays), performance of authentic task, teacher observation, and student self-report" (Linn & Miller, 2005, p. 26). According to William and Thompson (2008), Scriven (1967) proposed the terminology "formative" and "summative" assessment, given the reason to differentiate the role of evaluation. Formative assessment is introduced as an ongoing process of evaluating students' learning, providing feedback to adjust instruction and learning, improving the curriculum (2008). Summative assessment, on the other hand, is bound to administrative decisions and assigning grades to the tests. Assessment in general accounts for "supporting learning (formative), certifying the achievement or potential of individuals (summative), and evaluating the quality of educational institutions or programs (evaluative)" (Wiliam, 2008, p. 59). Black and Wiliam (1998) put more emphasis on the use of assessment to support learning; however, they also acknowledge the importance of using assessment for certification and evaluation.

1.2 Students Perceptions of Assessment Questionnaire (SPAQ)

Dhindsa, Omar and Waldrip (2007) found that SPAQ was a suitable instrument for assessing students' perceptions on five assessment dimensions: congruence with planned learning (CPL), assessment of applied learning (AAL), students' consultation on assessment (SCA) types, transparency in assessment (TA), and Students Capabilities (SC) in assessment procedures. Congruence with Planned Learning (CPL) focuses on the extent to which assessment tasks align with the goals, objectives and activities of the learning program. Authenticity of Assessment of applied learning (AAL) is the extent to which assessment tasks feature real life situations those are relevant to the learner. Students' Consultation about Assessment (SCA) explores the extent to which

students are consulted and informed about the forms of assessment tasks being employed. Transparency of Assessment (TA) tries to investigate the extent to which the purposes and forms of assessment tasks are well defined and clear to the learner.

2. Methodology

In this study, a mixed-method approach was used. Therefore the design is both qualitative and quantitative as the study employs a questionnaire and an interview for assessment purposes . This study provides a generic representation to many other studies as far as perceptions of students are concerned with assessment. As part of the study, a five-scale instrument: (SPAQ) was developed. The authors administered SPAQ with an attitude scale and self-efficacy scales to 150 students from selected universities. Only students from the third and fourth years were chosen to involve for questionnaire survey because they have more experience and have witnessed a wider range of assessment practices in their classrooms. Then, interviews with the class teachers were also arranged (n=28). Faculty members and students were asked to volunteer to participate in this study.

2.1 Context of the Study

Selected universities for this study provide not only bachelor degrees but also Master's degrees in the areas of Arts and Science. However, for the sake of this study, the focus is on the undergraduate students who are specializing in English. The curriculum that is implemented in Myanmar HEI is provided and developed by board of studies in Universities of Myanmar. Assessment and evaluation methods practiced in higher education institutions of Myanmar are almost the same.

2.2 Method, Instrument, Procedure, and Analysis

In this study, students' perceptions of assessment used in English specialization modules were collected through quantitative types of data. In terms of the qualitative data, teachers' experiences and their perceptions of classroom assessment are explored. 28 interviews are conducted. Table1 shows the demographic data of student participants and table 2 shows interview participants. All interviews were held in Higher Education Institutions. These varied from 30 to 70 minutes. The researchers used a semi-structured interview approach focusing on four main themes of classroom assessment (methods of assessment, authenticity of assessment, use of assessment result, and transparency of assessment). Based on the research questions, two interview question protocols were developed: 28 for the faculty members and 150 for students. To ensure that the interview questions were aligned with the research questions, the researcher conferred with his academic advisor before entering in the field.

Table 1 Questionnaire Participants (n=150)

SN	Faculty Students	Responses		
		Male	Female	Sub-Total
1	3rd Year	21	39	60
2	4th Year	24	66	90
Total		**45**	**105**	**150**

Initially, the data were analyzed using descriptive statistics to demonstrate an overall perception of students to the five scale (24 items) assessment questionnaire.

Table 2 Semi-structured interview participants (n=28)

SN	Faculty members	Responses		
		Male	Female	Sub-Total
1	3rd Year	3	11	14
2	4th Year	7	7	14
Total		**10**	**18**	**28**

Data from Selected Universities were collected within five months that included both quantitative and qualitative data: during June, 2018 to July, 2019. The institutions contributed greatly in terms of permitting the study to be held and provided facilities, such as a room for the interview. In addition, third and fourth year English specialization students were informed 1-2 days before the questionnaires were administered so that those who were interested were aware and willing to participate. Anonymity of the students was confirmed by the authors so that they felt no threat from their teachers.

Table 3 Students' Perceptions of Assessment Questionnaire (SPAQ) (Source: Fisher, Waldrip and Dorman, 2005)

SN	Theme	Items on Questionnaire	Mean	Standard Deviation	Meaning
1	Congruence with planned learning (CPL)	1) My assessment in class tests what I memorize.	3.45	1.24	Agree
		2) My assessment in class tests what I understand.	3.20	1.37	Neutral
		3) My assignments are about what I have done in class.	3.47	1.21	Agree

Table 3 (Continue)

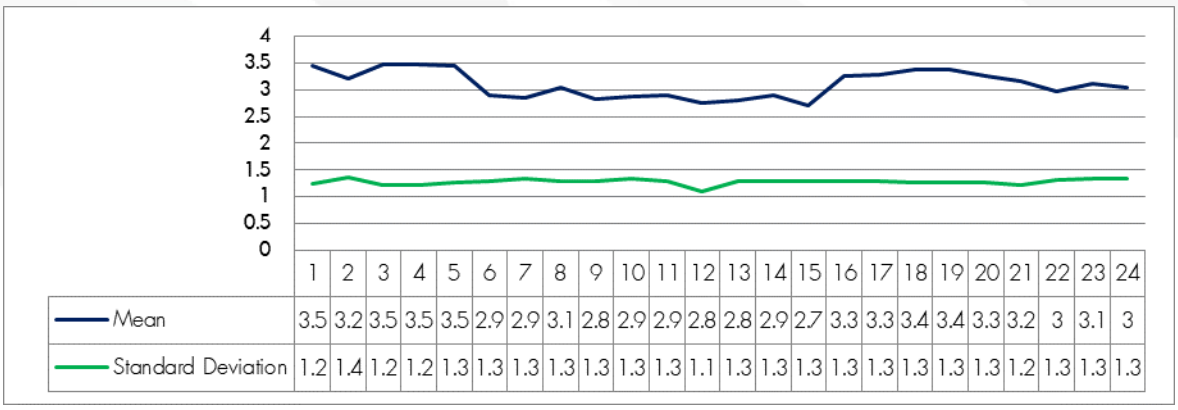
SN	Theme	Items on Questionnaire	Mean	Standard Deviation	Meaning
		4) How I am assessed is similar to what I do in class	3.47	1.21	Agree
		5) I am assessed on what the teacher has taught me	3.46	1.27	Agree
		Average	3.41	1.26	Agree
2	Assessment of applied learning (AAL)	6) I am asked to apply my learning to real life situations.	2.90	1.28	Neutral
		7) My class assessment tasks are useful for everyday life.	2.86	1.33	Neutral
		8) I find my class assessment tasks are relevant to what I do outside of university.	3.05	1.28	Neutral
		9) Assessment in my department tests my ability to apply what I know to real-life problems.	2.82	1.28	Neutral
		10) Assessment in my department examines my ability to answer everyday questions.	2.88	1.34	Neutral
		11) I can show others that my learning has helped me do things.	2.89	1.30	Neutral
		Average	2.90	1.30	Neutral
3	Student Consultation on Assessment (SCA)	12) In my department I am clear about the types of assessment being used.	2.76	1.11	Neutral
		13) I am aware how my assessment will be marked.	2.80	1.18	Neutral
		14) My teacher has explained to me how each type of assessment is to be used	2.89	1.28	Neutral
		15) I can have a say in how I will be assessed in my class.	2.70	1.28	Neutral
		Average	2.79	1.21	Neutral

Table 3 (Continue)

SN	Theme	Items on Questionnaire	Mean	Standard Deviation	Meaning
4	Transparency in Assessment (TA)	16) I understand what is needed in all my class assessment tasks.	3.25	1.29	Neutral
		17) I am told in advance when I am being assessed.	3.27	1.30	Neutral
		18) I am told in advance on what I am being assessed.	3.38	1.26	Neutral
		19) I am clear about what my teacher wants in my assessment tasks.	3.37	1.26	Neutral
		20) I know how a particular assessment tasks will be marked.	3.26	1.27	Neutral
		Average	3.31	1.27	Neutral
5	Students Capabilities (SC)	21) I can complete the assessment tasks by the given time	3.17	1.22	Neutral
		22) I am given a choice of assessment tasks.	2.97	1.31	Neutral
		23) I am given assessment tasks that suit my ability.	3.11	1.34	Neutral
		24) When I am confused about an assessment task, I am given another way to answer it.	3.04	1.34	Neutral
		Average	3.07	1.30	Neutral

Note: Strongly agree=4.50-5.00, Agree=3.50-4.49, Neutral=2.50-3.49, Disagree=1.50-2.49, Strongly disagree=1.00-1.49

Students' perceptions of Assessment Questionnaire (SPAQ) are shown in the following figure 1.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mean	3.5	3.2	3.5	3.5	3.5	2.9	2.9	3.1	2.8	2.9	2.9	2.8	2.8	2.9	2.7	3.3	3.3	3.4	3.4	3.3	3.2	3	3.1	3
Standard Deviation	1.2	1.4	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.3	1.3

Figure 1 Students' Perceptions of Assessment Questionnaire (SPAQ) (Source: Fisher, Waldrip and Dorman, 2005).

The researchers summarized that the average scale-item mean values for Congruence with Planned Learning (CPL Mean = 3.41) and Transparency in Assessment (TA Mean = 3.31) were higher. However, the scale-item values for Students Consultation on Assessment (SCA) were the lowest (Mean=2.79), meaning that students perceived a low-level of consultation. This suggests that students perceived a weak link between what is taught and what is assessed; assessment is less transparent, does not account for student consultation, lacks testing applications in daily life, and caters very little towards students' diversity.

The qualitatively investigated through interview survey are shown in Table 4.

Table 4 Faculty members' perceptions of classroom assessment and their expectations of students' learning. (n=33)

SN	Themes	Sample Responses
1	Use of assessment results to improve student learning in assessment literature	(i) Interviewee A Although higher education institutions often engage in assessment practices, use of assessment results to improve student learning is rare. (ii) Interviewee B Many university staffs lack the expertise to learn from assessment results. (iii) Interviewee C Universities need a process for engaging in conversations around teaching and learning, an opportunity for support of analyses of data from their university. (iv) Interviewee D Very few faculty members learned lessons from student-assessment results with important implications for instructional improvement. (v) Interviewee E Assessment results are not used as a tool for facilitating discussion about improving a curriculum or degree program.

Table 4 (Continue)

SN	Themes	Sample Responses
		(vi) Interviewee F In order to facilitate optimal use of results, each department should have a meeting during which all departmental faculty members reflect on assessment results and determine their best use.
2	Assessment rubrics	(vii) Interviewee G A rubric is a scoring guide used to evaluate performance, a product, or a project. It has three parts: 1) performance criteria; 2) rating scale; and 3) indicators. For me and my students, the rubric defines what is expected and what will be assessed. (viii) Interviewee H Rubrics are important because they clarify for students the qualities their work should have. For this reason, rubrics help teachers teach, they help coordinate instruction and assessment, and they help students learn. (ix) Interviewee I Rubrics are great for students: they let students know what is expected of them, and demystify grades by clearly stating, in age-appropriate vocabulary, the expectations for a project. (x) Interviewee J Rubrics also help teachers authentically monitor a student's learning process and develop and revise a lesson plan. (xi) Interviewee K A rubric is a performance-based assessment tool. Teachers use rubrics to gather data about their students' progress on a particular assignment or skill. (xii) Interviewee L Simple rubrics allow students to understand what is required in an assignment, how it will be graded, and how well they are progressing toward proficiency. (xiii) Interviewee M A rubric is an explicit set of criteria used for assessing a particular type of work or performance and provides more details than a single grade or mark. Rubrics, therefore, will help you grade more objectively.
3	Institutional accreditation standards	(xiv) Interviewee N Currently, we haven't fully experienced comprehensibility of accreditation standards and how they work to increase the education standard. (xv) Interviewee O Accreditation is a quality assurance process that universities and education institutions or programs undergo to confirm that they meet a strict and recognized set of service and operational standards. (xvi) Interviewee P Accreditation is assessed by private or non-governmental accrediting agencies that have been created specifically to review education institutions and programs.

Table 4 (Continue)

SN	Themes	Sample Responses
4	Transparency of assessment	(xvii) Interviewee Q Transparency in assessment is productive for learning would depend on the criteria. If the criteria are true indicators of quality, then they have the potential to support student learning. (xviii) Interviewee R Transparency should therefore be viewed at the curriculum level, addressing what is expected of students at the end of the curriculum and in working life, and linked to the development of self-regulatory skills.

According to the responses of the participants, classroom assessment plays an important role in the process of learning and motivation. The types of assessment tasks that teachers ask students to determine how students will approach the learning task and what study behaviour they will use. This phase looks at the use of assessment results to improve student learning. In Myanmar, the concept of assessment is understood as giving marks to students in order to judge their performance. A senior faculty member asserted that using classroom assessment to improve student learning is not widely practiced by the teachers. Participants suggest that Myanmar should refocus on classroom assessment so it is designed to help students learn.

In this research, participants also discuss key features of a quality rubric and present an example of a rubric for assessing a research study. According to an associate professor, a rubric is a multi-purpose scoring guide for assessing student products and performances and an important source of information for program improvement.

Accreditation is not widely adopted for the quality control and quality improvement in Myanmar higher education. Thus, there is lack of knowledge of how accreditation is received and experienced. However, some faculty members maintained positive perspectives about the Institutional accreditation standards.

A faculty member also asserts that she gave students some questions during their instructions and used those questions in their exams. One of the faculty participants clarified, “I do not want to give new questions to students and distract their minds in the exam” implying that he engages students in problem solving activities by giving questions during the instruction and test them based on those at the end of the course. The faculty members may not have a control over those practices but to implement what came to them from the Ministry of Higher Education.

3. Results

This research focuses on the respondents’ answers in terms of assessment practices in Selected Higher Education Institution (HEI).

Quantitative Research — Results

Questionnaires were contributed once to those who agreed to participate. It has been found that among the five scales of SPAQ, the mean values of Congruence with Planned Learning and Transparency in assessment were higher than other scales. In contrast, the scale of Student Consultation was found with the lowest mean.

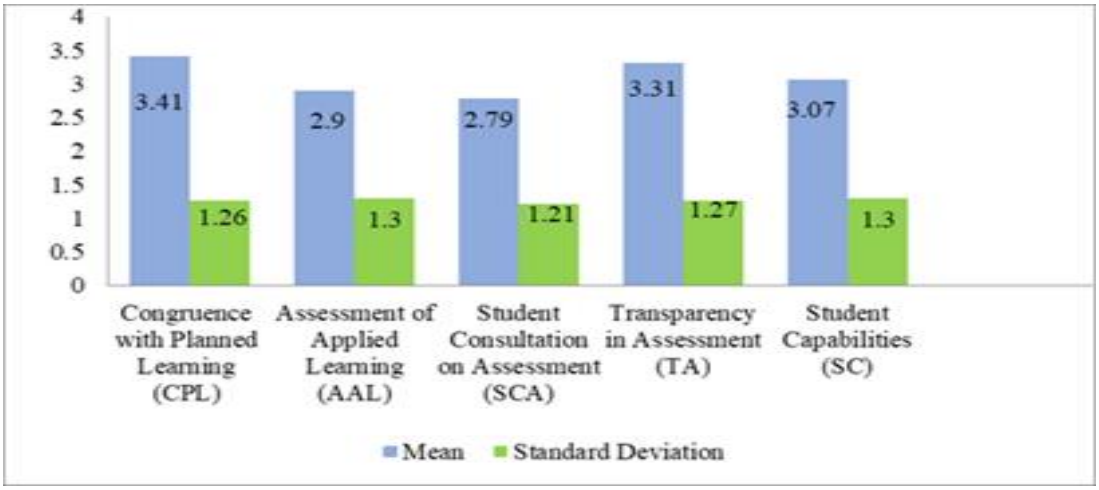


Figure 2 Students' Perceptions of Assessment Questionnaire (SPAQ) (Source: Fisher, Waldrip and Dorman, 2005)

Qualitative Research — Results

The faculty members' interview responses varied based on their work experience and their exposition to various forms of classroom assessment. They pointed that, accreditation in education is the process by which an association or agency evaluates an educational institution or program of study and formally recognizes it as having met and satisfied, or exceeded, certain predetermined requirements and criteria or standards of educational quality. Themes vary from current practices of assessment to students' experiences and assessment methods on students' current learning habits. Currently, some Myanmar Higher Education Institutions have got the autonomous status, while the Ministry of Education was in charge of others. This first compulsory process to attain autonomy used to be called accreditation. Since institutional accreditation is a voluntary process, most institutions do not undertake it yet. Both institutional and program accreditation lead to public recognition of quality assurance and HEIs become responsible for maintaining it.

4. Discussion

This study has attempted to explore the perceptions of English specialization teachers and students at undergraduate level on classroom assessment practices in Myanmar. The results

of the current study is a little different from the research of Oman entitled " CLASSROOM ASSESSMENT: TEACHERS PRACTICES, STUDENT PERCEPTIONS, AND ACADEMIC SELF-EFFICACY BELIEFS". But we have found that there is a little relevance with the research " A Study on the Assessment Methods and Experiences of Teachers at an Ethiopian University". Based on the average means, students have marked the congruence with planned learning (CPL) and transparency of assessment the highest among the five scales (M = 3.41 & 3. 31). The items that indicate that students do not have a say in how they will be assessed in their class has the lowest mean scores (M = 2.70) in item 15

5. Conclusion

This research illustrates selected Higher Education Institution's third and fourth year students' perceptions of classroom assessment and a comparison of perceptions of the teachers of English departments. The mean values ranged from 2.70 to 3.47 in the 24 item assessment questionnaires. Table 5 shows a descriptive comparison of average item means and standard deviation of students' perceptions of classroom assessment.

Table 5 Students' Perceptions of Assessment Questionnaire (SPAQ) (Source: Fisher, Waldrip and Dorman, 2005)

SN	Theme	Mean	Standard Deviation	Meaning
1	Congruence with planned learning (CPL)	3.41	1.26	Agree
2	Assessment of applied learning (AAL)	2.90	1.30	Neutral
3	Student Consultation on Assessment (SCA)	2.79	1.21	Neutral
4	Transparency in Assessment (TA)	3.31	1.27	Neutral
5	Students Capabilities (SC)	3.07	1.30	Neutral
Average		**3.09**	**1.27**	**Neutral**

According to the interview data, some teachers seemed dissatisfied with the current practices of assessment in HEI. Teachers' responses show that they realized the populated classes and teachers are responsible to teach various subjects. Generally, the current practices of classroom assessment seemed dissatisfying for some teachers. Students showed more positive perceptions in the quantitative approach. Although the study shows that current dynamics, to a greater extent, students demonstrated an awareness of the importance of assessment in relation to students learning. Although diversity existed among the faculty members the way they defined classroom assessment, the majority of them recognized the weakness of the traditional methods which are dominant in this institution. The study reveals that primarily the current practices of assessment were focused on exams, classroom discussions, classroom assignment, projects, and

seminars. The main issue that the study was concerned about is that the extent of responsibility students and the faculty members felt in terms of learning and students' progress. The results and the data indicate that assessment results are rarely used for learning. In assessment rubrics, some teachers understand simple assessment rubrics, but some do not understand precisely.

5.1 Limitation

The result of the study should be treated with caution. Filling a research questionnaire was administered for the first time in Selected Higher Education Institution, and there might be some biases and power dynamics as the authors used to teach at this institution. In addition, the sample was selected few days before the final exam; therefore, fewer students were present at that time, indicating that the sample may not represent all students' perceptions.

5.2 Recommendations

Based on findings, the study suggests that an institutional support is needed to foster alternative assessment approaches in HEI. To increase the knowledge of classroom assessment within higher education institutions, short-term course, workshops and seminars should be conducted and supported. Future investigation should be conducted to testify the findings from this study in various subject areas and grade levels using mixed-methods research design.

6. References

Alkharusi, H., Aldhafri, S., Alnabhani, H., & Alkalbani, M. (2014). Classroom Assessment: Teacher Practices, Student Perceptions, and Academic Self-Efficacy Beliefs. Social Behavior and Personality: *an International Journal*, 42(5), 835–855. https://doi.org/10.2224/SBP.2014.42.5.835

Black, P. J., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *London: King's college London University of Education.* http://doi.org/10.1177/003172171009200119

Dhindsa, H., Omar, K., & Waldrip, B. (2007, August 1). Upper Secondary Bruneian Science Students' Perceptions of Assessment. *International Journal of Science Education*, *29*(10). https://doi.org/10.1080/09500690600991149

Goodrum, D., Hackling, M., & Rennie, L. (2001). The status and quality of teaching and learning of science in Australian schools. *Canberra: Department of Education, Training and Youth Affairs.* https://catalogue.nla.gov.au/Record/879767

Goodrum et al., 2005, p.2. Assessment Practices: Student's and Teachers' Perceptions of Classroom Assessment. *University of Massachusetts School of Education.* pp. 1-115. https://scholarworks.umass.edu/cie_capstones/9/

Linn, R. L., & Miller, M. D. (2005). *Measurement and assessment in teaching* (9th ed.) Upper Saddle River, NJ: Prentice Hall. https://www.scirp.org/(S(lz5mqp453edsnp55rrgjct55))/reference/ReferencesPapers.aspx?ReferenceID=2016126

Sewagegn, A. A. (2019). A Study on the Assessment Methods and Experiences of Teachers at an Ethiopian University. *International Journal of Instruction*, 12(2), 605-622. https://www.researchgate.net/publication/332568242

Scriven, M. (1967). The methodology of evaluation (Vol. 1). *Washington DC: American Educational Research*. https://www.scribd.com/doc/283341599/Scriven

Wiliam, D., & Thompson, M. (2008). Integrating assessment with learning: What will it take to make it work? In C. A. Dwyer (Ed.). The future of assessment: Shaping teaching and learning. *New York: Lawrence Erlbaum Associates.* pp. 53-82. https://doi.org/10.4324/9781315086545

The Study on Needs and Mistakes of Usage of English for Communication in the Cultural Heritage Spots in Dhonburi District of Bangkok

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Abstract

The objectives of this research were: 1*)* to study and investigate needs of using correct English for communication in cultural heritage spots in Dhonburi district of Bangkok and *2)* to analyze some mistakes of English usage in public relation media and information sources in the cultural heritage spots. This research was considered a survey research. The respondents in this research were thirty people who were responsible for supervising thirty cultural heritage spots. Two research instruments were employed to collect data and information in this study; namely, 1) a questionnaire and 2) an English usage evaluation form. The information and data collected were analysed through the content analysis method and presented in terms of frequency count and percentage. The results and findings indicated that:

1) The need of the supervisors of thirty cultural tourist spots in Dhonburi district of Bangkok for using correct English in communicating with foreigners was found in the highest degree level. In addition, the need for correct usage of all five English skills; namely, listening, speaking, writing, reading and translating was found in the highest degree level as well.

2) Some mistakes of English usage for communicating with foreigners in the public relation media as well as information sources of thirty cultural heritage spots were divided into two groups; namely, 1) words, sentences and expressions frequently misused by Thai people in public relation media and information sources in the cultural heritage spots, and 2) words frequently mispronounced by Thai people causing a change in meaning.

Keywords : Needs, Mistakes, English for Communication, Cultural Heritage Spots, Dhonburi District of Bangkok

1. Rationale:

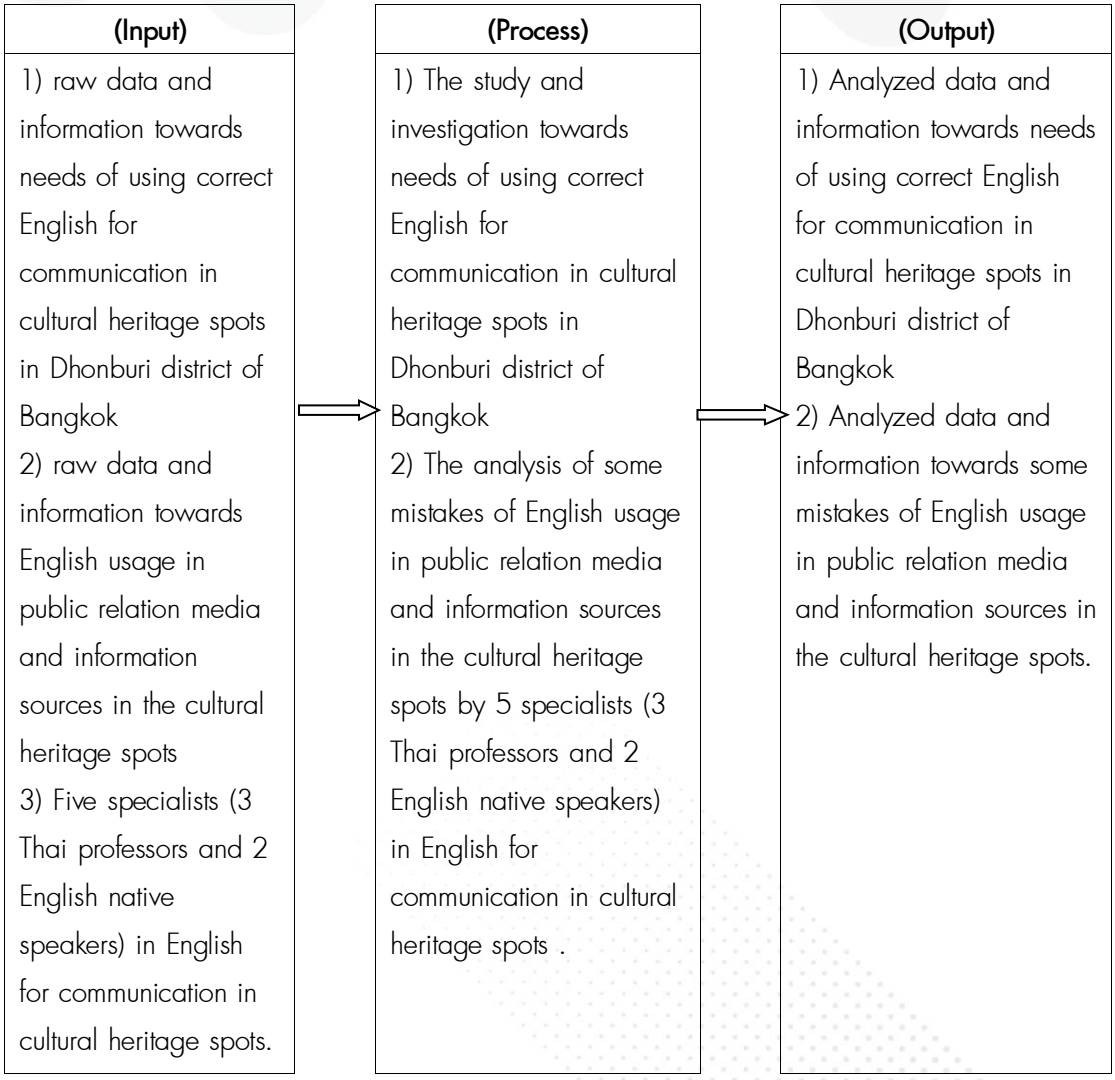
Tourism is considered one of the industries bringing high income to Thailand. Foreigners who come to visit Thailand are interested in visiting tourist spots especially cultural heritage spots. In order to facilitate the tourists as well as be a good host, it is necessary to provide these tourists proper information and to interact with them. In this way, goodwill is generated which increases the chance that foreigners will want to return to Thailand. In the area of tourism, having effective English communication skills is of great importance. English is considered the main medium of communication between local people and visiting foreigners. However, it is known that the English communication skills of English of Thai people are often inadequate. Therefore there is a necessity for local people at tourist spots to improve their English communication skills, and they should be encouraged to do so. If local people demonstrate better English skills, tourists will be more satisfied and this will ultimately increase the potential of tourism in Thailand.

The Tourism Authority of Thailand and Ministry of Culture (2009: p 31-32) have promoted arts and culture of local area by organizing the activity "Worship Nine Temples". This was to encourage people, including foreign tourists, to travel around and worship holy places in each province in Thailand. In the area of the capital city Bangkok, the 9 temples used as resources for local art study, and included in the recommended route for temple visit, were as follows: Wat Kalayanamit, Wat Chana Songkhram, Wat Phra Chetuphon (Wat Pho, or Reclining Buddha), Wat Phra Kaew (Emerald Buddha), Wat Rakhang, Wat Suthat, Wat Arun (Temple of Dawn) Swatchararam, Wat Bowonniwet, and Wat Saket (Phu Khao Thong, or Golden Mount). The tourists visiting these temples were both foreigners and Thais. There are many foreigners travelling in Thailand by themselves who should be provided correct information of each tourist spot. Even though some tourist spots have direction signs and information booklets, it is found that there are still mistakes in the English translation. Moreover, there are some tourist spots which offer no information whatsoever, and do not have staff that can provide information to tourists. Lack of information in English about the temple or tourist spots at the tourist sites should be of concern to the tourism or local authorities.

For these reasons, the researcher was interested in the study of the needs and mistakes of usage of English for communication in the cultural heritage spots in Dhonburi District of Bangkok. The objectives of this research were to study and investigate needs of using correct English for communication in cultural heritage spots in Dhonburi district of Bangkok, and to analyze some mistakes of English usage in public relation media and information sources in the cultural heritage spots in terms of word choice, structure and expressions. The result of this study will help to create media or information source in correct English for the foreign tourists, as well as create an English communication handbook for the supervisors of cultural heritage spots, so that they can practice how to communicate with foreign tourists in a correct and effective way. The study will also help

provide knowledge and understanding about the tourist spots for the foreign tourists, who in turn will be able to appreciate Thai arts and culture further. (see the conceptual frame work as follows)

Conceptual Frame Work



2. Research Objectives

In this study, there were two research objectives as follows:

2.1 to study and investigate needs of using correct English for communication in cultural heritage spots in Dhonburi district of Bangkok

2.2 to analyze some mistakes of English usage in public relation media and information sources in the cultural heritage spots

3. Research Methodology

3.1 Samples

Group 1: To study and investigate needs of using correct English for communication in cultural heritage spots in Dhonburi district of Bangkok, 30 supervisors of 30 cultural heritage spots were employed as research respondents. The 30 heritage spots were selected according to the preliminary survey of the research team. All 98 heritage spots in Thonburi area were mailed the invitation letter as well as acceptance form, to be mailed back to the researcher. Only 30 letters were mailed back, which were then selected as sample groups.

Group 2: To analyze some mistakes of English usage in public relation media and information sources in the cultural heritage spots, 5 specialists (3 Thai professors and 2 English native speakers) in English for communication in cultural heritage spots were employed as research respondents.

3.2 Research Instruments

1) 30 questionnaires for collecting the data and information from the study and investigation of needs of using correct English for communication in cultural heritage spots in Dhonburi district of Bangkok

2) The English Usage Evaluation Form for collecting the data and information from the analyses of some mistakes of English usage in public relation media and information sources in the cultural heritage spots

The research instruments, including questionnaires for needs of using correct English at heritage spots, as well as the English Usage Evaluation form, were constructed according to the review of other relevant research papers and the theory of constructing research instruments from other related textbooks both in Thai and English. The two research instruments were approved in terms of correctness and suitability of the contents by the five specialists (3 Thai professors and 2 English native speakers) in English for communication in cultural heritage spots. All items in the questionnaire as well as The English Usage Evaluation Form possessed the IOC (Index of Congruence) value of 0.66 or more, which were acceptable for being used to collect data and information of this research.

3.3 Data Collection

3.3.1 To collect the data and information from the study and investigate needs of using correct English for communication in cultural heritage spots in Dhonburi district of Bangkok, the researcher himself as well as his assistants mailed the questionnaire to all 30 supervisors of the 30 selected cultural heritage spots, informing the purposes as well as the benefits to be gained from this research study, setting the appointment dates and time to pick up the questionnaire and interview for further information.

3.3.2 To collect data and information from the analyses of some mistakes of English usage in public relation media and over 3,000 information sources in the cultural heritage spots, **3 focus group meetings were organized.** The 5 specialists (3 Thai professors and 2 English native speakers) in English for communication in cultural heritage spots **were invited to attend the meetings.** Some mistakes of English usage in public relation media and information sources in the cultural heritage spots were analyzed in terms of words choice, structure and expressions according to The English Usage Evaluation Form.

3.4 Data Analysis

The information and data collected were analysed through the content analysis method and presented in terms of frequency count and percentage as follows:

3.4.1 The general information in data of the 30 supervisors were analysed and presented in terms of frequency count and percentages, for gender, age and education level.

3.4.2 The average numbers of tourists visiting the 30 selected cultural heritage spots were analysed and presented in terms of frequency count (average tourists per day and per year) and percentages of foreigners and Thais, for each heritage spot.

3.4.3 The needs of using correct English for communication in the 30 selected cultural spots were analyzed and presented in terms of the means value ($\bar{X}$ and S.D.) and level of need according to the type of public relation media and information source.

3.4.4 The words, sentences and expressions frequently misused by Thai people in public relation media and information sources in cultural heritage spots were analyzed and presented by means of explicit explanation of their erroneous usage and how the errors could be corrected.

3.4.5 The words frequently mispronounced by Thai people causing a change in meaning were analyzed and presented by means of clear explanation of their erroneous pronunciation and how they should be correctly pronounced.

4. Research Results

4.1 The results from the study and investigation of needs of using correct English for communication in cultural heritage spots in Dhonburi district of Bangkok

4.1.1 General information and data of the 30 supervisors of the 30 selected cultural heritage spots in Dhonburi district of Bangkok

Table 1 General information and data of the 30 supervisors of the 30 selected cultural heritage spots in Dhonburi district of Bangkok

Items		Number	Percentage
1.	**Gender**		
	Male	23	76.7
	Female	7	23.3
total		**30**	**100**
2.	**Age**		
	40 or lower	4	13.3
	40 – 60	20	66.7
	61 or more	6	20.0
total		**30**	**100**
3.	**Education Level**		
	Primary School or lower	8	26.7
	High School	10	33.3
	higher than high School	12	40.0
total		**30**	**100**

According to table 1, it indicated that 23 of the supervisors were males (76.7%) and 7 were females (23.3%). It was found that 20 of supervisors were in the age between 40-60 (66.7%), 6 of them were older than 61 (20%), and 4 were younger than 40 (13.3). In terms of education level, it was found that 12 supervisors graduated higher than high School (40%), 10 graduated high school (33.3%) and 8 graduated primary school or lower (26.7%).

4.1.2 Numbers of tourists visiting the 30 selected cultural heritage spots in Dhonburi district of Bangkok

Table 2 Average numbers and percentage of tourists visiting the 30 selected cultural heritage spots in Dhonburi district of Bangkok

cultural heritage spots	Average number of tourists/day	Average number of tourists/year	Nationality of Tourists	
			Thai (%)	Foreigners (%)
1) Wat Ratchawarin	50	18,250	80	20
2) Wat Hiran Pathumrangsi	50	18,250	80	20
3) Wat Rajkrueh	50	18,250	80	20

Table 2 (Continue)

cultural heritage spots	Average number of tourists/day	Average number of tourists/year	Nationality of Tourists	
			Thai (%)	Foreigners (%)
4) Wat Intharam Worawiharn	200	73,000	70	30
5) Wat Bang Sakae Nok	50	18,250	80	20
6) Wat Kantathraram	50	18,250	80	20
7) Wat Arun Ratchawararam Ratchaworamahawihan	300	109,500	60	40
8) Wat Pradittharam	100	36,500	80	20
9) Wat Yai Srisupan	50	18,250	80	20
10) Wat Krachap Phinit	50	18,250	80	20
11) Wat Mai Yai Nui	50	18,250	80	20
12) Wat Klang Dao Khanong	50	18,250	80	20
13) Wat Bukkhalo	50	18,250	80	20
14) Wat Chantharam Worawihan (Wat Klang Talat Phlu)	50	18,250	80	20
15) Wat Bang Sakae Nai	50	18,250	80	20
16) Wat Santi Thammaram	50	18,250	80	20
17) Wat Prayun Wongsawat Worawihan	200	73,000	70	30
18) Wat Pho Nimit Sathit Mahasimaram	50	18,250	80	20
19) Wat Chinorasaram Worawihan (Wat Chinorot)	50	18,250	80	20
20) Thanusingha Bakery House	200	73,000	70	30
21) Kanom Whan Talad Plu Shop	200	73,000	70	30
22) Kanom Farang Kudeejeen Shop	200	73,000	70	30
23) Bamboo Flute of Nan Lao Community	100	36,500	80	20
24) Baan Kudichin Museum	200	73,000	70	30
25) Prayoon Bhandakharn, The Buddha Images Museum	200	73,000	70	30
26) Santa Cruz Church	200	73,000	70	30
27) Guan Yu Shrine	50	18,250	80	20
28) Budhist Pathumrangsri Association	50	18,250	80	20
29) Masjid Nurulmubeen Bansomdejchaopraya	200	73,000	70	30
30) Bang Luang Mosque	200	73,000	70	30

According to table 2, it was found that the average number of tourists visiting the 30 selected cultural heritage spots was 18,500 a year. The average number of tourists visiting Wat Arun was 109,500 which was considered the highest. The average number of tourists visiting Wat Intharam, Wat Prayun, Thanusingha Bakery House, Kanom Whan Talad Plu Shop, Kanom Farang Kudeejeen Shop, Baan Kudichin Museum, Prayoon Bhandakharn (The Buddha Images Museum), Santa Cruz Church, Masjid Nurulmubeen Bansomdejchaopraya and Bang Luang Mosque was found similarly to be at 73,000 a year. The average number of tourists visiting Wat Pradittharam and Bamboo Flute of Nan Lao Community was 36,500 a year. Moreover, it was found that 60 to 80 percent of the tourists were Thai, whereas only 20 to 40 percent of them were foreigners. It was found that 40 percent of the foreign tourists came to visit Wat Arun, 30 percent of them came to visit Wat Intharam, Wat Prayun, Thanusingha Bakery House, Kanom Whan Talad Plu Shop, Kanom Farang Kudeejeen Shop, Baan Kudichin Museum, Prayoon Bhandakharn (The Buddha Images Museum), Santa Cruz Church, Masjid Nurulmubeen Bansomdejchaopraya and Bang Luang Mosque.

4.1.3 needs of using correct English for communication in the 30 selected cultural heritage spots in Dhonburi district of Bangkok

1) needs of using correct English for communication in the 30 selected cultural heritage spots in Dhonburi district of Bangkok according to types of public relation media and information sources

Table 3 Means and Standard Deviation of needs of using correct English for communication in the 30 cultural heritage spots in Dhonburi district of Bangkok according to types of public relation media and information sources

Types of public relation media and information sources	n = 30		Level of Need
	$\bar{X}$	S.D.	
1) Direction signs in the cultural heritage spots	4.95	0.21	Highest
2) Identification signs of each place in the cultural heritage spots	4.74	0.53	Highest
3) Instruction and religious practice signs for visiting the cultural heritage spots	4.63	0.51	Highest
4) Praying explanation signs in the cultural heritage spots	4.87	0.45	Highest
5) Information booklets about visiting the cultural heritage spots	4.61	0.41	Highest

Table 3 (Continue)

Types of public relation media and information sources	n = 30		Level of Need
	$\bar{X}$	S.D.	
6) Public relation booklets of activities or events in the cultural heritage spots	4.72	0.44	Highest
7) Material with explanation of history and introduction of each place in the cultural heritage spots	4.89	0.31	Highest
8) Person assigned to give knowledge about the cultural heritage spots	4.91	0.23	Highest
9) Electronic media (computer) in the cultural heritage spots	4.95	0.22	Highest
10) Exhibition rooms providing information about each place in the cultural heritage spots	4.77	0.45	Highest
Total	**4.77**	**0.16**	Highest

According to table 3, it was indicated that the needs of using correct English for communication in the 30 selected cultural heritage spots in Dhonburi district of Bangkok in terms of types of public relation media and information sources was in the "Highest" level at the statistical significance of .05

2) needs of using correct English for communication in the 30 cultural heritage spots in Dhonburi district of Bangkok according to English skills

Table 4 Means and Standard Deviation of needs of using correct English for communication in the 30 selected cultural heritage spots in Dhonburi district of Bangkok according to English skills

Needs of English skills in the 30 cultural heritage spots	n = 30		Level of Need
	$\bar{X}$	S.D.	
1) Listening Skill	4.74	0.48	Highest
2) Speaking Skill	4.67	0.51	Highest
3) Reading Skill	4.91	0.22	Highest
4) Writing Skill	4.87	0.28	Highest
5) Translating Skill	4.79	0.31	Highest
Total	**4.74**	**0.17**	**Highest**

According to table 4, it was indicated that the needs of using correct English for communication in the 30 selected cultural heritage spots in Dhonburi district of Bangkok in terms of the five English skills (listening, speaking, writing, reading, translating) were in the "Highest" level at the statistical significance of .05

4.2 Results of the analyses of some mistakes of English usage in public relation media and information sources in the cultural heritage spots in terms of words choice, structure and expressions

4.2.1 Words, sentences and expressions frequently misused by Thai people in public relation media and information sources in the cultural heritage spots

According to this research, there were 62 words/ sentences/ expressions frequently misused by Thai people in public relation media and information sources in the cultural heritage spots as presented in table 5

Table 5 Words, sentences and expressions frequently misused by Thai people in public relation media and information sources in the cultural heritage spots

No.	Words / Sentences / Expressions	No.	Words / Sentences / Expressions	N0.	Words / Sentences / Expressions
1	Fitness	23	I like to play Internet	45	I no like.
2	In trend	24	I want to play yoga	46	You want ice-cream?"
3	No have	25	Check bill	47	I don't like him. He's too over.
4	Out of order	26	Where you go	48	Thai social is very strict.
5	Stop your mouth	27	Happy Birthday To You	49	I like coffee, please.
6	Over	28	I like to sing a song	50	I like English. Moreover, it's fun.
7	Pretty	29	I am in the tv series very much	51	Have many tourists around the temple."
8	American share	30	I'm a freshy at university.	52	How about Bangkok?
9	Jam	31	Phuket is a beautiful island	53	Where you go?
10	Back	32	I have a meeting with Jane tonight.	54	How will I do?

Table 5 (Continue)

No.	Words / Sentences / Expressions	No.	Words / Sentences / Expressions	N0.	Words / Sentences / Expressions
11	Check bill	33	I suspect why you come to see me tonight, James.	55	We funny with the concert all night.
12	Hi-so	34	I want to speak English like a native speaker.	56	Do you like James? Yes, I like.
13	Mansion	35	How to do?	57	Close the light, darling ... and open a romantic song on the stereo.
14	Never mind	36	Eat rice!	58	I ever see you before.
15	Same same	37	There's lots of pig in your fried rice.	59	I must to go home now.
16	Where you go, madam?	38	Don't be serious.	60	I'm boring.
17	Pen/close the light	39	Can you speak English? Snake snake fish fish.	61	I like you. You no same-same other boys
18	No have	40	I'm too fat, so I will deny cakes this week.	62	Hey you! YOU! YOU!
19	I very like it	41	I was late for school, so my teacher blamed me.		
20	Take a bath	42	I hope to entrance next year		
21	Are you spicy?	43	My house is far from here about 10 km.		
22	Are you boring?	44	Go home is better		

4.2.2 Words frequently mispronounced by Thai people causing a change in meaning

According to this research, there were 21 Words frequently mispronounced by Thai people causing a change in meaning as presented in Table 6

Table 6 Words frequently mispronounced by Thai people causing a change in meaning

No.	Words / Sentences / Expressions	No.	Words / Sentences / Expressions	No.	Words / Sentences / Expressions
1	Asia	9	Sword	17	Island/ Iceland
2	Tuition	10	Receipt/ debt“receipt”	18	Valley/ Medley/ Volleyball/ Harley
3	Comfortable / Vegetable	11	Juice/ Cruise	19	Syrup/ Syringe/ Lyrics
4	Suite/ Suit	12	Science/ Scientist	20	Singer/ Singing/ Belonging(s) “singer”
5	Yoga	13	Volume/ Value	21	Sang You.
6	Error	14	Onion/ Iron“Onion	22	Hell me, please.
7	Fragile“Fragile”	15	Chaos/ Architect		
8	Dove	16	Six/ Sick		

5. Discussion

5.1 Needs of using correct English for communication in the 30 selected cultural heritage spots in Dhonburi district of Bangkok

The results from this research indicated that most of the supervisors of the 30 selected cultural heritage spots were male in the age range of 40 to 60, most of which were high school graduates. The reason why majority were males is because most of the cultural heritage spots are temples, and the group of administrators in temples are male. It is known that most religions allow males to organize ritual activities in the temples. The likely reason why most of them are between 40 and 60 years of age is that they have to handle numerous manual tasks in the temples. As such, the group of administrators of most of the cultural heritage spots must be young and healthy. Moreover, it was found that most of them finished high school. One of the important responsibilities of the supervisors was to take care of the income and expense of the cultural heritage spots. Therefore they need to have sufficient education of at least high school level to be able to handle this kind of responsibility.

It was found that Wat Arun had the highest number of tourists among the 30 selected cultural heritage spots, amounting to 109,500 a year. It was also found that among this number, 40 percent of them were foreigners. However, as per research results, a lower percentage percentage of foreigners came to visit the cultural heritage spots in Dhonburi area due to the lack of promotion from the government as well as the lack of publication in social media. The results were found correspondent with the research results of Saneh Dechawong (2557) which indicated

that the number of people visiting Wat Arun was by average 500,000 a year. The highest number of tourists came to visit Wat Pra Kaew (3 million a year) and Wat Pho (2 million a year). The two temples are located in Bangkok area on the other side of Dhonburi area, separated by the Chaopraya River.

The results from the investigation of needs of using correct English for communication in the 30 selected cultural heritage spots in Dhonburi district of Bangkok, according to the 10 types of public relation media and information sources, was in the "Highest" level at the statistical significance .05, indicating that English is considered an international language as well as ASEAN language. Tourists from Asia, Europe and America need public relation media and information sources in each cultural heritage spot in English. The supervisor in each cultural heritage spot needs to communicate with foreigners in English in an effective way. In addition, the shop owners and sellers of souvenirs, restaurants, and the tour guides must be able to communicate effectively with foreign customers in English. Nowadays, there is high competition in the area of tourism among Thailand and its neighboring countries like Myanmar, Laos, Cambodia and Vietnam. It is known that a lot of foreigners go to visit Laos especially Luang Prabang and Wang Wiang in the North of Laos. The results from this research was found to correspond with the one of Saneh Dechawong (2557) in that English was needed in the "Highest" level for cultural heritage spots in Bangkok. It was also found that Wat Arun needed English in terms of public relation media and information sources for foreigners visiting the temple. The results were found to correspond with the ones of Theerawit Phinyonattakarn (2558) and Theeraporn Phlailek in that English is considered an international language and is used as a medium of communication of vast majority of human beings. Tourists from all parts of the world who are able to visit many places in the world use English as a medium of communication. Noel Watts (1994) found that public relation media and information sources providing knowledge and information to foreigners were strongly needed in the tourism sector.

The results from the investigation of needs of using correct English for communication in the 30 cultural heritage spots in Dhonburi district of Bangkok, according to the five skills of English (listening, speaking, reading, writing and translating), indicated that all of the five skills of English were found in the "Highest"level of need at the statistical significance .05. This is because all the five skills equally need to be used for communicating with foreigners. Therefore, the supervisors of cultural heritage spots must be able to use all five skills of English to communicate with the foreigners effectively. It is accepted that most Thai people have a problem with English pronunciation. This is due to the two causes. First, the sound system of Thai language is different from the one of English. Second, instruction of English pronunciation for learners in the classroom is not carried out in an effective way. Nantana Ronnakiet (2556: 1-28) said that teaching English pronunciation in the classroom in Thailand required a teacher who can be a good model for

pronouncing English the correct way. The English teacher must know well English phonetics as well as the background of Thai English learners. Moreover, Kris Phattaraphakin (2557: 1-13) found that the problems of English listening and speaking skills caused problems to students in English teaching program in that they were not able to communicate with foreigners in the real situation effectively. This was because the students had minimal or null opportunities to perceive or experience the accents or sounds of English native speakers in the real situation. Once they were given the chance to communicate with foreigners, they were often confused with the different sounds or accents in the real situation which were different from ones they learned in the sound lab or in the recorded audio materials.

5.2 The results from this research indicated that there were some mistakes of English usage in public relation media and information sources in the cultural heritage spots in terms of words choice, structure and expressions, which can be divided into 2 main categories which are: 1) words, sentences and expressions frequently misused by Thai people in public relation media and information sources in the cultural heritage spots, and 2) words frequently mispronounced by Thai people, causing a change in meaning. In the first category, it is found that there are some English words used by Thai people with wrong meanings. Others are not found in English but instead were created themselves by Thai people. However, when Thai people use the created words to communicate with foreigner, there is a serious problem in that both of them cannot communicate each other in an effective way. They often misunderstand each other, causing some problems.

The results from the research also indicated that there are some words frequently mispronounced by Thai people, causing a change in meaning. There are some English words that Thai people have mispronounced for a long time. Therefore, it is difficult for them to change it to the correct pronunciation. This can sometimes cause serious problems when Thai people communicate with foreigners. The results from this research was found to correspond with the one of Wilawan Anusorntanawat (2555:55) in that the direction sign on the street in Bangkok often brought confusion to foreigners. One example is the sign of “RAMA IX Road” which makes foreigners confused when they take a taxi. This is because Thai people actually call it “Phra Ram 9 Road”. To solve this problem, the sign must be written out with the name of the road according to the international way like “RAMA IX Road”; however, there must also be a parenthesis displaying “Phra Ram 9 Road”. It is suggested that a responsible agency takes care of such matters in order to solve problems of some mistakes of the language.

6. Recommendations

6.1 A research on the evaluation of English for communication of the supervisors in the cultural heritage spots in Dhonburi district of Bangkok must be executed.

6.2 A research on factors affecting the competence of English for communication of the supervisors in the cultural heritage spots in Dhonburi district of Bangkok must be executed.

7. References

Blunkett, D. (1998). *Foreword Modern Foreign Languages*. London: Department of Education and Employment.

Bywater, M. (1993). The Market for Cultural Tourism in Europe. *Travel and Tourism Analyst*, 6, 30-46.

Chanwit Kasetsiri.(1997). *Thai Trajectory and Cultural Tourism* . Bangkok: Way of Education Project.

Chun Srisawat, et.al . (2010). *Cultural Tourism: Case study, the culture of Chao Kuay Community in the Southern Isan and the Southern Laos.* Bangkok: Thailand Research Fund.

Huisman, S. and Moore, K. (1999).Natural Language and that of Tourism.*Annals of Tourism Research,* 26(2), 445-448.

Kanjana Saenglimsuwan. (2012) Sustainable Cultural Heritage Tourism. *Journal of Administrators,* 32(4). 139-146.

Kennett, F. (2002).Language Learners as Cultural Tourists.*Annals of Tourism Research,* 29 (2), 557-559.

Koliou, A. (1997). Foreign languages and Their Role in Access to Museums.*Museum Management and Curatorship*, 16(1), 71-76.

Kris Phattaraphakin. (2014). *A development of English for communication program for entering the ASEAN community for students of Education Faculty if Dhonbri Rajabhat University.* Dissertation in Ed.D. (Educational Administration and Management). Bangkok: Graduate School of Srinakarinwirote. Photocopy

Leslie David and Russell Hilary. (2004). The Importance of Foreign Language skills in the Tourism Sector : A Comparative Study of Student Perceptions in the UK and Continental Europe. *Tourism Management*, 27 (2006).

Ministry of Culture. (2012). World Heritage Convention. retrieved 10 May 2019, from http://www.thaiwhic.go.th/convention.aspx

Nantana Ronnakiet. (2013). *Sound, sound System and English Accent*. Bangkok: THammasat University

Tain-Cole, S. and Crompton, J.L. (2003). A Conceptualization of the Relationships between Service Quality and Visitor Satisfaction and their links to Destination Selection. *Leisure Studies*, 22, 65-80.

The Tourism Authority of Thailand.(2009). *Wai Phra 9 Wat.* retrieved 11 June 2019, from www.travel.kapook.com/view8373.html.

Theerawit Phinyonattakarn. (1995). Foreign Language Learning for Thai People: Why and How?. *Journal of Suranaree Technology.* 2, 203-206.

Theeraporn Phlailek. (2011). Factors affecting English speaking of year-2 students in English program. *Journal of research and development, Suansunanta Rajabhat University,* 3.

Watts, Noel. (1994). The Use of Foreign Languages in Tourism. *Research Needs: Australian Review of Applied Linguistics*, 17(1), 73-84.

Wilawan Anusorntanawat. (2012). *The tourist gets confused!!! Signs of directions and places in English have different styles of writing but the same meaning.* Retrieved 10 May 2019, from http://m.prachachat.net/news_detail.php?newsid=1352103727

World Toursim Organization. (2010). *Arrivals of non resident tourists/visitors, departures and tourism.* Retrieved May 10, 2017, from http://unstats.un.org

Employee Engagement in Healthcare : The Case of Medical Assistants at Buriram Hospital

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Abstract

This research aimed to study the current state of employee engagement among medical assistants at Buriram hospital by conducting a trend analysis of their organizational engagement from 2016 – 2020 and an in-depth interview on four executives at Buriram hospital. The results revealed that the overall trend of employee engagement among medical assistants at Buriram hospital over the last five years was at a high level ($\bar{x}$ = 3.57, SD= 0.76). When each component of employee engagement was considered separately, the dedication to organization was found with the highest mean score ($\bar{x}$ = 3.73, SD= 0.68), followed by the confidence in organization ($\bar{x}$ = 3.72, SD= 0.73) and the desire to be organizational member ($\bar{x}$ = 3.60, SD= 0.73), respectively. Meanwhile, the expectation of organizational response to employees' needs was significantly lower, presenting mean score at a moderate level ($\bar{x}$ = 3.22, SD= 0.85). Furthermore, three major areas that healthcare personnel wished to see at Buriram hospital were job security, relationship with colleagues and good organizational image, while compensation, benefits and working conditions were listed as three areas that could be most improved.

Keywords : Employee Engagement, Medical Assistants, Public Healthcare Person

1. Introduction

Current growing population in Thailand creates a situation where healthcare workforce is still in high demand and many healthcare professions are still lacking in numbers. Although many healthcare professions were increased in production capacity, the growing demand would still continue to make this shortage of healthcare professions remain a major challenge to Thailand's healthcare system in the future. Based on the projected numbers of production capacity and the demand for manpower in healthcare, it is forecasted that four major professions that would still be in high demand for continuing years are doctors, dentists, nurses and pharmacists (Thinkorn Noree, Harin Chokchaichan and Weerasak Mongkolporn, 2015: 25).

This shortage of healthcare personnel is mainly due to the resignation, which is closely related to the employee engagement (Kamthorn Prukananon et al., 2015, 126). The employee engagement has both direct and indirect effects on the resignation of healthcare personnel while it is also related to and structurally influences on the resignation of physicians in Thai bureaucracy (Ingarat Patrick See-Kheawsukwongkod, 2016: 184). In 2014, the Office of the Permanent Secretary of Public Health found that there was a shortage of 25 health service professions (an overview of the Office of the Permanent Secretary of Public Health) with a total of 55,885 Full-time Equivalent (FTE), of which 6,680 FTE shortage of doctors, 2,252 FTE shortage of dentists, 1,802 FTE shortage of pharmacists and 27,113 FTE shortage of professional nurses. The distribution was also found to be problematic because most public healthcare personnel were still concentrated in Bangkok and central regions. In 2013, it was found that the ratio of doctors and nurses to the population in the Northeast was lower than the central region by more than half (0.58 and 0.76, respectively), which contributed to the unfair distribution of healthcare workforce in providing healthcare services (Ministry of Public Health, 2016: 21).

Moreover, the information from the Ministry of Public Health Staffing Division (2013: 26) indicated that the resignation of personnel from the Ministry of Public Health used to be 29 percent in 2001 compared to the new doctors, but significantly increased to 63 percent in 2005 and 71 percent in 2009. Even though it was not clear whether or not they entered private hospitals after leaving, many studies supported this assumption. Thaksapol Thamrangsi conducted a study on factors leading to the resignation of healthcare workers and found that heavy workloads in the public sector and having to work far away from home and family were among the leading causes.

Over recent years, the Ministry of Public Health, as well as Buriram hospital, have been struggled to manage healthcare personnel because of a high resignation rate among medical assistants. The percentage of personnel retention rate in 2015 – 2017 was at 93.56, 90.02 and 89.26, respectively, with more and more personnel resigning accounted for 8.32, 11.08 and 12.02 percent, respectively (Annual Report, Buriram hospital, 2560: 20). As the trend of turnover rates is higher and is expected to continue to rise, hospital administrators are aware of the issue. As a result, the organization has changed its policy and management practices in order to motivate employees by boosting their confidence in the organization, the willingness and dedication to work, the desire to be a member of the organization, as well as being attentive to employees' expectations in terms of success and career path, respect, salary, or even good relationship with their supervisors. These components undeniably affect the morale of the personnel and, if being answered, would improve the efficiency and effectiveness of the organization. As doctors, nurses and other healthcare professions are currently in high demand, retaining these healthcare professions should become the top priority for the hospitals, especially those in the public sector

which pay lower wages, are behind on up-to-date services or medical equipments, and lack other conveniences compared to private hospitals. This causes stressful personnel and lack of morale in work. Effective human resource management by improving staff satisfaction and reducing stress with good working environment could ensure that the hospital can retain its valuable personnel (Nongnuch Wongsuwan et al., 2018: 1762-1763).

Therefore, the researcher aimed to study the current state of employee engagement among medical assistants at Buriram hospital in order to strengthen the organizational bond, reduce the turnover rate, and successfully retain this group of valuable employees.

2. Research Objective

This research aimed to study current situation of employee engagement among medical assistants at Buriram hospital.

3. Research Methodology

3.1 Population and Samples

The population is the medical assistants of Buriram Hospital. This means a practitioner who will facilitate and speed up their work so that medical personnel can perform their tasks more efficiently, such as dental assistants. Patient support staff, service staff, drug room staff and patient support staff of 1,495 who worked at Buriram Hospital from 2016 to 2020. In this research, the sample group was population.

3.2 Research Tools

The research tool was divided into 2 main parts:

3.2.1 Analysis of trends in organizational engagement elements by survey research using subject matter questionnaire tools. "Current situation, employee engagement in the group of physician assistants at Buriram Hospital" The analysis consists of four components: 1) trust in the organization, 2) dedication to the organization, 3) desire to be a member of the organization, and 4) the organization's response to employee needs.

3.2.2 The in-depth interview was performed on four senior leaders within the Buriram hospital to study the current situation of employee engagement in the group of physician assistants at Buriram Hospital. They were selected through purposive sampling and consisted of the director of Buriram hospital, the deputy director of human resources development, the head of human resources division, and the head of human resources development division. Interviewees were asked to give their opinions and criticisms on four components of employee engagement including 1) the confidence in organization, 2) the dedication to organization, 3) the desire to be organizational member, and 4) the expectation of organizational responses to employees' needs. They were then asked to suggest on how to improve employee engagement among medical assistants at Buriram hospital.

3.3 Data Collection

(1) The trend analysis of the organizational engagement component was based on responses to the employee engagement survey collected 2016 - 2020 from a physician assistant at Buriram Hospital. Four elements were examined: 1) trust in the organization, 2) dedication to the organization, 3) the desire to be a member of the organization, and 4) the organization's response expectations to the needs of its employees. the content validity was tested by 5 experts and was test by reliability test more than 95%.

(2) Compilation of employee engagement survey data from 2016 - 2020 was used to analyze trends, with descriptive statistics used to analyze numerical data, namely percentage, mean and standard deviation. Other recommendations were analyzed using content analysis.

(3) The in-depth interview was performed to collect opinions and criticisms on four components of employee engagement. Then, the researcher analyzed these data by using content analysis.

4. Research Results

The research results were found that

(1) Most of the sample were female (78.80 %) , most of them worked for more than 15 years(29.4 %) , most of the level of study is at the bachelor's level (65.83 %), most of them had 2-3 people to take care (44.65 %), most monthly income is between 10,000-15,000 Baht (23.3 %), most of the working status were civil servants, (44.66 %) , most types of jobs were practitioners (92.4 %), the majority of duties and responsibilities were healthcare (56.17 %)

(2) The analysis of the participation trends of medical assistants at Buriram Hospital in the years 2016 - 2020 consists of 4 components: 1) trust in the organization 2) dedication to the organization 3) desire to be a member of the organization and 4) organizational response to employee needs were summarized as follows.

Table 1 Employee engagement of medical assistants at Buriram hospital, year 2016 – 2020

Engagement Components	2016	2017	2018	2019	2020	$\bar{x}$	SD.	Interpretation of Score
	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$			
1. Dedication to organization	3.83	3.73	3.70	3.73	3.96	3.75	0.68	High
2. Confidence in organization	3.80	3.63	3.61	3.72	3.90	3.69	0.73	High
3. Desire to be organizational member	3.74	3.61	3.51	3.60	3.90	3.62	0.73	High
4. Expectation of organizational responses	3.36	3.11	3.05	3.22	3.55	3.19	0.85	Moderate
Total Average	3.68	3.52	3.47	3.57	3.83	3.56	0.76	High

From table 1, the overall employee engagement among medical assistants at Buriram hospital over the last five years was at a high level ($\bar{x}$ = 3.56, SD= 0.76). When considering each component of employee engagement individually, it was found that the dedication to organization had the highest mean score ($\bar{x}$ = 3.75, SD= 0.68), followed by the confidence in organization ($\bar{x}$ = 3.69, SD= 0.73) and the desire to be the organizational member ($\bar{x}$ = 3.62, SD= 0.73), respectively. Meanwhile, the expectation of organizational responses was significantly lower with the mean score at a moderate level ($\bar{x}$ = 3.19, SD= 0.85).

Based on the above information, trends of Analysis of trends in organizational engagement elements in the years 2016 - 2020 can be analyzed as shown in the figure.

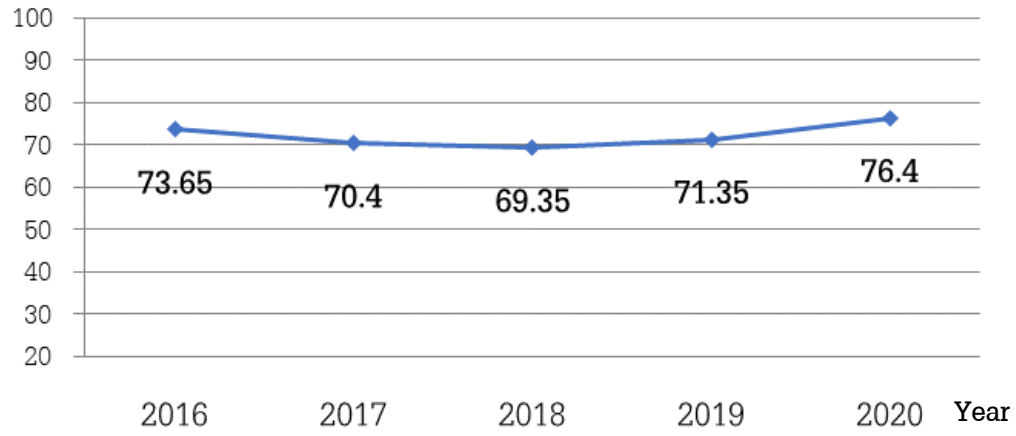

Figure 1 Trends of employee engagement of medical assistants at Buriram hospital

From figure 1, the employee engagement among the medical assistants at Buriram hospital in 2018 was measured at 69.35 percent, which slightly decreased from the previous year. However, the engagement continued to increase in 2019 – 2020, accounting for 71.35 percent and 76.40 percent, respectively.

(3) The results from interviews revealed that three important areas that healthcare personnel wished to happen at Buriram Hospital were job security, relationship with colleagues and good organizational image, while compensation, benefits and working conditions were listed as top three areas that could be most improved. It was also mentioned that the employee engagement started with the attitude and way of thinking of each individual; therefore, supervisors could be an important success factor. In addition, positive working environments within organization could contribute to employee engagement, despite heavy workload. Nonetheless, it was agreed among interviewees that changes could take time and required dedicated efforts.

Activities or programs which were mentioned to help improve employee engagement included: 1) Creating income-generating opportunities for low-income employees, such as happy markets, online marketplace, and singing contests. 2) Supporting personnel who are periodical employees to qualify as employees of the Ministry of Public Health. This would provide a career security and help enhance employees' morale. 3) Encouraging patient-supporting staff to further study in the nursing assistant program. 4) Creating more communication channels. It could be either through information technology (IT), voice broadcasting, or information documents to improve clarity in workplace. 5) Incentives for shortage professions by promoting good employees or outstanding performers to appreciate those who make their commitment and good contributions to the organization, providing housing and food, etc. The employee engagement should be constantly reviewed and improved. This is consistent with Buchanan's findings which stated that engaged employees were more willing and committed to work for the organization than those with low organizational affiliations. The organizational engagement made employees understand and accept organizational missions and values, while also encouraged them to work hard toward accomplishing the organizational goals.

5. Discussion of Results

From the analysis of organizational engagement among medical assistants at Buriram hospital, the results can be discussed as follows.

By analyzing trends of internal employee engagement among medical assistants at Buriram hospital, it was found that the engagement trend increased from 73.65 percent in 2016 to 76.40 percent in 2020. This increase was the result of two specific programs implemented in 2020; the Excellent Service Behavior Development Program (ESB) and the Scholarships offered for employees' children, as measures to help create working incentives. The happiness in workplace also increased in 2020, which aligned with the increasing satisfaction of personnel development. The expectation of the organizational responses to employees' needs was low at 67.17% due to the inadequate compensation and the difficulties encountered when coordinating with other departments within the hospital. It was found that shortage professions had less overall engagement than other supporting healthcare workers and professions. When considered by job categories and professions, it was found that the patient support staff had less overall engagement than other professions, with only 73.66 percent of them feeling engaged, and the main complaint was the insufficient income to cover for their normal expenses. This was consistent with the information from the Office of the Civil Service Commission, 2009, indicating that personnel still wanted to receive more compensation and benefits, especially the salary. This is because most of the medical assistants do not have sufficient income to meet their expenses. However, these temporary

employees choose to continue working due to various reasons, such as being local, wanting to be close to their family, or still could not find a new job, etc.

Though the confidence in organization was found to be very high, employees wished to see more opened and clear communication within the hospital. In the healthcare service system, leadership is seen in a situation where leaders can utilize his or her talents to collaborate in any activities to achieve a set of objectives (George & Stallard, 1980, p.493; Luthans, 1992, p.269). When employees collaborate with dedicated efforts to achieve organizational objectives and feel united, it is the evidence that the organizational engagement is established (Buchanan, 1974, p.533). Leadership is something that the senior management team should exercise to promote and develop greater organizational engagement (Ketsara Rakchart, 2007). Thus, it can be concluded that leadership is a crucial internal factor for employee engagement among healthcare workers.

As for the dedication to organization, it was found to be at a high level which indicated that employees were willing to perform their assigned tasks to the best of their ability. This internal motivating factor was important to build the organizational engagement within Buriram hospital because every health care operation required teamwork and collaboration, which could not be completed within a single service point. Therefore, personnel must have good working interactions. The analysis of qualitative data showed that important elements were good working atmosphere, collaboration, teamwork and effective communication. This was consistent with the results from several job satisfaction studies which stated that every employee needed recognition and sought after a healthy interpersonal relationship with others (Mcclelland & Atkinson, 1961), being able to work as a team (Herzberg et al., 1959), and being a good organizational member would help strengthen the organizational engagement (Mowday et al., 1982, pp. 434 - 434). Therefore, it can be concluded that the desire to be a member of the organization is important and is an internal factor affecting the organizational engagement.

The desire to be the organizational member was also at a high level as evidenced in the finding that employees at the operational level did not consider relocating while the division heads and supervisors intended to stay until their retirement. Healthcare work requires technical knowledge and is very challenging. The nature of work also allows independent decisions. Therefore, even if it comes with heavy workloads, healthcare workers take pride in their professions. This was consistent with Mowday's findings which stated that working regularly and being a good member of the organization could lead to a high organizational engagement (Mowday et al., 1982, pp. 433 - 434). If employees were not feeling engaged with the organization, negative behaviors, such as lateness, absenteeism, and resigning would follow (Allen & Meyer, 1990, pp.1 - 14). Hence, it can be concluded that job characteristics are internal factors which affect organizational engagement of public health personnel.

The expectation of the organization's response to employees' needs was at a moderate level. It was found that the money is one of the important factors as healthcare workers still needed better compensation and benefits, especially the salary. Most medical assistants do not usually earn enough to cover for their expenses. These groups of healthcare workers are employed as temporary employees, not as civil servants; therefore, it could influence their decision to leave the hospital. Thus, it can be concluded that the employment status affects the organizational engagement of healthcare personnel. However, these temporary employees might choose to continue working due to various reasons, such as being local, wanting to be close to their family, or not being able to find a new job (Office of the Civil Service Commission, 2009). Moreover, many workforce researches emphasized the significance of job security. Therefore, the expectation of the organization's response to employees' needs plays an important role in organizational engagement of health personnel.

6. Conclusions

The overall employee engagement among medical assistants at Buriram hospital from 2016 – 2020 was at a high level. When considering each component of employee engagement separately, it was found that the dedication to organization had the highest mean score, followed by the confidence in organization and the desire to be the organizational member, respectively. Meanwhile, the expectation of their needs being answered by the organization showed a moderate mean score. It is crucial that organizational leaders and senior management team pay attention to the organizational engagement, especially in aspect of employees' expectations and needs, in order to create personnel retention and long-term commitment to the organization. Various programs and activities could prove effective in enhancing the organizational engagement, such as happy markets, online marketplaces and singing contests to provide income-generating opportunities for low-income employees, encouraging periodic workers to qualify as Ministry of Public Health's employees to offer job security, and allowing patient-supporting staff to take a study leave in the nursing assistant program.

7. Recommendations

7.1 Application of Results

The research was found Employee engagement starts with an individual attitude and way of thinking. Therefore, a supervisor can be an important success factor. Therefore, emphasis should be placed on creating leadership for supervisors

7.2 Suggestions for Future Research

(1) Other related factors or different indicators of organizational engagement should be examined such as Happinometer and exit surveys.

(2) The improvement of employee engagement among other groups of healthcare workers should also be explored in order to have a holistic view of public health personnel in all target groups.

8. References

Allen, N.J., & Meyer, J.P. (1990). *The measurement and antecedent of affective, continuance and normative commitment to the organization*. Journal of Occupational Psychology, 63(1), 1-18.

Buchanan, B. (1974). *Building the organizational commitment - the socialization of managers in work organizations*. Administrative Science Quarterly, 19(4), 533-546.

George, T.R., & Stallard, J. J. (1980). *Office management and control: The administrative managing of information*. Homewood, IL: Richard D. Irwin.

Herzberg, F., Mausner, B., & Snydeman, B.B. (1959). *The motivation to work (2nd ed.)*. New York: Wiley.

Ketsara Rakchart. (2007). *Phuk Jai pheuphukphan*. Productivity World Journal for Productivity.

Mcclelland, D. C., & Atkinson, J. W. (1961). *The need to achieve theory: The achieving society*. Princeton, NJ: No strand.

Ministry of Public Health. (2013). *Personnel information from personnel management units in all departments under the Ministry of Public Health*. Personnel Management Unit, Office of the Permanent Secretary, Ministry of Public Health.

_____. (2013). *Health Personnel Information Report of Ministry of Public Health: Administrative information system for following up on operations*. Office of Policy and Strategy. Bangkok.

Nongnuch Wongsuwan, et al. (2018). *Effectiveness of human resource management within hospitals in Bangkok*. Veridian E-Journal, Silpakorn University. Thai Language Ed. Humanities, Social Sciences and Arts. 11 (1), January - April 2018: 1762- 1763.

Noree, Phakaiya, et al. (2007). *Factors affecting doctors to remain in community hospitals*. Bangkok: Graphico Systems Publishing House.

Office of the Permanent Secretary, Ministry of Public Health. (2011). *Allocation of public health personnel with geographic information*. Retrieved on 15 August 2016, from http://203.157.240.14/gis/report/pop_officer.php.

Pruksanont et al. (2016). *Report on factors affecting the resignation of doctors in the government sector in Thailand*. Bangkok: National Institute of Development Administration.

Social Contexts Towards the Strength of Maeka Sub-District, Mueang District, Phayao Province

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Abstract

This research aimed at 1) investigating the social contexts affecting the strength of Maeka Sub-District, Muang District, Phayao Province, and 2) proposing a notable guideline leading to the strength of Maeka Sub-District. It employed a qualitative research methodology by means of non-formal interviews as well as participant observations during 2 years in 2019 and 2020. The key informants were 180 persons, 10 of whom were chosen from each of 18 villages, in Maeka Sub-District, Muang, Phayao. The study revealed that the social contexts in Maeka Sub-District mainly refer to therein social capitals of shared natural resources, people, traditions, indigenous knowledge, groups and institutions. Despite of richness in natural resources, Maeka needs adequate policy and planning for the environmental sustainability. For the people, there are villagers and immigrants living in different ways due to the various backgrounds and purposes. The former live a traditional life clinging to their traditions and norms, whereas the latter live a more energizing life due to their purposes, such as education and business. The local knowledge and skills such as agriculture, food, rituals, language and performing arts traditionally prevail, but they need a contemporarily trained and developed. The gatherings of villagers show a strong relationships, sense of belonging, trust, and kinship among them that need more considerable expertise networks. For the institutions, eleven temples and two universities can empower the people in the spiritual aspect as well as the academic aspect. Furthermore, the two universities: University of Phayao and Mahachulalongkornrajavidyalaya University, may mark Maeka as the 'University Town'.

Keywords : Social Contexts, Social Capitals, Strength of Community

1. Introduction

Ever since 1961 Thailand issued the first national economic development plan aiming at the sole economic growth and laying countrywide infrastructures. The plan primarily emphasized on the economic growth alone so that there would be the well-being of Thai citizens. Though the later plan endorsed the social dimension of development into the plan as 'the national economic

and social development plan', yet it mainly focused on the infrastructure development of the country, and the government still played a major role in the top-down approach in development. It can be said that the second to seventh plans continuously followed the same approach and goal. However, the turning points occurred in the late 1996 when Thailand encountered the economic crisis well known as 'Tomyamkoong Crisis'. The crisis not only reflected the unsustainability of economic development, but also the social and environment problems. When the government fell down, all sectors also collapsed since they depended on the centralization policy. As a result, the eighth plan (1997-2001) endorsed the development dimensions on human and community as the basis of development according to the Philosophy of Sufficiency Economy initiated by the late King Bhumibol. The so called philosophy is based on the key concept in sustainable development of men, business, culture, community, and environments (Office of the National Economic and Social Development Council, 1996, online access). From the eighth plan to the present one (Twelfth Plan), the national plans concerned with the people and their communities in order to boost the civil society where the development is of the people, by the people, and for the people. If this mode of development works, people and their communities would become the change agents in accordance with their specific contexts, whereas the government and local administration organizations would only play a supporting role.

The key concept for development after the crisis has been based on the Philosophy of Sufficiency Economy in order to reduce risks in economic and social problems and to boost the strength of a community as its ultimate goal, as it is shown in the present plan (2017-2021) in the first and second strategies: strengthening and realizing the potential of human capital and creating a just society and reducing inequality in order to strengthen the community (Royal Gazette, December 30, 2016, Number 133 Section 115 A). The potential of men and a just society are relevant and go hand in hand to create an ideal community. Therefore, the strength of a community is a key target in development. The so called 'strength of a community' refers to the communitarianism or community culture, an alternative way of development that implements the mode of community-based development in relevance with its various contexts. This theory reflects that each community has a unique context and can be self-sufficient, thus needs a different approach for development. The local contexts cover vast areas of things, both tangible and intangible, in a community. For example, they include environments, culture, ethnic, business, human resources, etc. Overall, they can be regarded as 'community capitals' or 'social capitals' (Seri Phongphit, 2010: 89-91). The strength of a community depends on these therein constituents, whereas the local administration organizations should play a supporting role in planning and assistance on community favors.

Maeka is an old name given to a remote village from Phayao city some 132 years ago, since it was found in 1887 by a small group of caravan merchants from Lampang. Originally,

the first establishment was known as 'Maekanamlom Village', later changed to 'Maekaluang Village'. Since then, there have been more immigrants from various areas to settle down around and far from the first one until extending to 18 villages at present with over 14,103 inhabitants (Maeka Municipality Information Section, 2019). However, there may be more double latent populations if the numbers of students and staffs of the University of Phayao including other immigrant entrepreneurs and workers are added. Before establishing the University of Phayao in 1999, then it was a distant campus of Naresuan Univesity in Phitsanulok Province, Maeka was just a rural area in which people lived their traditional lives as farmers and labors. As soon as the new university had been established, the wind of changes significantly occurred around the university area. The local way of life has been challenged by the new trends of mainstream development approaches, such as urbanization, commercialization, standardization, globalization, especially in Moo 2 and 16 (Village No.2 and No.16), whereas the other villages in the same sub-district do not share the same contexts. For example, some areas remain remote and rural with its traditional way of life, and some become semi-urban with a various ways of life. Hence, the idea of 'One size (of a shirt) fits all' may not be practical to all villages in Maeka to cope with different problems and challenges.

It is seen that the specific context in Maeka Sub-District mentioned above is a meeting point between the modernization and localization, thus it is necessary to be deeply investigated in order to pinpoint its unique context in each villages under the same administration run by the Maeka Municipality, so that the findings would be a guideline for an adequate development plan in accordance with the contexts of each village and of overall Maeka. Thus, this research was conducted in order to find out Maeka's contexts with special references to the context of capitals therein.

2. Research Objectives

This research consisted of two objectives:

1. To investigate the social contexts affecting the strength of Maeka Sub-District, Muang District, Phayao Province

2. To propose a remarkable guideline fitting with specific social contexts leading to the strength of Maeka Sub-District, Muang District, Phayao Province.

3. Literature Review

A researcher had gone through the academic works relating to the communitarianism, also known in Thai academic sphere 'community culture', which is regarded as an alternative development approach apart from the mainstream ones. This idea has been adopted from the Asian Mode of Production – AMP by the Thai NGOs (Non-Government Organizations) since

1977s onwards. It contrasts with the mainstream concepts of development that brings about unsustainable outcomes affecting quality of life in the long run, such as the environment problems, culture change, local norms disrupted, and social crisis. Some well-known scholars whose works concern with this idea are Chatthip Natsupha, Phaiboon Vatthanasiritham, Seri Phopngphit, Praves Vasee, Niphoj Tienviharn, Kowit Puang-ngarm, and Anek Nakabutr. The community culture is a paradigm based on a strong belief that each community has the immunity and self-sufficiency since there are various capitals therein, especially the social capital. The previous development plans have mainly been top-down approaches from the government supervised by American and European plan-makers who were less experienced in the local contexts of Thailand. They have less concerns with socio-cultural multi-dimensions prevailing in each community and tried to adopt the same pattern of development. Therefore, no room left for local initiatives in creating a unique plan for their own interests.

There are many forms of capitals embedded in local history, culture and social interactions that could be used. The social capitals seem to cover vast areas of values in a community. They include trust, reciprocity, moral obligation, networks, shared rules and norms, and local knowledge. Some Thai scholars like Anek Nakabutr (2002: 16-19) and Suvannee Kamman and others (2008: 5-6) regard the social capitals in Thailand as the social bottom power leading to change for the civil society. Social capitals-based approach could be a powerful alternative development for a better community, since it is 'inside-out blasting' and goes hand in hand with the socio-geographical spheres according to the late King Bhumibol. According to Anek, there are five types of the social capitals: 1) spiritual capital of sense of belonging, obligation, and pride in one's birthplace or community, 2) indigenous wisdom initiated by experiences and learning from actual surroundings and adequately, timely applied, 3) local leaders or conventional leaders who can compromise and centralize inhabitants therein, 4) natural resources like community forests, rivers, and lands, and 5) social funds or collectiveness such as community fund-raising groups, housewife groups, public mind groups, etc. Meanwhile, Suvannee Kamman and others specify the four social capitals: 1) human capitals whose health, mind and wisdom are well developed, 2) institutional capitals or organizations or groups that are united for the community interests, and 3) cultural capitals consisting of historical background, local archeology, shared values and norms, traditions and rituals, and 4) a unique body of knowledge or wisdom which is learnt, preserved, and timely applied.

Some interesting research works done under the framework of social contexts with a special focus on capitals prevailing in communities can be summarized into two main points: the changing contexts in Maeka after establishment of University of Phayao in 1999, and the social capitals that empower strength of communities.

Changing Contexts in Maeka can be seen in the following research projects: Kwan Sanguansermsri (2013) made her survey on Maeka people's ways of life in the aspects of community's economic, social, environmental, political, and local wisdom contexts. The findings revealed that economic growth rate and health care were higher, whereas the environment problems increased such as chemical use in farming, deforestation, the burning of waste, air pollution from burning, and the shortage of water, the social problems increased, and participation and preservation of local traditional and rituals decreased. Panyupa Nopparak and others (2016) conducted a research project on the urbanization in communities around the University of Phayao, and revealed that Maeka communities around the University became urbanized in five following dimensions: 1) increasing populations and changing way of their lives, 2) upgrading the local administration organization into the municipality, 3) economic growth and expansion, 4) enlarging infrastructures such as road, water supply, electricity, and 5) becoming a university city where there have been increasing latent populations. The most two extreme social impacts, both positive and negative, are the variety of occupations and incomes, and on other hand, the environment crisis.

For the research regarding social capitals, Piyapong Boossabong and Sunthonchai Chopyot (2015) investigated on the social capital-based local policy and governance as an alternative approach to the local development in the 21st Century. It was found that though the government tried to decentralization into the local governance more than a decade ago, the local governing body seems to employ the top-down approach in development. Further, the central government recently emphasizes on policy on creating innovations, it provides no room for old traditions which are normally basis in all locality. Social capitals are one of the old ones. The researchers insisted that the social capitals are still practical in all communities where the trust, reciprocity, moral obligations, networks, and indigenous knowledge are taken deep roots. Just like four old cities in the north-eastern region of Roi-et, Khonkhaen, Mahasarkam and Kalasin, attempted to adopt this approach. Sarit Pha-art (2016) studied the dynamics of social capital management in multi-religious society in Saikhao Sub-District, Kophoe District, Pattani Province. He pointed out that this community is rich in social capitals since the people accept and trust in one another's religion, handed down reciprocity, and participation in community activities. The key success depends on community reputation and pride with the discourse of 'Men of Saikhao', harmonious living between Buddhists and Muslims, kinship. The leaders also played an essential role in mutual understanding both different faiths through local traditions and rituals. They also issued a social norm of rotating the village headmanship among Buddhists and Muslims, one term for each side. The local administration organization provides financial supports for the community activities.

It should be noted that the best practices for adopting social capitals in one community may not be practical or could not be a benchmark to another community in using the same approach, since each community have a unique capital that cope with different contexts and challenges in its own community.

4. Research Methodology

1. Key Informants

The key informants were composed of 180 inhabitants in all 18 villages in Maeka Sub-District area, ten of whom were purposively chosen from each village on the basis of the following reasons: 1) they all are at the age over 20 and local inhabitants over 10 years, and 2) five of them in each village are the village key men such as a headman, vice-headman, well-known local intellectuals. Moreover, the five more Maeka Municipality administrative staff including Maeka Municipality Mayor were interviewed as reflections from the sub-district governing body. A researcher employed the Snowball Technique or Sampling in which the precursor informants provide referrals to recruit other informants required for interviews.

2. Research Instruments

The research instrument consisted of non-formal interviews along with the participant observations in various occasions, especially in local gatherings such as usual merit-making ceremonies in the Buddhist Temples, villagers' meetings and local markets. A researcher made in mind the points for questioning and discussing about Maeka's multiple capitals. Data collection was conducted for 2 years during February 2019 to December 2020. The given responses were taken short notes soon after the end of interviews and observations.

3. Data Analysis

The collected data were examined, interpreted, and analyzed by means of the content analysis. Furthermore, the reflections given by the administrative staffs of Maeka Municipality were taken into account in order to recheck and compare with those given by the 180 key informants.

5. Research Results

So far the non-formal interviews and participant observations were made in all 18 villages in Maeka, the social contexts and capitals were explored in the following findings:

Physically, Maeka is located in a plain and hills along both sides of Phaholyothin Highway. 18 Villages in Maeka can be categorized into five main clusters out of which 17 villages were later separated, except one independent village of Moo 18: first cluster starting from Moo (Village No.) 1 as the original settlement then separating to Moo 10 and Moo 14, respectively, the second cluster starting from Moo 2 as the original settlement to Moo 12 and Moo 16, respectively, and the third cluster starting from Moo 3 to Moo 7, the fourth cluster starting

from Moo 4 as the original settlement to Moo 6, Moo 13 and Moo 17, and the fifth cluster starting from Moo 5 as the original settlement separating to Moo 8, Moo 9, Moo 11 and Moo 15, respectively. Only Ban Maetamnoi Moo 18 is independently settle down and distances from other 17 villages since it is in total hilly and rural area with its unique tribal inhabitants. First groups of immigrants in all 17 villages were mostly from nearby provinces, especially Lampang, Chiangrai, Nan and Phrae. After the establishment of University of Phayao, there have been a variety of immigrants from all over the country to study in the University and work around the University area. Thus, there are on-and-off latent uncountable populations. The main natural resources consist of agricultural lands and farms which are mostly under the land reform project out of which are misused for business and housing of the rich. There are five main streams called Huaynapoi, Huaysaidaeng, Huaykhian, Huaykiang, and Huaymaetam, and two reservoirs called Huaynapoi and Maetham. The forest areas are along with the hills, though some parts are preserved as community forests just as the community forests of over 212 Rais each in Moo 12 and Moo 17, yet most other are gradually deforested and occupied by invaders for their plantations and housing or business.

A notable gap of community culture here can be seen through the new housing estates in Moo 4, Moo 6, and Moo 13, and 3 estates in Moo 8, which overlap the traditional housing therein both lifestyle and their typical house planning. Those in the new estates live a modern lifestyle in their modernly designed houses with less interactions with the nearby folks. Most of them are officers, entrepreneurs, and self-employed. An informant B4 said that they (members of an estate in Moo 8) lack the communal sensibility in the village, keep distances and observe individualism; however, they bring about the so called 'prosperity' to the village in terms of economic growth rate and new infrastructures (interviewed October 12, 2020). Whereas, the latter responded that they are newcomers and have not been familiar with villagers; they have been busy with their jobs and have no free time to join the frequent activities in a village (an informant B6, interviewed October 12, 2020). The gap is also found in all villages where there are immigrants residing, especially along the highway except Moo 18.

Way of earning living costs of most populations is in a traditional way. Agriculture and animals husbandry are main occupations along with additional jobs such as hireling, laboring, weaving bamboo basketry, making grass brooms, hunting and finding naturally grown items like mushrooms, young bamboos, fruits and vegetables from the forests. There is an inconvenient truth about the folk belief in burning the farmlands and forests in the summer as to prepare them for the next plantations and for the new mushrooms and some favourite forest vegetables to grow. The fire pollutes the environment as a whole such as air pollution, killing wild animals, and soil damage. People live a slow life in such a way called by them as sufficient and simplified living. It contrasts with those immigrants who later purchased the lands previously owned by inhabitants

and settle down along roadside surroundings, especially around the University are mainly energizing entrepreneurs. However, they all shared the same capitalism-driven social system including those who live in a rural area like in Moo 18 (Ban Maetamnoi), need more living costs to pay bills. As some informants B18 (interviewed on July 12-13, 2020) confirmed that their annual living costs rely on the rainy drops, mercy of the merchants as well as good luck and government policy on agricultural price, while they have to pay daily bills for the basic needs, electricity fees, education fees and hi-speed internet fees for their kids. The economic recession plus the city shutdown policy due to the pandemic of Covid-19 more affects earning a livelihood to all villages the same. But, being farmers, most villagers have disadvantage in earning living costs, they mostly depend on the loans both formal and informal.

Kinship, seniority, gratefulness, and belief in Buddhism are regarded as a social norms. For the folk beliefs, superstitions, ancestor spirit worship, and animism are also preserved, though people officially believe in Buddhism in which the Triple Refuge: Buddha, Dhamma and Sangha are main venerations. The small spirit houses in almost houses and shops are daily venerated, while the spirit houses of the village guardians annually sacrificed; even in temples, the mixed faiths and practices between Buddhism and animism focus on lucks in the lottery and earning a livelihood. For examples, the statues of the Buddha called 'Phrachaotanjai or the Buddha of suddenly fulfilled wishes', as well as the other gods like Lord Ganesh, Brahma, Chinese Guanyin Mother, and even some ancient big dead wood, are also consecrated in a high esteem with belief in superpower embedded inside. The so called tradition 'Pengput' (เป็งปุด) is an obvious example of mixing between Buddhism and folk belief which is based on superstitions in earning living. This tradition has been consecrated in Wat Maekahuaykhian and Wat Morkaengthong on every full moon midnight that occasionally falls on Wednesday in order to conduct the alms giving to the Arhant Upagutta who lives immortal under the deep ocean. The elder monks also perform the mystic rituals and magic due to the requests made by people, such as new car welcoming ceremony, horoscope, and bad fortune removing ceremony, etc. These traditions differ from the tribal villagers in Moo 18 who believed in the Chinese traditions like ancestor warships and celebrations of Chinese New Year, though some accept that they are Buddhists, yet they never have Buddhist practices done in their daily life, because there is no any temple, they practice the Shamanism instead. Some believe in Christianity and prepare a building for the group prayers separately.

Human resources, though mostly were born therein, yet consist of various backgrounds of newcomers in their ages, education, sexuality, belief, and social status, etc. which widen the gaps between insiders and outsiders and generations. As an informant B2 (interviewed on June 2, 2020) pointed out, 'The newcomers live here (Moo 2) for the sake of their business without involving village traditions and activities, they just behave like people in metropolis. We also worry

about future of our children who are the new generations with different mindset and manners in culture and politics.' Monks, elders, teachers, intellectuals, and village headmen are traditionally prioritized as natural leaders in a high esteem, whereas the legally authorized leaders like mayor and representative members of the municipality parliament are timely honoured. The significant monks who play a leading role in guiding way of life for people and being pioneers in establishing the only first two elderly schools in temples are abbots of Wat Maekahuaykhian and Wat Maekatokwak. The former also holds the Maeka's governor title who administrates the monks' affairs in Maeka Sub-District. Recently, both abbots launched 'Toopansooks' (Sharing Happiness Cupboards) for those who need in order to cope with the pandemic of Covid-19, including raising funds for the disabled and poor in the village cluster 2 and cluster 4. Two notable leaders in the way of sufficiency economy are Manoj Tesin and headman Pariyat Suwan from the village cluster 1. Both are resources in the Sub-District whom the municipality acknowledges and recommends for the best practices in the self-reliance.

Funds found in all villages are the village financial funds from the government, additional saving funds, cremation welfare funds. Some funds like the village financial fund and village saving fund seem not to respond the loans of villagers who need money lent because those who loaned earlier could not pay back the loans on time. Thus, more villagers find other loans outside their village loans and become debtors for the informal loans (informant A17, interviewed October 20, 2020). To earn the extra incomes, people who share the same skills and preferences gather as a specific group, such as housewives or female groups for making different handmade products in accordance with their skills such as basketry and local food cooking. There are some social enterprises run by groups of people, such as the community marketplaces in Moo 2, 4, and 16 where the people can bring their freshly homegrown fruits or vegetables or homemade products to trade, group of chilly roasted in sand in Moo 4, beef cattle raising group in Moo 6, earthenware pottery group in Moo 7 (Vieng Bua archeological site), frogs raising group in Moo 13, traditional liquor brewery group in Moo 15, traditional aerobic dance group in Moo 16, and two elderly schools in monasteries of Wat Maekahuaykhian and Wat Maekatokwak. These two elderly schools render spiritual services to elders from at least 10 surrounding areas out of 18 villages and become the study visit sites in Maeka (informant A1, interviewed on June 30, 2020).

Institutions and organizations are comprised of both government and non-government sectors. The foremost and primary institutions are eleven temples in Maeka that serve the spiritual needs and year-round social activities for the embedded people. The municipality with the motto declared by the present mayor: 'wisdom-based developing the city with the partnership of Maeka people', seems to serve the routine jobs in the office rather than serves decentralizing ideology. However, the municipality has well done in the facilitating and participations in the villages' traditions and activities. There are two universities: one Buddhist university namely

Mahachulalongkornrajvidyalaya University, Phayao Campus, and University of Phayao. The former as a specific religious institute runs the courses relating to Buddhism and Philosophy for both monks and lay students. This university seems to emphasize the teaching mission rather than social services or socially engaged missions in Maeka. Therefore, more people in Maeka wonder there a kind of religious institute exists. The University of Phayao seems to serve as the comprehensive institute, not only in terms of teaching mission but also render services for the social engagement with its clearly motto: 'wisdom for community empowerment'. The obvious example can be seen in the big campaign called 'One Faculty One Signatue' which was formerly known as 'One Faculty One Model'. This campaign is designed to all faculties to apply their knowledge and skills for solving local problems.

7. Discussions

The findings as mentioned above can be put into the discussions in the following order: The first discussion was made on the environmental problems and cultural gaps between the old and the young, and the inhabitants and immigrants. For the environmental issues, the urbanizations in Maeka area especially the settle down along the highway and around the University of Phayao can be seen through the problems in misuse of lands in the agricultural reform zone, forest invasions and burnings, and waste managements. For the cultural gaps with a special reference to the traditional and local beliefs and practices, there are widening gaps of generations, the old and the young, and the inhabitants and the newcomers. This finding was in the same line with those found by Kwan Sanguansermsri (2013) and Panyupa Nopparak and others (2016) whose studies results revealed that Maeka's environmental problems were about soil, deforestation, waste and air pollutions, meanwhile the young and newcomers hardly paid attentions over the local traditions. The urbanization around the university brought about the economic growth but on the other hand it lead to the environment crises.

The second discussion focused on the finding of a key to strength of Maeka community which is based on the contexts or capitals without interfering and dominations of the government with top-down approach. Since the government usually promotes the campaign on moving country forwards with the innovations of things as to create a smart city, this implies that all villages should leave behind their 'old entities' in order to create the new things. But the social capital in each community signifies the traditional things, such as relationships, mutual understanding, beliefs, norms and morals, that have been the long deep roots in each society. Is it necessary that the utmost outcome of the development in each villages should be the same? Is it better if the government or local administration organizations just facilitates the locality in designing their own development plan in accordance with therein capital. This key was also revealed by Piyapong Boossabong and Sunthonchai Chopyot (2015) that boosting innovations, and interfering and dominations by

the government made no room left for the locality in creating a unique approach for the community where there are a variety of social capitals fitting the socio-geography. The government should let the locality learn to use the social capital to cope with the modernizations.

Another key to the strength is the communal sensibility or the sense of belonging to the same area. This idea is an abstract and difficult, yet necessary to arouse it to happen, since it is a pride or dignity that unifies a variety of men in Maeka into oneness as Maeka citizenship. However, the main challenge in Maeka is, according to the researcher, seeking a core identity as the 'University Town' where the two universities: both secular and monastic, co-exist. This proposal is in the same line with Sarit Pha-art (2016) whose study results showed the case study in Saikhao Sub-District in Pattani where the Buddhists and Muslims fall on the same pride as the 'Men of Saikhao' without discrimination of Buddhism or Islam.

8. Conclusions

As far as the research work had been conducted, the study revealed that the so called social contexts coincide with the social capitals in Maeka Sub-District that include trust, reciprocity, moral obligation, networks, values and norms, and local wisdom in the present Maeka community of 18 villages. The so called capitals can be summed up into 2 types: the tangible and intangible. For the tangible, Maeka was quite rich in natural environments such as lands, forests, hills, and streams, but due to the lack of planning in order to cope with urbanization after the establishment of the University of Phayao, they were misused for the sake of business and encounter the environmental crises mainly from illegal use of lands, waste from the entrepreneurship, deforestation for the housing and agriculture, air pollutions from forest and dry waste burning. The housing also varied between the traditional and modern housing: residing housing and big buildings and housing estates. Maeka is also rich in festivals, ceremonies, and rituals based on Buddhism throughout a year, such as Songkrant Day, Buddhist Holidays. There are two main groups of people: 1) inhabitants who have been regarded 'villagers' embedded in Maeka over 10 years, and 2) immigrants who casually live here for a specific purposes like educations and business. The leaders can be divided into 2 groups: 1) traditional leaders especially the monastic abbots, seniors, indigenous intellectuals, and 2) official leaders appointed by the government or authorized by the concerned organizations, such as the mayor, administrative staff, headmen, and representatives in the municipality.

The social funds and groups in each villages are based on casual gatherings, for example, old aging groups, market places, local music and performing arts groups, basketry groups, alternative saving funds, etc. They need more outside networks to help them develop the tasks. For example, the basketry group in Moo 1 needs at least collaborations with the municipality, skilled designers and marketers to help them manage, design a specific as well as attractive

basketry and an opportunity to sell out. For the institutions, there are two main types: the temples and universities. The former consist of eleven temples scattering through all village clusters and perform regular Buddhist rituals, except only Moo 18 where the occasional religious activities are led by tribal shamans for tribal Buddhists and by an external Christian pastor for the tribal Christians. Only two temples, i.e. Wat Maekahuaykhian and Wat Maekatokwak, operate the active elderly schools where the elderly from more than 10 villages join. The latter are the monastic university namely Mahachulalongkornrajavidyalaya University, Phayao Campus, and the secular one named University of Phayao. Both stand for the landmarks of the monastic knowledge alongside with the worldly knowledge and may help highlight Maeka as the 'University Town' in the near future.

The intangible capitals can be seen through peoples' traditional way of life, social norms mainly based on the seniority, kinship, and belief in Buddhism along with folk beliefs in superstitions and animism. However these traditions and ideologies are challenged by the youth and immigrants as they regard those activities unrelated to their lives. For example, the social cohesion is usually preserved by the elderly who emphasize on the social engagements and activities; whereas the youth and newcomers may casually participate or keep distances and observe individualism. The indigenous knowledge and skills in many aspects such as agriculture, handicraft, local language, music and performing arts, folk beliefs, etc. are discarded by the youth as they regard them out of date. Social norms such as premarital sex and nightlife which once were a taboo, are commonly adopted by the youth. The aforesaid gaps between youth and elderly, and inhabitants and immigrants, may be narrowed, if both sides share the dream regarding Maeka as a melting pot which welcomes and unites all the same.

9. Suggestions

There are two suggestions reflected in this paper:

1) a suggestion for making use of the finding in this study as a guideline for the development policy and planning of Maeka municipality in terms of Maeka's environments, human resources, traditions, funds and groups, and institutions without the top-down approach,

2) a suggestion for further study in possibility of the public policy on highlighting an identity of Maeka through the campaign 'the University Town', just as made by the local government of Pune City in Maharashtra State, India, in featuring Pune City as the studying area well known as 'Oxford of the East'.

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11. References

Anek Nakabutr. (2002). *Social Capital and Civil Society in Thailand.* Bangkok: Office of Social Fund, Government Serving Bank.

Kwan Sanguansermsri. (2013). Maeka People's Ways of Life. *Journal of Humanities and Social Sciences*, University of Phayao, Volume 1 Number 3 (Septempber-December, 2013), pp.54-63.

Maeka Municipality Information Section. 2019. *Maeka's Population Census Information in 2019.* Phayao: Maeka Municipality, Phayao Province.

Royal Gazette, December 30, 2016, Number 133 Section 115 A. *Declaration on the 12th National Economic and Social Development Plan (2017-2021).*

Office of the National Economic and Social Development Council. *Economic and Social Development Plans*. Access from https://www.nesdc.go.th/main.php?filename=develop_issue

Panyupa Nopparak and others (2016). *Urbanization in the Communities around the University of Phayao: the case of Maeka.* Research Project funded by the University of Phayao, Phayao Province.

Piyapong Boossabong and Sunthonchai Chopyot (2015). The Social Capital-based Local Policy and Governance: An Alternative Approach to Local Development in the 21st Century. *Journal of Social Sciences*, Naresuan University, Vol.11 No.1 (January-June 2015), pp. 55-83.

Sarit Pha-art (2016). The Dynamics of Social Capital Management in Multi-religious Societies: A Case Study of the Tumbon in Saikhao Community in Amphor Kokpoe, Pattani Province. *Journal of Social Development.* Vol.18 No.1, (April), pp.61-84.

Seri Phongphit, (2010). *100 Technical Terms that should be known*. (Revised Edition). Bangkok: Palangpanya Publishing.

Suvannee Kamman and others. (2008). *Social Capital towards development of Human Capital.* A Paper for 2008 Annual Academic Seminar by Chaipattana Foundation, Office of the National Economic and Social Development, and Thailand Development Research Institute. November 29-30, 2008. Ambassador City Hotel, Chomtien Beach, Chonburi.

An Analysis of Pragmatics in a Movie : A Case Study of Illocutionary Acts in *Aquaman*

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Abstract

The purpose of this research was to investigate the types of illocutionary acts employed by the main character in *Aquaman*, and to examine the frequency of illocutionary types used by the main character in *Aquaman*. Both qualitative and quantitative methods were used in this study. The population consisted of the scripts in the movie *Aquaman*. The samples selected via a purposive sampling method comprised the main character's utterances found from the movie dialogues. The descriptive statistics i.e. frequency and percentage were employed to analyze the quantitative data while content analysis was made for analyzing the qualitative data. The research results revealed that:

1. The following five types of illocutionary acts were employed by the main character in the movie: representatives, directives, comissives, expressives, and declaratives.

2. For the frequency of all five types of illocutionary acts used by the movie main character, it was found as follows: Representatives were mostly found (46.01%), and were followed by directives (25.77%), expressives (23.31%), comissives (3.68%), and declaratives (1.23%), respectively.

Keywords : Analysis of Pragmatics, Illocutionary Acts, *Aquaman*

1. Introduction

Communication is the transmission of a message which goes from a sender to a recipient. Every communication contains at least one sender, a message, and a recipient so that they can exchange knowledge, beliefs, opinions, wishes, threats, commands, or even their feelings (Taylor. 2005: 4). We use language as a tool in conversation because we cannot even make or create a sentence without using language. The communication will be complete if both sender and recipient understand the same thing when a message is conveyed. The key to effective communication is to ensure that your message is understood, stimulating the recipient to take an

appropriate action, or affecting the way the recipient thinks about in some ways. Language is more than a word and how the words are put together. In every language, problems in communication occur all the time. Especially misunderstanding between the speakers and listeners (Mcwhorter. 2004: 3).

Pragmatics is the study of the cognitive processes involved in utterance interpretation. Pragmatic aspects of meaning imply relations between language and human cognition, that is, the structure and property of natural languages and the language of thought (Rajma, 2007: 48). The speakers and receivers need to know and study pragmatics because in daily conversation, meaning is very important so people can know what the speaker's intention is and they can also avoid misunderstanding one another. Therefore, it is all important to bear in mind when we want to effectively analyze a speech act.

A speech act is an utterance that serves a function in communication speech acts. It is used in everyday life for greeting, apologizing, requesting and complaining. Austin (1962) is a British philosopher of languages who showed that people not only use language to assert things but also to do things. Later, Searle (1980) brought the aspects of theory into much greater prominence. Cultural differences play an important role in speech acts, because some words cannot be translated into another language. Speech acts do not only just exist in daily conversation, but they are also in films because they reflect human life through characters, dialogue and conversation which contains speech acts (Hickey. 2012: 3). Speech acts must be applied in their utterances in order to convey their intention or their emotion. For example, when characters want someone to do something by using their language to perform an action.

Aquaman is a U.S. movie written by James Wan which was adapted from a fictional superhero appearing in American comic books published by DC Comics that was created by Paul Norris and Mort Weisinger (Barnhardt. 2019). DC Comics is one of the largest and oldest American comic book companies. These iconic characters are very popular all around the world. The movie adaptation of *Aquaman* opened nationwide on December 21st 2018 and earned mostly positive reviews, with many praising the film's underwater special effects (Dirks. 2013).

According to the lack of communication and the misunderstanding between speakers and listeners, this study aims to clarify the illocutionary acts based on Searle's theory (1980) relevant to five types of illocutionary acts i.e., Representatives, Directives, Commissives, Expressives, and Declaratives. Therefore, the *Aquaman* movie has been used as an example. As a result, the research results will be useful for those who are interested in studying pragmatics in a movie.

2. Research Objectives

This research consisted of two objectives:

1.2.1 To investigate the types of illocutionary acts employed by the main character in *Aquaman*

1.2.2 To examine the frequency of illocutionary types used by the main character in *Aquaman*

3. Research Methodology

3.1 Population and Samples

The population of this study consisted of the *Aquaman* movie scripts. *Aquaman* was written by Mort Weisinger. The movie has no sequel as of 2020, and it is 2 hours 22 minutes long. The samples were composed of 163 main character's utterances. They were chosen from the *Aquaman* movie scripts, and the samples were selected based on a purposive sampling method.

3.2 Research Instruments

The research instruments were Searle's theory (1980) used to analyze the main character's utterances in the *Aquaman* movie. The following theory were analyzed:
1) Representatives, 2) Directives, 3) Commissives, 4) Expressives, and 5) Declaratives.

3.3 Data Collection

The researcher collected data from the main character in the *Aquaman* movie. The procedures to collect the data were as follows:

1. The data from this study were from the movie, *Aquaman* which originated from an American comic strip superhero written by Mort Weisinger, and it became a movie directed by James Wan.

2. The researcher watched the whole *Aquaman* movie with the subtitles and printed out the movie script.

3. The researcher rechecked the movie scripts by comparing the subtitles that appear on the screen.

4. The data were collected from the main character's utterances.

5. The tables were created, and the selected sentences were also listed into the tables.

6. The researcher analyzed the data by employing the theoretical framework of Searle (1980) sentence by sentence.

7. The coding was presented to advisors and three experts for their consideration and approval of the data correctness.

3.4 Data Analysis

Each of the utterance was analyzed for identifying the type of illocutionary acts that applied by the main character based on the theoretical framework of Searle (1980). The collected data were coded based on Searle's theory (1980) to discover the type of each utterance. The accuracy of the coding was estimated by the inter-rater dependability by three experts. For the table list analysis, the descriptive analysis will be utilized in eight columns, i.e. code, utterances, five illocutionary types and context of situation, while the data were analyzed by interpreting the main character's utterances shown in the movie script utterance by utterance. Inter-rater reliability (IRR) was calculated by three experts for asserting the content congruence of the analyzed items against the theoretical framework. There are three pieces of criteria: +1, 0, -1. If inter-rater reliability is high, they strongly agree (100%). If it is low, they strongly disagree (0%).

4. Research Results

The research results were presented according to the research objectives as follows:

4.1 For the types of illocutionary acts employed by the main character in *Aquaman,* all five types of illocutionary acts were found as presented in Table 1:

Table 1 Example of illocutionary act types employed by the main character in Aquaman

Types of Illocutionary Acts	Sub-Types of Illocutionary Acts	
1. Representatives	A. Informing	E. Describing
	B. Agreeing	F. Convincing
	C. Arguing	G. Reporting
	D. Explaining	H. Stating Opinion
2. Directives	A. Commanding	D. Inviting
	B. Requesting	E. Questioning
	C. Suggesting	F. Warning
3. Commissives	A. Promising	B. Offering
	C. Threatening	
4. Expressives	A. Thanking	F. Stating Surprise
	B. Complimenting	G. Stating Fears
	C. Stating pleasure	H. Stating Panic
	D. Stating Doubt	I. Stating Anger
	E. Stating Confusion	J. Stating Dislike
5. Declaratives	A. Declaring war	

From Table 1, some examples of the main character's utterances reflecting each type were presented as follows:

1. Representatives

ARTHUR: Just so we're clear, I'll help you stop this war. But then, I'm done.

MERA: Maybe that's for the best.

(Informing)

TOM: You don't know that for sure.

ARTHUR: Yes, I do. They killed her. For loving you and having me. And you know it.

(Arguing)

In the first dialogue, Arthur informed Mera again about the deals that could save the world from King Orm, without interest in ascending to the throne, and in the second dialogue Arthur and Tom (his dad) went to the restaurant and they were talking about his mom.

2. Directives

ARTHUR: Don't touch me.

CUE BALL: Right, that's exactly right. I'm gonna go down here. There we go. Everybody smile.

(Commanding)

MERA: What?

ARTHUR: Shouldn't we have written it down first?

(Suggesting)

In the first dialogue Arthur went to the aquarium with his school friends and he was bullied by his friends because he always seemed to act as if he could talk to the fish. And in the second dialogue, they found an ancient castle that provided them with another clue in order to get the trident and Mera found a pillar. The pillar needed water in order to make it work, so Arthur suggested.

3. Comissives

ARTHUR: **Let's do it.**

KING ORM: So be it. Challenge has been made, and I accept. Prepare him for the Ring of Fire.

(Offering)

MERA: It would be wrong to judge a place I've never seen before.

ARTHUR: **I'll be right back. Don't go anywhere. Well, apparently, it's just right up on the hill. A big old castle.**

(Promising)

In the first dialogue, when King Orm told Arthur about the army that he was going to send onto land, but he promised to stop if Arthur was able to win in a tournament (The Ring of Fire). Arthur was willing to do it in order to stop King Orm. In the second dialogue, they found the map that could lead them to where the trident was, and they couldn't let King Orm know about it. This was because Arthur needed to check the integrity of a clue, but he promised to Mera that he would be back.

4. Expressives

MERA: It's Princess Y'Mera Xebella Challa. You may call me Mera.

ARTHUR: **Thank you, Mera**.

(Thanking)

ARTHUR: **Wow. That's awesome**.

MERA: Let me see. Wow. But how do you know where to point it?

(Complimenting)

In the first dialogue, tells us that his dad had just drowned, and Mera was trying to help resuscitate him by using her power, but Arthur did not even know Mera's name at this point in the movie. In the second dialogue, Arthur and Mera were solving a puzzle. Mera knew how to solve the puzzle and Arthur liked that she was able to do that.

5. Declaratives

ARTHUR: **If that's what it takes to stop your war.**

KING ORM: Are you invoking the Combat of the Kings?

(Declaring war)

ARTHUR: **Hell yes, I challenge you. And when I win...**

KING ORM: If you win, I will cease all immediate action. The war is over. But if I win...You're over.

(Declaring war)

In the first dialogue, Arthur met King Orm. King Orm thought that Arthur had already chosen a side and he thought he had come there to take his throne. Arthur declared war against the king in an attempt to save everyone on land. In the second dialogue, Arthur challenged King Orm by declaring a battle between the two of them. If he were to win, King Orm promised to stop the war, but if he lost then everything was going to be over.

4.2 Regarding the frequency and percentage of illocutionary acts found in this study the following figures were presented to clarify the obtained data:

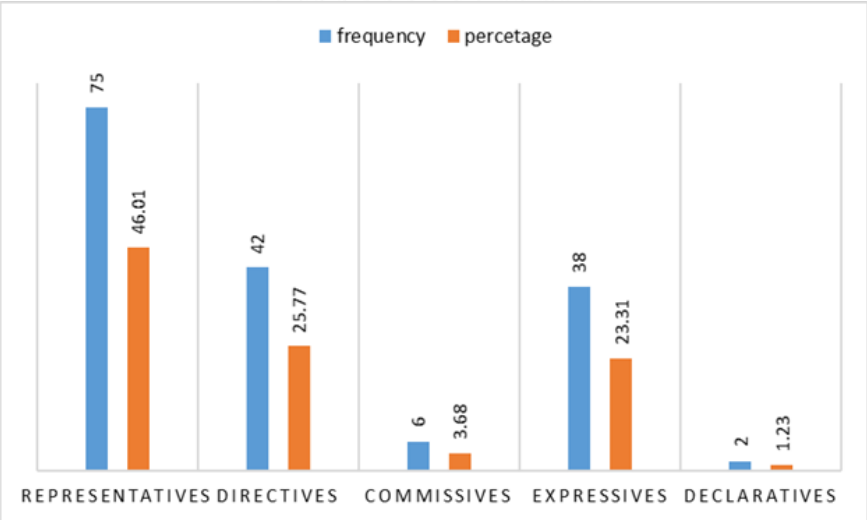

Figure 1 Frequency and percentage of illocutionary acts

Figure 1 showed that all five illocutionary main types were found in the movie; representatives, directives, commissives, expressives, and declaratives.

Moreover, representatives were mostly found at 46.01%, and were followed by directives (25.77%), expressives (23.31%), comissives (3.68%), and declaratives (1.23%). In addition, the sub-types of each five main types of illocutionary acts were also presented in the following figures:

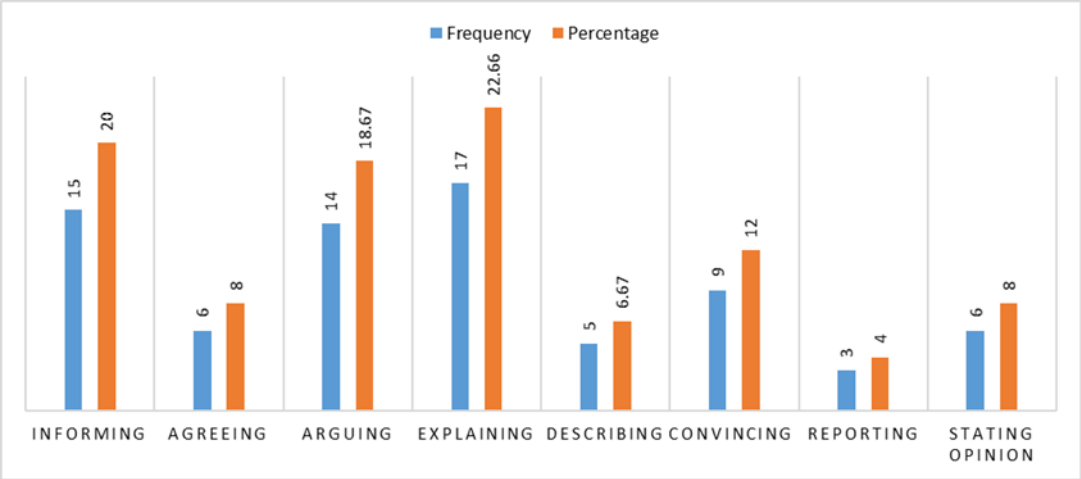

Figure 2 Frequency and percentage of representatives' sub-types

Figure 2 revealed that eight out of 10 types were found i.e., informing, agreeing, arguing, explaining, describing, convincing, reporting, and stating opinion.

Moreover, explaining was mostly found at 22.66%, and was followed by informing (20.00%), arguing (18.67%), convincing (12.00%), stating opinion (8.00%), agreeing (8.00%), describing (6.67%), and reporting (4.00%), respectively. It is noted that the two sub-types under this main type i.e., stating and predicting were not found in this study.

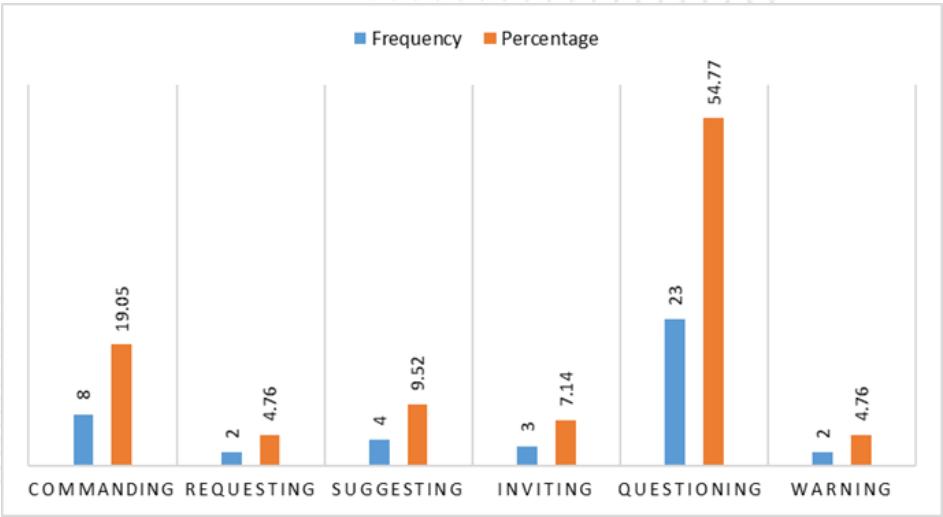

Figure 3 Frequency and percentage of directives' sub-types

Figure 3 revealed that all six types of directives were found i.e., commanding, requesting, suggesting, inviting, questioning, and warning.

Moreover, questioning was mostly found at 54.77%, and was followed by commanding (19.05%), suggesting (9.52%), inviting (7.14%), requesting (4.76%), and warning was (4.76%).

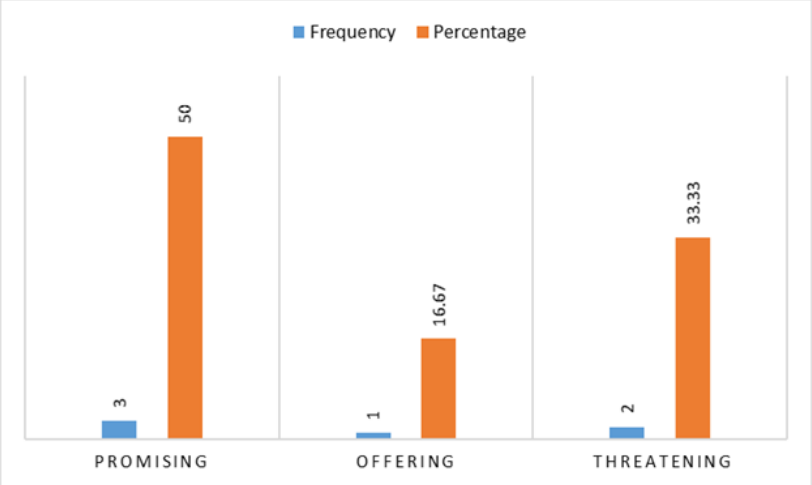

Figure 4 Frequency and percentage of commissives' sub-types

Figure 4 showed that all three types of commissives were found i.e., promising, offering, and threatening.

Moreover, promising was mostly found at 50.00%, and was followed by threatening (33.33%), and offering (16.67%).

The frequency and percentage of expressives' sub-types

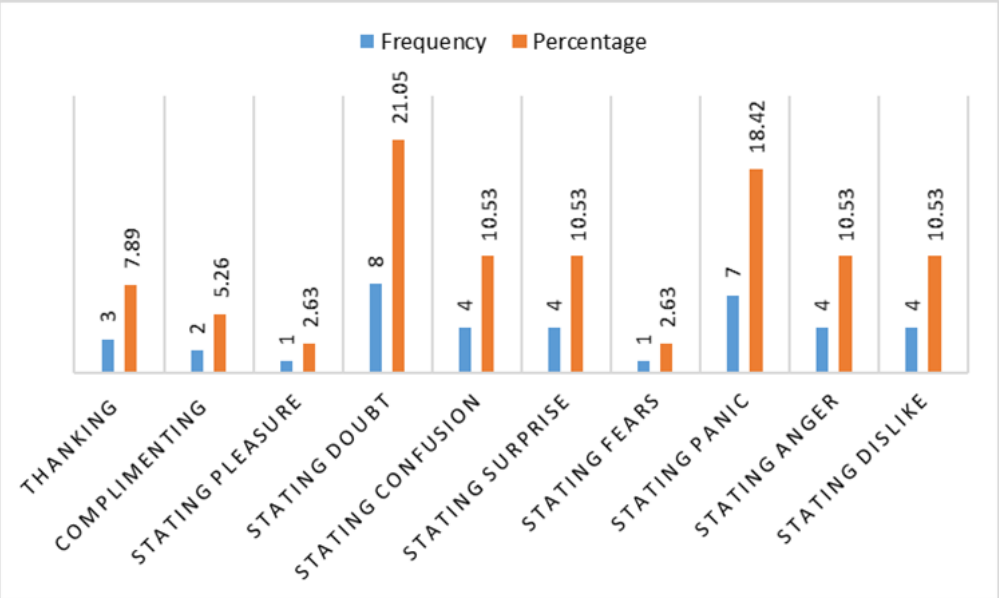

Figure 5 Frequency and percentage of expressives' sub-types

Figure 5 showed that ten out of 14 types of expressives were found: thanking, complimenting, stating pleasure, stating doubt, stating confusion, stating surprise, stating fear, stating panic, stating anger, and stating dislike.

Moreover, stating doubt was mostly found at 21.05%, and was followed by stating panic (18.42%), stating confusion (10.53%), stating surprise (10.53%), stating anger (10.53%), stating dislike (10.53%), thanking (7.89%), complimenting (5.26%), stating pleasure (2.63%), and stating fear (2.63%), respectively. It is noted that the four sub-types under this main type i.e., greeting, apologizing, stating pain, and stating surrender were not found in this study.

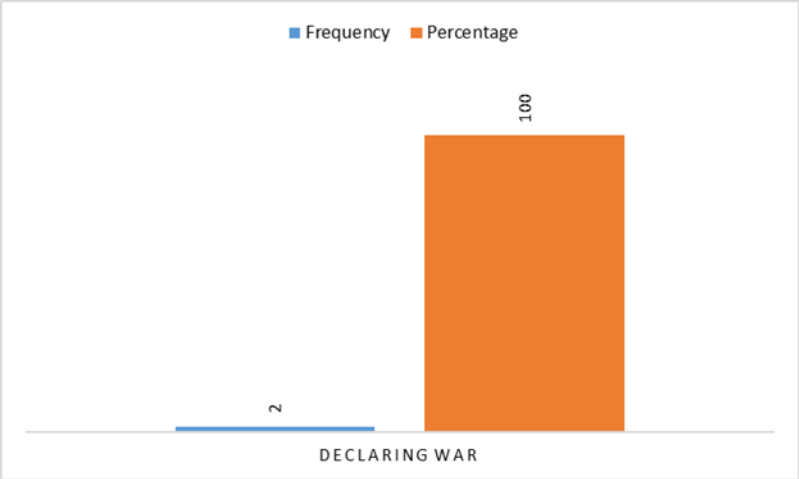

Figure 6 Frequency and percentage of declaratives' sub-types

Figure 6 revealed that one out of four types of declaratives was found: declaring war.

Moreover, declaring war was the only type found in this movie (100.00%) of the declaratives found. It is noted that the three sub-types under this main type i.e., excommunicating, marrying, and firing from employment were not found in this study.

5. Discussion

The research results indicated that all five main types of illocutionary acts proposed by Searle (1980) were applied in the movie *Aquaman* and employed by the main character. However, 'Representatives' were mostly found in this study. Representatives are speech acts in which the words state what the speaker believes to be the case, so representatives were used by the main character i.e., asking, arguing, questioning, reporting or explaining, etc. in order to communicate with other characters in the movie and to keep the movie going. Furthermore, the other main types i.e., 'Directive', 'Commissive', 'Expressives', and 'Declaratives' were also found. The research findings were similar to Rahayu (2017) who conducted a research entitled *Illocutionary Acts Uttered by the Main Characters in Me Before You Movie*. The main purpose

was to investigate the five main types of illocutionary acts by using the theoretical framework of Searle (1980). The findings revealed that 'Representatives' (58.97%) were mostly frequently used, and followed by directives (20.08%), expressives (12.82), commissives (4.70%), and 'Declaratives' (4.70%), respectively. In addition, Rukmanasari (2012) who conducted a research entitled *A Pragmatic Analysis of the Main Character's Speech Acts in Date Night Movie.* The results showed that the illocutionary act types were applied in this study i.e., Representatives, Directives, Comissives, and Expressives. Only Declaratives was not found in this study. However, the present study's results were slightly different from the research of Nugroho (2011) who studied *An Analysis of Illocutionary Acts in Sherlock Holmes Movie.* This study was based on the illocutionary act types in the movie by using the theoretical framework of Searle (1980). The study results showed that 'Directives' was the most common type found in the movie and was followed by 'Expressives' whereas 'Declaratives' was the least found in the movie.

6. Recommendation

6.1 Implication

1. This research will be useful for those who are interested in the pragmatics used in movie contexts.

2. It is also an applicable guideline to study speech acts uttered by the movie characters.

6.2 Further Studies

1. Further research should focus on other kinds of movie with more characters.

2. It is also recommended that a comparative study between speech acts and conversational implicatures should be carried out.

7. References

Austin, J. L. (1962). *How to Do Things with Words.* London : Oxford at the Clarendon Press.

Barnhardt, A. (2019). *Avengers: Endgame, Aquaman Lead 2019 Saturn Award Nominations*. [Online]. from https://comicbook.com/movies/news/saturn-awards-nominations-2019-avengers-endgame-aquaman/. Retrieved 10 November 2019.

Dirks, T. (2015). *Film Genres and Origins & Types.* [Online]. from https://www.filmsite.org/filmgenres.html. Retrieved 4 December 2019.

Hicky, R. (2014). *Speech Act Theory.* Cambridge : Cambridge University Press.

McWhorter, J. (2004). *The Story of Human Language.* Chantilly : The Teaching Company.

Nugroho, S. A. (2011). *An Analysis of Illocutionary Acts in Sherlock Holmes Movie.* English Letters Department. State Islamic University.

Rahayu, S. (2017). *Illocutionary Acts Uttered by the Main Characters in Me Before You Movie.* English Department. Muhamadiyah Sumatera Utara Medan University.

Rajman, M. (2007). *Speech and Language Engineering.* Lausanne : EPFL Press.

Rukmanasari, I. (2012). *A Pragmatic Analysis of the Main Character's Speech Acts in Date Night Movie.* English Education Department. Yogyakarta State University.

Searle, J. (1980). *Speech Act Theory and Pragmatics.* Germany : Kluwer Academic Publishers.

Taylor, S. (2015). *Communication for Business: A Practical Approach.* London : Pearson Longman.

An Analysis of Strategies in Translation Isan Verse into English: A Case Study of Isan Folktale *Phadaeng Nang Ai*

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Abstract

The purpose of this research was to find out the frequency of the translation strategies in translating the Isan verse *Phadaeng Nang Ai* into English. The text composed of two versions: Isan version was written by Phra Ariyanuwat (1981) and English version was translated by Tossa (1990). The five chapters of both versions were selected via a random sampling method. The quantitative method involved the calculation of frequency and percentage of each strategy found in the translation analysis and calculation of Inter-rater Reliability (IRR). The qualitative method concerned the analysis of descriptive data and interpretive analysis. The texts of the two versions were analyzed in order to find what the strategies were found in this verse translation under the theoretical framework of Lefevere. The results revealed that all seven strategies were employed by the translator, i.e. phonemic translation, literal translation, metrical translation, rhymed translation, poetry in prose, blank verse, and interpretation. The findings also showed that the sixth strategy, blank verse translation, was most frequently used (55.01%) while the first strategy, phonemic translation, was least frequently used (1.95%).

Keywords : Isan Folktale, Translation Strategies, Poetry Translation, Translation Analysis, *Phadaeng Nang Ai*

1. Introduction

In the globalization era, people all around the world can easily connect with each other. They can learn and get the information just one click via Internet. They need to use language as a tool to communicate with each other. English language is the chosen one. People use English to convey their information, ideas, and lifestyles or to learn the different cultures, traditions and history.

Larson (1984) says that translation is the communication, the source language and the target language must be the same meaning. The equivalent of the meaning comprises of language

and culture. Catford (1967) characterizes that translation is the method to reproduce the substituting content in the source language for the content in another. Literature is a famous media which people can get the information from the different countries. Kennedy and Gioia (2007) classify literatures into three types; fiction, drama and poetry.

Regarding the poetry, *Lilit Phra Lor* was a good example of Thai poetry. It was translated by Prince Prem Purachatra. This verse teaches us about the human beings' mind.

พระสมุทรสุดลึกล้น	คณนา
สายดิ่งทิ้งทอดมา	หยั่งได้
เขาสูงอาจวัดวา	กำหนด
จิตมนุษย์นี้ไซร้ยากแท้	หยั่งถึง
Fathoms deep though the seas	may be,
Measurable are the seas	in depth.
Scaled can mountains be	in height.
Immeasurable in the depth	this heart of man. (Pramoj. 1973 : 11)

The verse is interpreted that we can measure everything in this world, but no one can measure other people's mind. We cannot know what they are thinking, so do not believe or accept another one.

The poetry is the art of rhythmical composition, composed or spoken, for exiting pleasure by beautiful, imaginative, or elevated thoughts (Dictionary, 2020). Thai language is tonal language and has built-in musical intervals, so it is very difficult to reproduce the music of Thai poetry in a monotonic language such as English. The translators should have both bicultural and bilingual knowledge. Jacobson (cited in Venuti. 2001: 118) states that "poetry by definition is untranslatable."

Lefevere (1992) views poetry as a unified context in which the form, content and aesthetic issues are closely intermingled, but all of the issues have their own special value.

There are many poems and verses translated from Thai language into English language. The well-known verses are as follows: *Nirat Phra Prathom*, *Ramayana or Rammakien, Sangthong: A Dance-Drama from Thailand, A Village Ordination, Story and Translation of Sri Praj* and Isan folktales epics, *Phya Khanka*ak and *Phadeang Nang Ai* by Tossa (1990).

Phadeang Nang Ai, a verse literature, is the famous one. It is the tragic love triangle story between human and Naga. Boon Bang Fai (Bamboo rocket) event is told in this poem and also has an explanation for Isan geography and place-naming. This folktale is performed in many occasions because it concerns traditional, cultural and history of Isan provinces that remains until at the present day. It is especially well known to Thai because it has been designated as a

secondary school supplementary reading by the Thai Ministry of Education (Tossa. 1990). This story published in 1978 is the one of three literatures used to be the literature lesson for teaching Thai literature in Translation at Drew University, the University of Hawaii, and the University of Oregon in 1991-1992.

Phadeang Nang Ai is the Isan folktale composed in Klong San form, the one of five types of verse form in Isan poetry. It is the complicated rhyming pattern, written by Tossa (1990) who is an expert of Isan literature. She tells stories to revitalized Thai/Lao folktales and storytelling. She had also held workshops on folktales and storytelling in USA, Australia, Singapore, and Indonesia. Her books include *Phadeang Nang Ai* (1990), *Phya Khankaak, the Toad King* (1996), *Laos Folktales* (2008) and parts of *Telling Tales of Southeast Asia and Korea* (2011). Accordingly, this research was conducted in order to investigate strategies for translating the verse *Phadeang Nang Ai* from Thai / Isan language to English language because rare previous works have been conducted with the verse and Isan folktale. The research results will be useful for teachers, students, researchers, and those who are interested in translation, verse translation in particular.

2. Research Objectives

The research objective was to find out the frequency of the translation strategies in translating the Isan verse *Phadaeng Nang Ai* into English proposed by Lefevere's (1992) translation strategies.

3. Research Methodology

3.1 Samples

The *Phadeang Nang Ai*, Thai-Isan folk epic verse consists of 35 chapters. Five chapters of both versions, including chapters 5, 10, 15, 20, and 25 were selected as the samples via a random sampling method.

3.2 Research Instruments

The research instrument consisted of the five-column table containing five elements: 1) Source language, 2) Source text, 3) Target language, 4) Back translation, and 5) Remarks. The data were collected by the document analysis. The researcher chose the Thai-Isan folk tale epic verse of ผาแดง นางไอ่, *Phadeang Nang Ai* as a source text. It is written in Thai-Isan language. The translation strategies proposed by Lefevere (1992) were employed. All research instruments were validated by the two experts in the related field.

3.3 Data Collection

The researcher chose the Isan verse *Phadeang Nang Ai* translated from the palm leaf manuscript by Phra Ariyanuwat (1981) as the source text and *Phadeang Nang Ai*, the translation

of a Thai – Isan Folk Epic in verse written by Tossa (1990) as the target text to analyze the strategies used in translation. The data from this verse were collected via the following steps:

3.3.1 The entire sources and target texts were read and analyzed.

3.3.2 The translation strategies of Lefevere (1992) were reviewed and analyzed.

3.3.3 Chapters 5, 10, 15, 20, and 25 from both sources and target texts were selected as the sample chapters.

3.3.4 The poems were divided into a stanza or a hemistich.

3.3.5 The poems were divided into a stanza or a hemistich were compared rhyme by finding the rhyme pattern of each line in each stanza or a stanza plus a hemistich.

3.3.6 The translated version was compared with the source version, a stanza by a stanza or a stanza plus a hemistich, and then was clarified in the table.

3.3.7 The procedure of coding was based on the theoretical framework of Lefevere (1992).

3.3.8 The coding was presented to the thesis advisors and two experts to examine for accuracy of language translated version.

3.4. Data Analysis

This part was about the coding of the collected data and statistical procedures used for the calculation in this study.

3.4.1 Coding

The process begins by comparing the source language with the target text stanza by stanza to identify the strategies used by the translator. The researcher coded all verses based on seven strategies of Lefevere (1992) to find out the relevant strategies for each sentence. The coding has measured to possess the correctness through the inter-rater reliability (IRR) by two experts. The reliability of the obtained data was rechecked by the advisors. The statistics employed in this research to identify the most and least uses of translation strategies.

3.4.2 Calculation of Frequency

The frequency of each strategy used in translation analysis was calculated in percentage by the following formula:

$$\frac{N \times 100}{T}$$

N = The number of each strategy used in translation analysis

T = The total number of strategies used in translation analysis

4. Research Results

The content validity of Inter-rater Reliability (IRR) were 0.93 which meant that the translation strategies analysis was congruent with the objectives or content.

The result was presented according to the research objective as follows:

4.1 It was found that all translation strategies proposed by Lefevere (1992) were used in the study as the frequency and percentage were presented in the *Table 1*.

Table 1 Frequency and Percentage of Strategies Found in the Verse

Translation Strategies	Frequency (N)	Percentage (%)
1. Phonemic	5	1.95
2. Literal	31	12.10
3. Metrical	8	3.10
4. Rhymed	39	15.23
5. Poetry in prose	15	5.86
6. Blank verse	141	55.01
7. Interpretation	17	6.60
Total (T)	**256**	**100**

As shown in *Table 1*, there were seven strategies employed by the translator. Moreover, the most frequency of strategy used was translation by blank verse (55.01%). It was followed by rhymed translation (15.23%), literal translation (12.10%), interpretation translation (6.60%), poetry in prose translation (5.86%), metrical translation (3.10%), and phonemic translation (1.95%), respectively.

5. Discussion

Based on the research results, all seven translation strategies proposed by Lefevere (1992) were employed, and these could be discussed as the followings:

1. The blank verse translation (50.01%) was most found in this study. This might be the reason that there were many restrictions of the poetics system between Isan and English language, so it is very difficult to keep all the verse forms, sound patterns and figurative language. This result was slightly different from Kolahi's (2012) research. In her study, the blank verse translation was ranked the second of frequent use.

2. Rhymed translation (15.23%) was found because of the reasons that Isan language is polysyllabic words, unlike English, so the translator cannot keep the rhyming position of the verse in many places, then the translator employed the poetic techniques such as assonance, consonance, and alliteration to remain the internal and external rhyming. Regarding to rhymed

translation found in this study, it was very different from the study of Khameneh and Sharif (2015) because this translation strategy was not found in their study.

3. Literal translation (12.10%) was found in this study. This might be the reasons that the words and form of the target text are familiar with the source language, so the translator tried to retain the original form. Regarding the literal translation found in this study, it was very different from the study of Sangroj (2009) whose findings were found that the word for word translation or literal translation (63%) was the most frequently used.

4. Interpretation translation (6.60%) was found in this study. It might be because the translator employed this strategy to express more information than the source language to help the readers understand the text better. This was different from Khameneh and Sharif (2015) because this strategy was not found in their study.

5. Poetry in prose translation (5.86%) was found in this study because the translator paid more emphasis on the meaning of the source language. It was different from the study of Sangroj (2009) whose result revealed that the poetry in prose was not found.

6. Metrical translation (3.10%) was found in this study because English is not a monosyllable language, so it cannot keep the equivalent of the syllables between English and Thai. The translator divided each line as word-by-word and mentioned on the internal and external rhyming in order to retain all aspects of the source text in the target text. This finding was consistent to Kolahi's (2012) study with the result of less use of translation (5%).

7. Phonemic translation (1.95%) was found in this study because there is more variety in onomatopoeia in Isan language, and some words do not have any meanings but they are valuable in the aesthetic aspect, so the translator chose the meaningful equivalent sounds in English. This research finding was very different from Sangroj's (2009) research. In the study, the phonemic translation was not found.

6. Recommendations

Based on the research results of this study, there are two parts of recommendations as follows:

6.1 Implications

6.1.1 This research results are useful for academics and teachers for teaching translation, and students who study translation course.

6.1.2 The result of this research can be an applicable guideline to a person who is eager to learn about translation, verse translation in particular.

6.2 Further Studies

6.2.1 A comparative study on the two verse literatures by using the theoretical framework of Lefevere (1992) or the other scholars should be conducted.

6.2.2 The translation strategies of the same verse by using the other translation strategies or theories should be studied.

References

Attwater, J. (2020) *Per happiness: The art of compromise in the translating poetry or: 'steering betwixt two extremes*. Universidade Federal de Santa Catarina. Retrieved 28 November 2020, from https://dialnet.unirioja.es/descarga/articulo/4925791.pdf

Cohen's kappa free calculator. (2020). *Idostatistics,* Retrieved 31 October 2020, from https://idostatistics.com/cohen-kappa-free-calculator/

Khamenmeh, R & Sharif, F (2015). *A model for translating poetry based on the Lefevere's theory on poetry translation and Dastjerdi's model.* Department of English Language, Islamic Azad University Central Tehran Branch. Iran. Retrieved 11 November 2020, from http://eltvoices.in/Volume5/Issue_4/EVI_54_6.pdf.

Kolahi, S. (2012). *Application of Lefevere's seven strategies in English translations of Sohrab Sepehri's poems*. International Journal of Linguistic. Islamic Azad University Central Tehran Branch. Iran. Retrieved 5 April 2019, from http://www.macrothink.org/journal/index.php/ijl/article/view/2915.

Kongrith, T. (2016). *An analysis of Thai-English translation strategies in the novel of: A case study of democracy, shaken & stirred*. Master's thesis. Buriram Rajabhat University.

Lefevere, A. (1992). *Translating poetry: Seven strategies and a blueprint.* Assen: Van Gorcum.

Persinger, A. (2013). *Foxfire: The selected poems of Yosa Buson, a Translation*. Ph.D. Dissertation. (Paper748). The University of Wisconsin-Milwaukee. Retrieved 1 December 2020, from http://dc.uwm.edu/etd.

Sangroj, N. (2009). *Strategies and quality: Translation of song lyrics from English to Thai.* Master's thesis. Srinakharinwirot University. Retrieved 4 June 2019, from http://thesis.swu.ac.th/swuthesis/Eng (M.A.)/Nantaporn_S.pdf.

Tossa, W. (1990). *Phadeang Nang Ai, a translation of Thai-Isan folk epic in verse.* Bucknell University Press London, Associated University Press Inc. United State of America.

Common Experiences of Postgraduate Research : Myanmar Student Perspectives

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Abstract

This research addresses the perspectives of students on postgraduate research from holistic experience of learning during two years of their postgraduate research training as researchers. This paper is aimed at exploring students' awareness and perceptions on research activities and research skills. Data were analyzed thematically by the use of questionnaires adapted by the Centre for Excellence in Teaching and Learning in Applied Postgraduate Research Skills (CETLAURS) to produce students' personal views on research activities. This paper reports the baseline findings of the Myanmar student perspectives on postgraduate research programs. This study has shown that students are largely unaware of the research activities in their host institution. Students had significantly higher levels of perceived competency in some transferable skills and in some research specific-skills: information gathering, project management, time management, information evaluation, study design and study sampling. However, they also had significantly lower levels of perceived competency concerning transferable skills and research specific-skills in teamwork, work independently, participant recruitment, statistics, paper preparation and paper presentation. Therefore, this study can pinpoint a need for educators to focus on the integration of specific research skills training within all aspects of the postgraduate curriculum.

Keywords : Postgraduate, Research specific-skills, Perceptions, Awareness, Research activities

1. Introduction

Scholarly activity programs are essential components of the modern postgraduate Arts and Science University curriculum. Many programs have a research focus ranging from thesis level projects conducted over a year or more to programs that can occur during a 'research' month (Illing, 2014). Contemporary University candidates come from diverse cultural and educational backgrounds and have varying levels of research knowledge and experience. During the last decade, there has been renewed emphasis on the student research experience. Two programs that have sought to engage students during this critical period of training are the Master's Degree

Programs and the PhD Programs. Examples include the Master's student research program, which facilitates students who are required to do individual research projects in their second years.

In Myanmar, all students are exposed to research principles within the Master's first year program. Students are encouraged to do a research and foster to develop analytical skills. One of the objectives of research integrated Master's curriculum is to expand the research skills of postgraduate students and to identify a range of opportunities that will allow them to experience research. An attempt is made to match students to have research active supervisors in an area that interests them. Like many other universities, a diverse student population enters to the program with varying research skills; and attitudes towards doing research. In Myanmar, master students have to take four semesters that take two years to complete master degree course. Each semester takes four months. In the third semester, they have to learn 'Research Methodology' as one of the core modules and in the last semester, they have to submit a thesis individually in written form and have to present orally twice.

Research projects are normally conducted during the period of one semester (four months) at the end of the second semester of second year for master students. Students are required to present their research orally and to submit a written submission of their work.

1.1 Transferrable Skills

Transferable skills are the essential skills possessed by the students to be more competitive and improve the personal qualities such as information gathering, information evaluation, numeracy and teamwork (Kemmis & Bowden, 2014). According to Denicolo and Reeves (2013), transferable skills are the skills needed to carry out research to produce a thesis, defending, presenting new ideas or original concepts that can contribute to new knowledge. According to Sri Sumarwati, Ibrahim & Yunos (2017), the elements of transferable skills needed by students to be successful to produce the research are critical thinking skills, planning and management skills, researching skills, technical competency, problem solving skills, academic integrity, communication, presentation, reading and writing skills and intellectual independence.

1.2 Research-specific Skills

Zainuriyah (2009) has identified through their research, the knowledge and skills that students should acquire before conducting and writing their research. Kardash (2000) also has identified the skills required in his study on the development of research skills. According to Meetan, Zakaria, Osman and Krish (2012), there were a range of skills necessary for doing research. Top among them are information seeking skills, communicating (and submitting and writing skills), methodological skills and data analytical (skills in using appropriate analysis and statistics).

1.3 Aim and Objectives

This research aims at exploring students' awareness and perceptions of research activities and research skills. The objectives of this research are as follows:

- to explore students' awareness of research activities,
- to compare students' perceptions of their transferable and research-specific skills competencies,
- to find out students' motivation for research and
- to investigate students' personal views on doing research

2. Methods

2.1 Participants

A total number of 341 selected students registered on the postgraduate program in Myanmar Arts and Science Universities from M.A. / M.Sc. courses were eligible to participate in this baseline study. All the students were from 14 Univeristies all around Myanmar.

Figure 1 shows the total number of male and female participants. When the students are asked to answer the questionnaires, the number of female participants is more than that of male participants. Number of male students is fewer than that of female students in classrooms.

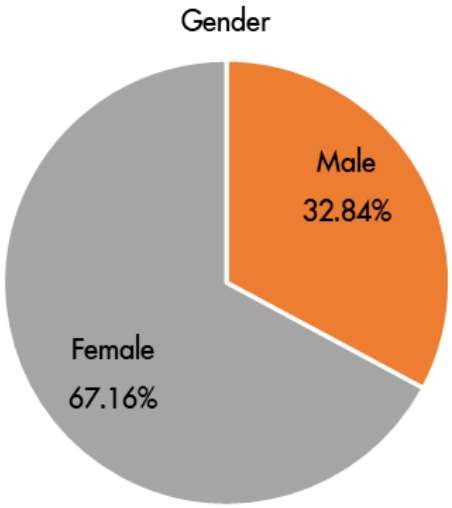

Figure 1 Number of Male and Female Participants

2.2 Study Measures

Students completed a questionnaire adapted by the Centre for Excellence in Teaching and Learning in Applied Postgraduate Research Skills (CETLAURS) to assess research skills with Science and Arts specialization students at selected Universities. The questionnaire is modified so that it required approximately 15 min completion time. The adapted research skills questionnaire was divided into five short sections. Minor modifications were made to the questionnaire after it was piloted with a small group of master second year students.

2.3 Procedures

The questionnaires were completed at the end of lectures between December 2018 and February 2019. Before the questionnaires were administered, the students were given information concerned with the purpose of the survey and informed them that their participation was voluntary. Student were explained and informed that their identification numbers and their responses would be kept confidential and used for educational research purposes only.

2.4 Data analysis

Descriptive statistics are reported through frequency percentage. For descriptive purposes, the data on students' perceived levels of competency were grouped into lower and higher levels using two equal cut-off points. The data were visually checked for normal distribution using percentage to examine the data on levels of motivation for research. Categorical data on students' awareness of research activities were also collected. Qualitative data on students' understanding of the term 'research' was analyzed using a thematic approach. According to Okoro, C.O. and Okoro, C.U. (2016), thematic approach is the way of teaching and learning where many areas of the curriculum are connected together and integrated within a theme.

3. Results

The results from postgraduate students' responses on the questionnaire were analyzed and shown as follows:

3.1 Demographic Characteristics

A total of 341 students from various universities of Myanmar participated in this survey. A demographic breakdown of participants is provided in Table 1. All the results were analyzed in term of percentage distribution.

Table 1 Demographic characteristics of the participants (n=341)

SN	Section heading		Student Responses	
			Frequency	Percentage
1	Gender	Male	112	32.84
		Female	229	67.16
2	Age groups	21-24	235	68.91
		25-29	104	30.49
		30-35	2	0.58
3	Scholarly research activities taken in their own university during Master's degree program	Aware	46	13.49
		Unaware	295	86.51

Unit: %

Table 1 indicates the composition of participants by gender, age group and the awareness of participants on research activities taken in their own universities during Master's degree program. As shown in table 1, female participants comprised of 67.16 % percent whereas male participants comprised of only 32.84% percent of the participants. According to the data, largest proportion of participants are within the age range of 21-24 (68.91%), the second largest of those are within 25-29 (30.49%) and the least are within the age range of 30-35 (0.58%). The statistical information shows that a total of 100% had completed a Bachelor degree. Almost all students had previously studied a research-focused term paper or had undertaken a research program in their previous bachelor's degree. However, (86.51%) of the students reported that they were 'totally unaware' of research activities in their own university. This result can be explained as such: first, it is true that the participants learnt research methodology as one of their core modules during master's degree program. However, they never experience research relating tasks in their tutorials. Second, though they may learn some research process and activities in their course, they have no chance to apply what they have learnt in practical.

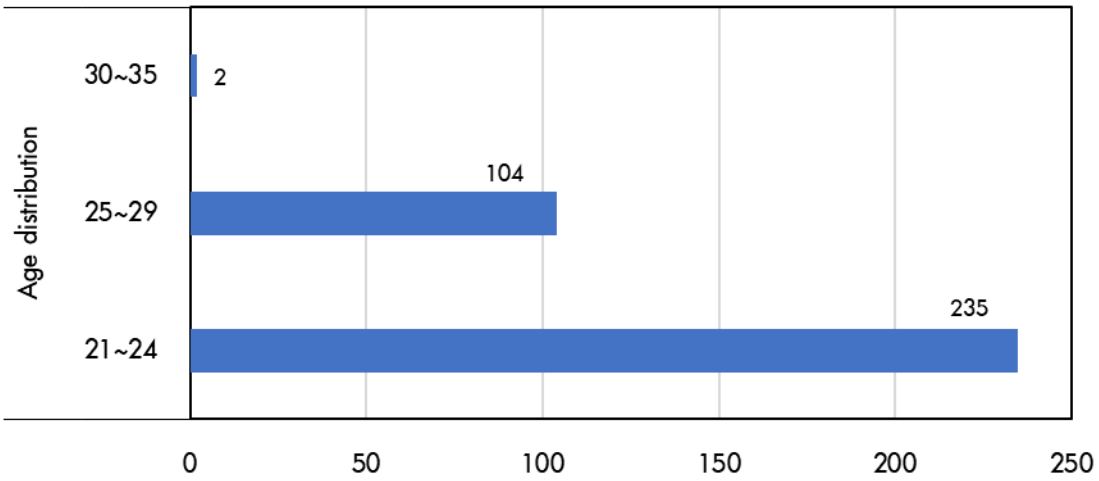

Fig.2 Age Distribution

Based on the statistical findings presented in Figure 2, a large proportion of the participants are within the age range of 21-24, the second largest proportion of them are within 25-29 and the least is within 30-35.

3.2 Postgraduate Students' Understanding of Research

The understanding of postgraduate students was analyzed in Table 2. All the results were analyzed in term of percentage distribution.

Table 2 Postgraduate students' understanding of research (n=341)

SN	Section heading		Student Responses	
			Frequency	Percentage
1	Have you studied a research module in the previous semesters?	Yes	339	99
		No	2	1
2	How do you understand of the term 'research'?	Discovering new things	159	47
		Advancing knowledge	182	53
3	Have you taken any scholarly research activities?	Experimenting / Testing hypotheses	64	19
		Gathering information	89	26
		Appraising information	188	55

Unit: %

According to the statistics presented in Table 2, the majority of participants (99%) have studied a research module in the previous semesters. The term "research" is understood as "advancing knowledge" by 53% of participants and, 47% of the participants accept it as "discovering new things." Over half of the participants (55%) have done appraising information, one of the research activities, and 26% of the participants have experience in "gathering information" and only 19% of the participants have taken some scholarly research activities such as experimenting and testing hypotheses. It seems most participants may enhance and experience some research activities. As postgraduate students' understanding of research is examined, teachers can derive detailed information from our study regarding how particular activities on average affect students' interest. By providing the opportunity to conduct scholarly research activities, teachers may influence students' interests in the activity positively (Fleith, 2000).

3.3 Perceived competence in transferable and research skills

Students' perceived competencies in transferable skills such as communication skills and time management and in research skills such as statistics and paper preparation are summarized in Table 3. All the results were analyzed in term of percentage distribution.

Table 3 Perceived competency in transferable and research skills by total students surveyed (n=341)

SN	Section heading		Student Responses	
			Low competence	High competence
1	Perceived levels of competence in transferable skills	Communication writing	46	54
		Communication oral	44	56
		Information gathering	31	69
		Information evaluation	38	62
		Numeracy	47	53
		Teamwork	65	35
		Work independently	64	36
		Project management	33	67
		Time management	35	65
		Problem solving	42	58
Average			44.4	55.5
2	Perceived levels of competence in research-specific skills	Designing a study	32	68
		Study sampling	35	65
		Participant recruitment	71	29
		Statistics	68	32
		Paper preparation	68	32
		Paper presenting	67	33
Average			56.83	43.16
3	Skills to improve	Transferable Skills	22	78
		Research-specific skills	68	32
Average			45	55

Unit: %

As the result from Table 3, the majority of students reported low competency in transferable skills such as teamwork (65%) and the ability to work independently (64%). Data shows a higher percentage in transferable skills such as information gathering (69%), project management (67%), time management (62%) and information evaluation (62%). The majority of students reported low competency in research-specific skills such as participant recruitment (71%), statistics (68%), paper preparation (68%) and in paper presenting (67%). Data shows a higher percentage in research-specific skills such as designing a study (68%) and study sampling (65%). Students rated significantly higher competencies in transferable skills. Students rated lower competency in research-specific skills (69%). These skills may not be taught directly to the students

during master degree programs. It seems they have few chances to do research and to try to improve some of these skills in their previous semesters. This may be contrasted with another study which found that when appropriately framed (especially with the relevant student motivation and autonomy), such students reported high competency in transferable skills such as teamwork and the ability to work independently (Allchin et al., 2014, p. 469).

3.4 Students' Motivation and Confidence on Research

The students' responses on their motivation and confidence according to their gender were analyzed in percentage distribution in Table 4.

Table 4 Student's responses on motivation and confidence of research (n=314)

SN	Role of Research in Practice	Gender	
		Male	Female
1	I am motivated to pursue research.	69	73
2	I am confident regarding my research skill competencies.	70	41

Unit: %

According to Table 4, 73% of female students and 69% of male students are motivated to do research. Likewise 70% of male students are confident with their research skill competencies and only 41% of female students have confidence regarding with their skills. Hence depending on their own perspectives and purposes, female participants have good motivation on doing research. As male participants have different attitudes and intuition, they have confidence in doing research. Our results were not consistent with the relevant literature. It was proposed by a previous research that motivation generally enhances confidence. They concluded that self-perceptions of moderate to high motivation were positively related to confidence (Bandura & Schunk, 1981).

3.5 Research motivation

Students' self-rated levels of motivation towards doing research are categorized into low, moderate and high, using equal cut-off points. All the results were analyzed in term of percentage distribution in Table 5.

Table 5 Students' self-rated levels of motivation towards doing research (n=341)

SN	Section heading		Student Responses
1	Students' self-rated levels of motivation towards doing research	Low	16
		Medium	59
		High	25

Unit: %

Table 5 shows that over half the students (59%) rated moderate motivation, one fourth of the students rated high motivation (25%) and just 16% of students rated low motivation. In this questionnaire, students have to select a response by themselves.

3.6 Personal views of research

Qualitative analysis of student responses (n=341) on five themes were identified in Table 6. All the results were analyzed in term of percentage distribution.

Table 6 Students' personal views of research (n=341)

SN	Five themes	Student responses		
		Agree	Undecided	Disagree
1	Research is necessary to advance and improve professionally.	64	23	13
2	It is necessary for career progression.	56	21	23
3	It is necessary for career satisfaction.	40	31	29
4	It is integral to all aspects of practice.	43	32	25
5	It is desirable as a part-time or occasional activity.	30	47	23
6	I am positive about a career involving research.	35	39	26
Average		44.7	32.2	32.2

Unit: %

Table 6 shows that about 64% of the students agree that research is necessary to advance and improve professionally. Likewise 56% of the students agree that it is necessary for career progression and 40% for satisfaction, 43% of the students agree that it is integral to all aspects of practice, 30% of the students agree that research is desirable as a part-time or occasional activity and some students 35% are positive about a career involving research. Most of the participants know the value and importance of doing research in their workplace. However, most of them are somehow undecided to do research-related work in the future. And one third of the students have positive attitudes in choosing a research-related career. As students' nature, they become more independent and self-directed. Thus, they have to practice as this is the most effective way of teaching and mastering statistical skills. Some authors have recommended that research is necessary to advance and improve professionally. The analysis used in this study, informed by the adult learning model by Wagner, Garner & Kawulic (2011), helps to highlight that research is necessary for career progression.

4. Findings and Discussion

With regard to research skills, students had significantly higher levels of perceived competency concerning transferable skills: information gathering, project management, time management and information evaluation. They also had higher competencies in research specific-skills such as study design and study sampling. Surprisingly, students had significantly lower levels of perceived competency concerning transferable skills and research specific-skills are teamwork, work independently, participant recruitment, statistics, paper preparation and paper presentation. But these skills (both transferable skills and research-specific skills) are essential for the students for their future work and life.

Overall, a majority of students indicated moderate to high levels of motivation towards doing research. Males felt significantly more competent than females with transferable but not with research-specific skills. Qualitative analysis revealed that a large proportion (35%) of the students who were positive about a career involving research felt that it would enable them to make advances and improvements in their specializations. Other groups of students felt that research is necessary for career progression and satisfaction and is an integral part of career. There were less students (26%) who were negative about a career incorporating research, reporting that they felt it would be isolating and uninteresting or that they had previous negative experiences. Students indicated that they were still unsure about the appeal of a career in research. That engagement in postgraduate research motivates students to pursue further research has been reported. The majority of students appear to be positively motivated towards engaging in research and, if one accepts that the intention to engage in research is highly predictive of doing so, this is reassuring. Interestingly, a number of students intend to engage in research activities for purely strategic reasons in order to support their career progression.

The results clearly show that most of the students are largely unaware of the research activities in their host institution (as shown in Table 1) because they just learnt theories and never had chances to do it practically. Nevertheless, over half of the participants reported that they are interested in a career incorporating research (as shown in Table 6) because they already know the importance of research. Male students appear to be the most confident regarding their research skill competencies. There are several limitations to this study. Firstly, our findings are based on self-reports and ratings by students from selected universities. Self-reported measures are commonly used in cross-sectional studies but are subject to participant overestimation and recall bias. Comparison with objective measures such as student research output (written submissions and oral presentation) would help to validate our findings. Secondly, the skills competency items in the questionnaire, although based on appropriate scales, and modified and piloted for use with students, have not been formally standardized. Thirdly, although we attempted to obtain responses from all students, we only managed a 60% response rate, and students are underrepresented in

the respondent profile. Finally, our questionnaire did not directly examine students' perceptions of basic versus research, which would have enabled us to gauge the extent of the view that research is distanced from patients and practice.

Their responses do not espouse any true commitment to research activity. This corresponds to findings elsewhere, which indicate that students are not necessarily research active. It is interesting that a proportion of our students retain a very traditional impression of research as being distanced from the population and from people. It is of concern that students do not fully understand the concepts or processes involved in translational research. Ironically, many of their mentors and educators are engaged in active research programs, but arguably have not been given an opportunity to convey this to the students. Furthermore, the majority of students are unaware of the research activities.

Their attitudes towards pursuing a career in research mirrors other findings, but their lack of awareness of the research activity in their home institution is somewhat surprising given that we have initiatives in place that have addressed this and successfully encouraged student research elsewhere. These initiatives include informing students about research opportunities, advertising research events, funding and acknowledgement of student research success, and organizing lunch time meetings where staff brief students about their research and invite participation.

5. Conclusions

Research is essential in this changing and challenging world to cope with its each and every pace in every single aspect. Postgraduate research can improve students' exposure and experience in their selected field of study and also inspire them to do more researches in their own ways with their new and fresh perspectives. Researching can also make students' academic achievement and thinking skills improve a lot and can also affect the students' behaviors and life skills in certain ways. There is a need for educators to focus on the integration of specific research skills training within all aspects of the postgraduate curriculum so that these skills are perceived by postgraduates to be relevant to the routine practice of all students and not just those engaged in full-time research. The core curriculum must ensure that relevant and appropriate research expertise is attained by all graduates who are then provided with a suitable foundation from which they can develop such specialized research skills as may be required in their careers. Educators also need to recognize that research skills training needs and research motivation are influenced by previous educational background, research experience and also possibly culture and gender.

Highly motivated and research-enabled students must be mentored by highly motivated staff. There are obvious incentives for researchers to recruit students to pursue postgraduate qualifications but perhaps fewer tangible benefits for principal investigators to include students in

a research group for shorter periods of time. Perhaps future programs should incentivize and mandate the inclusion of postgraduate researchers where appropriate. Fostering a supportive postgraduate research environment is recommended. It is also essential to examine ways to increase staff engagement in student research. This can be done through formal training in student supervision and protection of staff time for student project work, since gaining access to research supervision has been shown to be challenging for students.

Educators must focus their efforts on introducing and illustrating the concepts of research to target the student population who see research as an activity that is totally divorced from practical situation. Promoting institutional research projects, explaining the scope of these to students and involving them is one mechanism for achieving this. Research is defined as a people oriented activities, and its output must translate into a tangible changes for people. All opportunities to bring research-active staff and research enthusiastic postgraduates together must be explored and the value of postgraduate research must be recognized by funding authorities.

This paper focuses on the perspectives and awareness of postgraduate students in doing research. It is a partial contribution for the supervisors and students to facilitate research process in producing fruitful researches. This paper may be beneficial for master students because by participating in this process, they may notice which transferable skills and research skills they may lack. And they can become more interested in university research activities as they realize the value and importance of doing research.

6. References

Allchin D, Andersen H M and Nielsen K (2014), Complementary approaches to teaching nature of science: integrating student inquiry, historical cases, and contemporary cases in classroom practice. *Science Education*, 98, pp. 461-86.

Bandura, A. & Schunk, D.H. (1981). Cultivating confidence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality & Social Psychology*, 41(3), 586—598

Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology*, 41, pp. 586-598.

Christophel DM. (1990). The relationship among teacher immediacy behaviours, student motivation and learning. *Communication Education*, 39(3), pp. 323-340.

Denicolo, P. & Reeves, J. (2013). *Developing Transferable Skills: Enhancing Your Research and Employment Potential.* California: SAGE Publications. pp. 1-184.

Fleith, D. D. S. (2000). *Teacher and student perceptions of creativity in the classroom environment.* Roeper Review, 22, pp. 148-153.

Gillian A Fraser, Anne C Crook & Julian R Park (2007). *A Tool for Mapping Research Skills in Undergraduate Curricula, Bioscience Education,* 9:1, pp. 1-12, DOI: 10.3108/beej.9.1To link to this article: https://doi.org/10.3108/beej.9.1

Illing J. (2014). *Thinking about research: frameworks, ethics and scholarship*. Edinburgh, Wiley Blackwell. pp. 331-347.

Kardash, C.A. (2000). Evaluation of an under graduated research experience: Perceptions of undergraduate interns and their faculty mentors. *Journal of Educational Psychology*, 92(1), pp. 191-201.

Kemmis, R. B., Hodge, S., & Bowden, A. (2014). *Transferable skills in Technical and Vocational Education and Training (TVET): Implications for TVET teacher policies in Australia.* The Online Journal for Technical and Educational and Training in Asia, issue 3, pp. 1-13.

Meetan. S., Zakaria. E., Osman. K., Krish. P. (2012). *Measruing Graduate Students Research Skills.* Article in Procedia-Social and Behavioral Sciences (60): October, 2012, pp. 626-629.

Murdoch-Eaton D. (2007). Research governance: impeding both research and teaching? A survey of impact on postgraduate research opportunities. *Medical Education*, 2007, 41 (81): pp. 729-736.

Okoro, C.O. and Okoro, C.U. (2016). Teachers' understanding and use of thematic approach in teaching and learning of social studies in Rivers State. *International Journal of Education, Learning and Development,* April 2016, Vol.4, No. 3, pp.64-69.

Sumarwati. S., Ibrahim. B. & Yunos. J. M. (2017). Transferable Skills for Ph.D Students to finish the Journey. *Advanced Science Letters*, 2017, 23(2): pp. 968-971.

Wagner C, Garner M, Kawulich B. (2011). The state of the art of teaching research methods in the social sciences: towards a pedagogical culture. *Studies in Higher Education*;36(1): pp.75-8

Capacity and Competence of Supervisors : Better Quality of Graduates and Post-graduates in Myanmar Context

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Abstract

A research supervisor is the key person in graduate degree programs. Supervisors should be available to help their graduate students at every stage, from formulation of their research projects through establishing methodologies and discussing results, to presentation and possible publication of thesis. One issue Myanmar universities face is the need to demonstrate excellence in postgraduate research supervision at the individual, faculty and university level. As the research supervisors in a modern society of universities, both supervisors and the graduate students deserve to explore the possibilities to improve the supervision practice. There are a lot of information and guidelines on supervision available in the public domain. Some universities have published their own guidelines, while there are monographs authored by supervisors and students on general basis. The Myanmar universities acknowledge the need to improve capacity and competence of supervisors as one of the important steps to secure graduates and post-graduates of better quality – with the limited supervision resources available. Research supervision is one of the major avenues for sustaining students' satisfaction with the program, preparing students to be independent researchers and effectively initiating students into the academic community. This work reports students' evaluation of their various supervision models, their satisfaction with these supervision models, and development of research-related skills. The study used a descriptive research design and was guided by three research questions. A sample of 195 Master's candidates drawn from selected universities in Myanmar was used for this study. The data generated through the questionnaire was analyzed using descriptive statistics. Results show that face-to-face interactive model was not only the most frequently used, but also the most widely adopted in thesis supervision while ICT-based models were rarely used. Students supervised under face-to-face interactive model reported being more satisfied with thesis supervision than those operating under face-to-face non-interactive model. However, students supervised under these two models did not differ significantly in their perceived development in research-related skills.

Keywords : Research Supervision, Research Students, Capacity, Competence, Myanmar Context

1. Introduction

Thesis Supervision Models

The completion of these is the high point of the entire master's degree program. It is not surprising then that research supervision, the vital component of the process has attracted volumes of research interest. Although a number of scholars, have proposed and reported the practice of team and collaborative research supervision models, our understanding of research supervision presented in this work is drawn from the definition of postgraduate supervision proffered by Lategan (2008) who sees it "as the active engagement of a supervisor in assisting the postgraduate student in identifying a line of inquiry, delineating the scope of a project within that line of inquiry, and providing guidance for successful completion of the project and the dissemination of results." This active engagement involves continuous interaction and dialogue between the student (the supervisee) and the supervisor based on the text of the thesis.

Recognizing this, Wang and Li (2008) posit that, feedback from supervisor plays an important role in assisting student's development throughout the academic research journey. The student benefits from engaging in intellectual exchanges with the supervisor in order to receive guidance on their research progress and thesis writing. It is through the feedback process that the supervisor helps the student go through the research journey towards becoming an independent researcher and a competent scholarly writer. These conceptions presuppose a one-on-one relationship between two persons — the supervisor and the supervisee. Thus, we operate with the framework of the traditional dyadic relationship between a supervisor and his/her supervisee. Therefore, other supervision models based on groups of three or more are beyond the scope of this research. The models developed by Dysthe and other scholars seem to be built around face-to-face forms of interaction around texts. Although the face-to-face mode of relationship seems to give both the supervisor and the supervisee the affordances of clarifying understandings and expectations and negotiating meanings, research evidence shows that the traditional face-to-face models can be supplemented with new technologies. The affordances of these new information and communication technologies (ICT) and realities of heavy workload of supervisors have opened yet another window to what is viewed as the ICT-related thesis supervision model. One of such mixed models reported by de Beer and Mason (2009) is the blended learning model. In blended learning (BL) research supervision, the role of the supervisor is that of indicating the main sources of information to be accessed by the student in face-to-face consultations and via the Internet and libraries and then evaluating what the student has gained from it. This model is believed to have improved the supervision process, reduced administrative workload of the supervisor, and created a dynamic record of the supervision process. Students' evaluation of the innovation shows that it has some limitations which included inability to read body language cues and facial expressions as in face-to-face and being also seen to present communication in an abrupt manner.

Consequently, emphasis on face-to-face contact early in the supervision process is necessary in order to build rapport, trust, and understanding between the supervisor and student. However, one of the limitations of this approach which may not be an issue in the context of the above research but could be in the Myanmar context is accessibility to ICT facilities. Very few have access to various ICT facilities in Myanmar. However, from 2004 to 2018, most universities had a mandatory program for the provision of ICT facilities, such as Computer Centers, which provides ICT training and internet services to both students and lecturers. This was followed by the provision of laptops and free internet access to most universities. It is expected that both lecturers and students have grown in the culture of using these ICT facilities for various forms of educational activities.

A number of things stand out in the analysis of the various thesis supervision models reviewed. These are the degree of interaction and dialogue between the supervisor and the supervisee on the one hand and the mode of this interaction (face-to-face or technology mediated) on the other. Furthermore, none of these models have been quantitatively evaluated by the students who are major players in the whole process of thesis supervision. In line with this, we propose four models of thesis supervision as follows: the face-to-face interactive model, the face-to-face non-interactive model, the ICT-based interactive model and the ICT-based non-interactive model. In this work, student and supervisee are used interchangeably.

Students' Satisfaction with and Evaluation of Thesis Supervision

Increasingly, institutions of higher education in the developing countries have considered the satisfaction of the students' needs vital to their existence. Student satisfaction refers to the favorableness of a student's subjective evaluation of the various outcomes and experiences associated with education (Elliot & Shin, 2002, Gruber, Voss & Gl¨aser-Zikuda, 2010). Student satisfaction with thesis supervision is therefore seen as a student's subjective favorable evaluation of the interaction and encounter with the supervisor during the thesis writing process. It is believed that the assessment of students' satisfaction with educational services has positive outcome for both students and the institution. It increases the chances of students' completion of their program, their self-motivation, and their success in the program. On the other hand, the institution would be more prepared to deliver services that would meet students' needs and improve the services and the chances of the students coming back for further studies as well as the students' positive recommendation of the institution to others. The volume of research drawing attention to its relevance and those questioning the reliability and relevance of the practice show how controversial it has become. However, evaluation of thesis supervision which is a major aspect of research training has not received much empirical investigation. This work therefore extends this field of research by examining thesis supervision models in use, students' satisfaction with supervision experience, and contribution of these models to development of research-related skills

using a larger sample of students from diverse disciplines. The following research questions guided this study.

(1) What are the dominant research supervision models used in thesis supervision?

(2) How do students involved in the different supervision models compare in terms of satisfaction with thesis supervision?

(3) How do students involved in the different supervision models compare in their evaluation of the contribution of thesis supervision to development of research-related skills?

2. Methods

The empirical site is selected from Myanmar universities such as, Mandalay University of Distance Education, Mandalay University, Mandalay University of Foreign Languages, Yangon University of Distance Education, Yangon University, Yangon University of Foreign Languages, University of East Yangon, Dagon University, Magway University, Myitkyina University, Hninthada University, Taungoo University, and Bago University in Myanmar. Master's degree program enrollment is quite high year after year. The official language in Myanmar is Myanmar Language. Bachelor candidates must qualify for the admission of Master's degree course. Master's candidates must have (at 5-point scale) in the degree of master to qualify for admission. In their second year, students are assigned thesis supervisors. The duration for the program is 4 months for full-time. The thesis writing is a very significant part of the program. Students choose thesis topics after the course work. They are expected to go through three stages of thesis oral presentation (topic proposal defense, credit seminar, and external defense) before the degree is awarded. The first stage, called the proposal defense which comes up when the student completes three chapters (introduction, literature review, and methods), the credit seminar defense when the five chapters are completed, and then the external which marks the end of the program and the award of the degree. The university lecturers have a very high workload as some lecturers supervise as much as 2 to 3 Master's students stipulated in the postgraduate regulations.

The study is a descriptive survey. The sample was 310 Master's students drawn through simple random sampling registered between from December 2017 to September 2018 and from December, 2018 to September, 2019 academic sessions. Of the 310, 195 returned their questionnaire. This number consisted of 54 males (27.69%) and 141 females (72.31%) who have been in the program. The distribution of sample according to faculties were as follows; sciences 96 (49.23%) and arts 99 (50.77%). The instrument used for data collection was a 30-item questionnaire. Two items from the instrument elicited demographic and program information from the students. Of the 28 questions that addressed the research aims, 15 were descriptors of different models of thesis supervision to which students responded on a five-point Likert-type scale which consisted of almost always (5), frequently (4), sometimes (3), rarely, (2) and almost never (1). The

descriptors were distributed as follows; face-to-face interactive model — six items; face-to-face non-interactive model — five items; ICT-based interactive model — two items and ICT-based non-interactive model — two items. Students' satisfaction with thesis supervision and development of research-related skill were measured by two subscales (supervision and skill development) of Postgraduate Research Experience Questionnaire (PREQ) adapted from previous study by Australian Council for Educational Research as reported by Ainley (2001). The satisfaction with supervision had six (6) questions based on a five-point Likert-type scale: very satisfied (5); satisfied (4), neither satisfied or dissatisfied (3); dissatisfied (2); and very dissatisfied (1).

3. Results

The data are illustrated in tables and the results are shown in charts as follows.

Table 1 Elicited demographic and program information from the students (n=195)

SN	Demographic and program information		Frequency	Percentage
1	Gender	Male	54	27.69%
		female	141	72.31%
2	Specialization	Sciences	96	49.23%
		Arts	99	50.77%

In this study, 195 Master's students from Myanmar Universities were selected to collect the data. This number consisted of 54 male students (27.69%) and 141 female students (72.31%). 96 students (49.23%) were science students and 99 students (50.77%) were from arts.

Descriptors of different models of thesis supervision to which students responded on a five-point Likert-type scale which consisted of almost always (5), frequently (4), sometimes (3), rarely, (2) and almost never (1) are as follows.

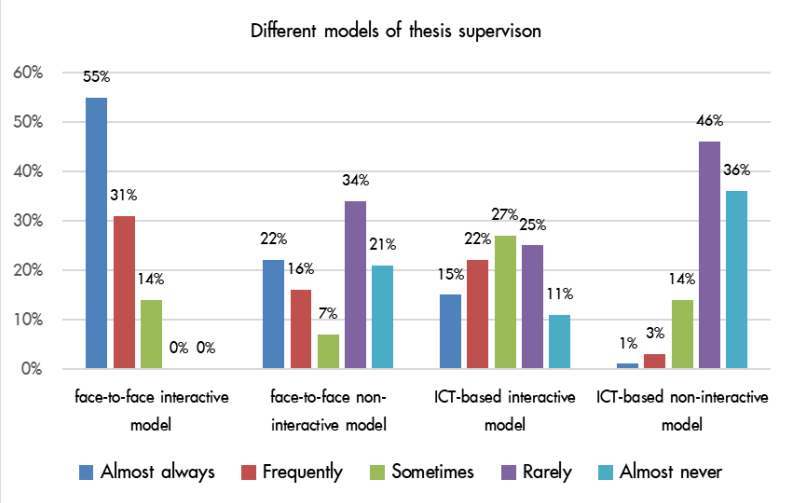

Figure 1 Descriptors of different models of thesis supervision (n=195 Master's students)

Face-to-face interactive model was not only the most frequently used, but also the most widely adopted in thesis supervision while ICT-based models were rarely used.

The data collected were analyzed using frequency percentage. Each student was classified into the model for which he or she obtained the highest average rating. Two main models emerged: the “face-to-face interactive model” and “face-to-face non-interaction model”. Frequency percentage was used to compare difference in students’ average rating of satisfaction with supervision. According to the data, 55% of students used face-to-face interactive model and 22% of students used face-to-face non-interactive model. ICT-based interactive model was used only by 15% of students and ICT-based non-interactive model was rarely used.

Students' satisfaction with supervision has been explored with a five-point Likert-type scale: very satisfied (5); satisfied (4), neither satisfied or dissatisfied (3); dissatisfied (2); and very dissatisfied (1) was used.

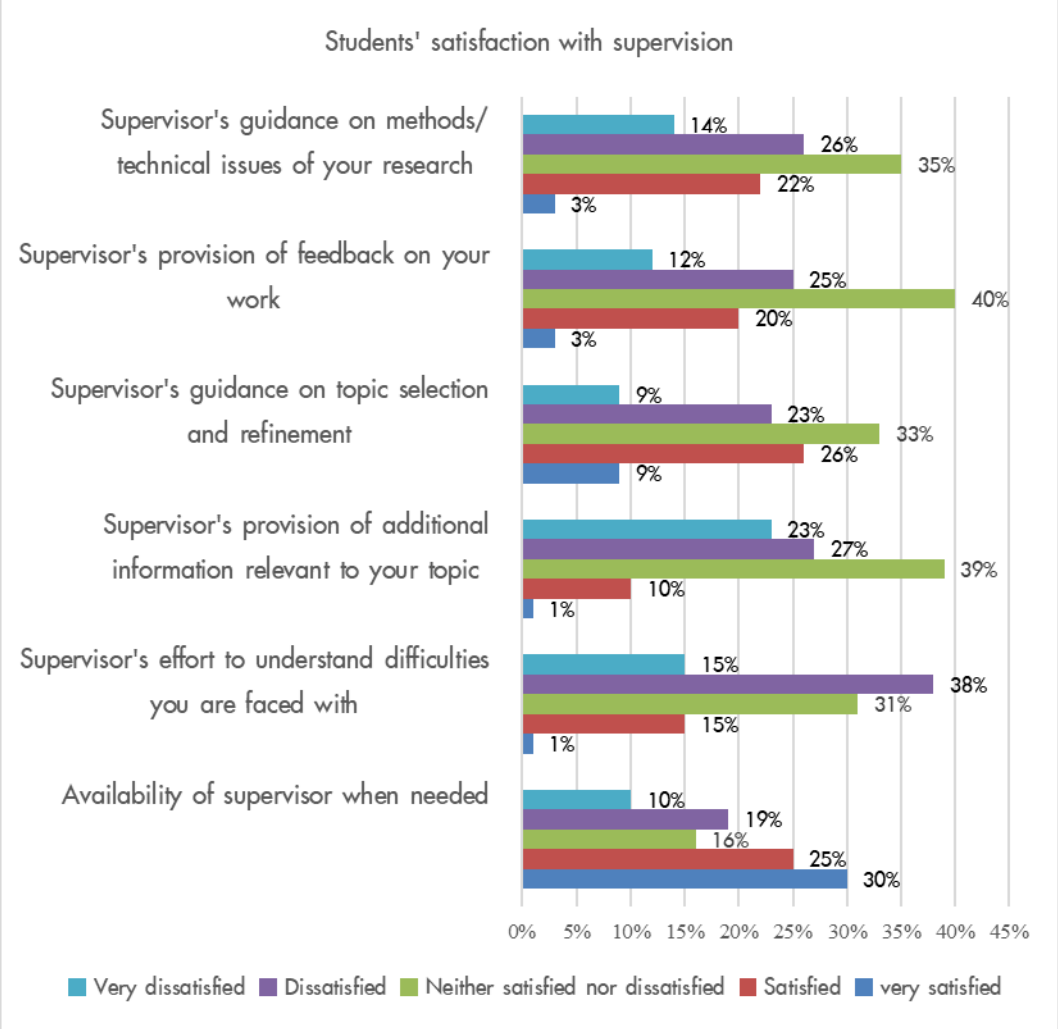

Figure 2 Students' satisfaction with supervision. (Source: Ainley, 2001)

Frequency percentage was used to demonstrate students' satisfaction with supervision. According to the data, only 27.5% of students were satisfied with their thesis supervision. 32.4% of students were unsure whether they were satisfied or not. It was found that 40.1% of students were dissatisfied with their thesis supervision.

The contribution of thesis supervision to master's students' development of research-related skill was measured using five (5) items that made up the skill development subscale of PREQ. The response format was based on a five-point Likert-type scale of strongly agree (5), agree (4), undecided (3), disagree (2), and strongly disagree (1). The 1999 Postgraduate Research Experience Questionnaire was used with a sample of 195 Master's students prior to this study.

Table 2 Development of research-related skill (Source: Ainley, 2001) (n=195 Master's students)

SN	Statements	Responses				
		Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree (1)
1	I have learnt to develop my ideas and present them in a written form.	19%	22%	31%	27%	1%
2	My analytic skills have been sharpened.	16%	30%	22%	17%	15%
3	I have developed the ability to plan my own work.	20%	19%	26%	23%	12%
4	My skill in writing research articles has been enhanced.	24%	31%	21%	18%	6%
5	I have more confidence in tackling possible research problems in my field.	21%	22%	31%	23%	3%
Average		**20.00%**	**24.80%**	**26.20%**	**21.60%**	**7.40%**
		44.80%		**26.20%**	**29.00%**	

According to the data, Master's students believed that their thesis supervision experience has moderate contribution (44.80%) to the development of their research-related skills. 26.20% of students could not decide whether their research-related skills developed or not. They (29.00%) disagreed with the contribution of thesis supervision to master's students' development of research-related skill.

RQ 1: Dominant Research Supervision Models / Styles Used in the Process of Master's Students' Thesis Supervision

The categorization of students into each of the models for which they had the highest mean rating showed that greater proportion of Master's students (55%) in the thesis supervision process engage often in the "face-to-face interactive model" while very few Master's students (22%) engage often in the "face-to-face non-interactive model" (Table 2). Therefore, while students who were supervised with the face-to-face interaction model rated their satisfaction with the whole thesis supervision experience above average, those supervised using non-interactive model reported being less satisfied. It was concluded that students most frequently engaged in face-to-face interactive model of thesis supervision.

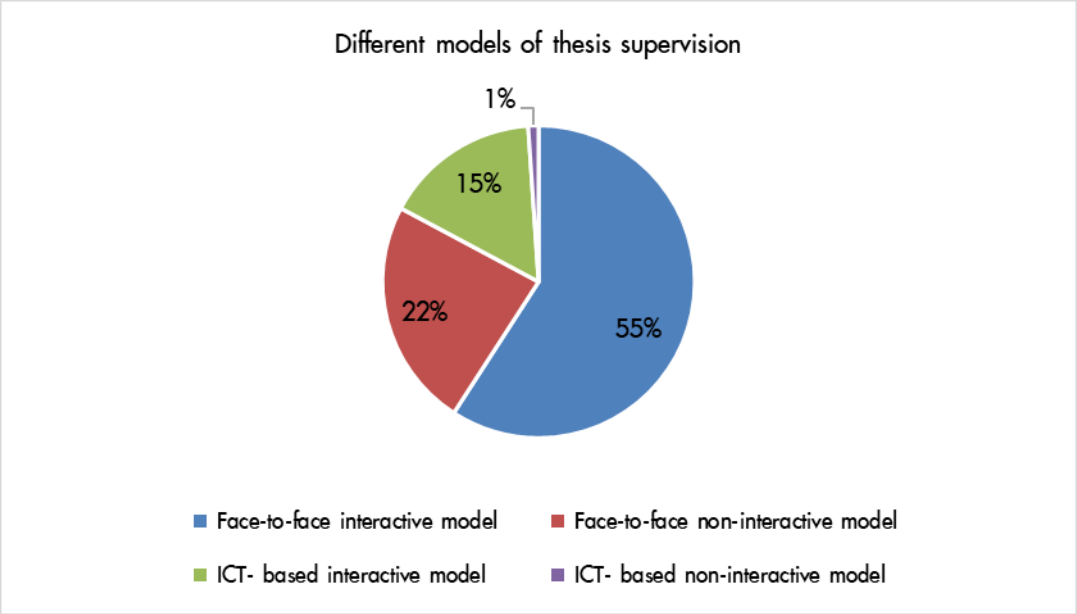

Figure 3 Descriptors of different models of thesis supervision

This figure shows that students like to use face-to-face interactive model and ICT-based non-interactive model is the least frequently used by master's students.

RQ 2: Relative Satisfaction with Thesis Supervision among Students within the Different Thesis Supervision Models

According to the data, master's students were dissatisfied with their thesis supervision. When they faced with difficulties of their tasks, they believed that their supervisors could not give enough guidance. They assumed that their supervisors' provision of additional information and feedback on their work was not insufficient. It was concluded that most of the master's students were not satisfied with supervision.

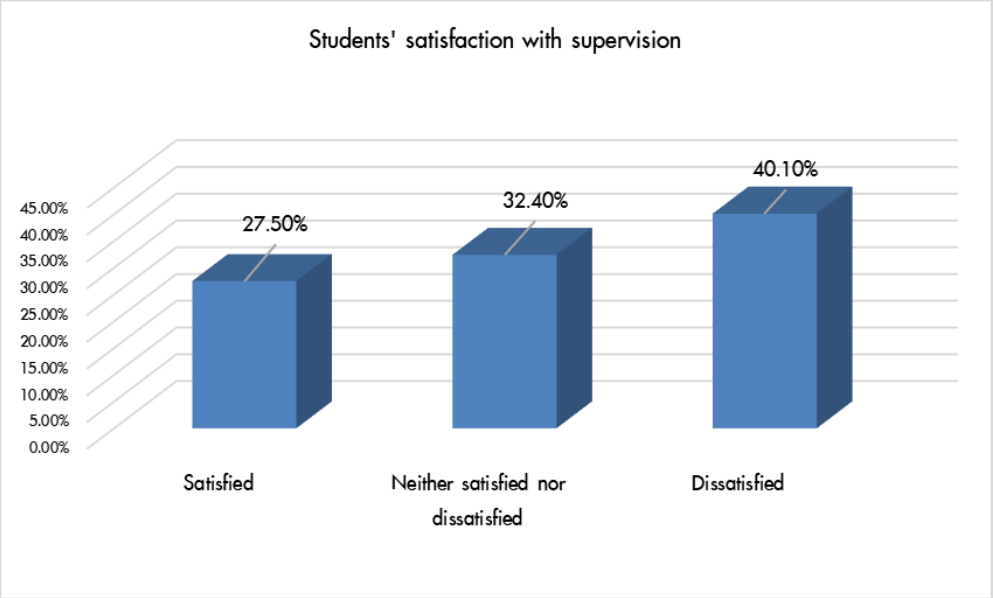

Figure 2 Percentage distribution of students' satisfaction with thesis supervision

This figure illustrates students' satisfaction with thesis supervision. It was found that master's students were not satisfied with thesis supervision.

RQ 3: Perceived Contribution of Thesis Supervision to master's Students' Development of Research-Related Skills in Relation to the Different Thesis Supervision Models

By these ratings, Master's students believed that their thesis supervision experience has moderate contribution to the development of their research-related skills. It was concluded that students were good at some research-related skills and weak in some other research-related skills.

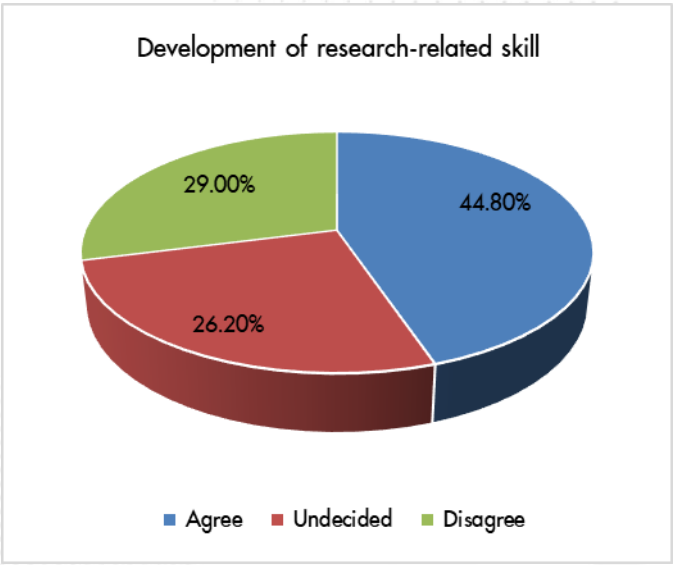

Figure 3 Percentage distribution of students' development of research-related skills

This figure displays master's students' development of research-related skills. Their thesis experience has a moderate contribution to the development of research-related skills.

4. Discussion of Findings

This study was aimed at determining the dominant Master's thesis supervision models in use in a university setting, students' rating of their satisfaction with supervision experience, and the contribution of this experience to the development of their research-related skills. One of the major findings was that face-to-face interactive model was not only the most frequently used model but also the most widely used while the ICT-based models (interactive and non-interactive) were almost never used. This seems to support the position held by Gurr (2001) that "passive" model of supervision is not acceptable in a university system. Literature showed that there is a wide consensus among scholars that master's thesis should be largely defined by interaction and dialogue between the supervisor and the supervisee. The lack of adoption of ICT-based models may be evidence that supervisors are not yet conscious of the opportunities provided by ICT for the improvement of educational provisions and as means of reducing thesis supervision workload. This study further revealed that students operating within the face-to-face interactive model express more satisfaction with their thesis experience than those in the non-interactive model. However, these models did not differ significantly in their contribution to development of research skills in the student. This could be as a result of the dynamism in thesis supervisory interaction reported by Gurr (2001) which suggests that each model (hands-on or hands-off) is relevant at different stages of the students' work. Three possible conclusions could be that the supervisor's hands-off (non-interaction) at certain stages of the work is an opportunity for the student to work independently and acquire more skills independently or that supervisors "hands-on" or interaction practice at some point of the thesis may be an inhibition to the students' development. Further possibility could be viewed in the nature and quality of the feedback given by the supervisors, the nature of the interaction between the supervisor and the supervisee and the supervisee's ability to undertake the thesis component of the master's program.

5. Conclusion

The research examined the master's thesis supervision models in selected universities, students' satisfaction with research supervision models and possible contribution to the development of research-related skills. It has been found that students did not report greater development in research-related skills. ICT-based models are yet to be adopted in the master's thesis process despite their potential for reducing the high workload lecturers experience in these universities. There is therefore the need to create awareness by the institution. The findings open up new vistas for further research and opportunity for changing institutional practices as regards master's thesis

supervision and skill development. Although this study provided a detailed description of the context of this study to facilitate evaluation of applicability of the findings to different contexts, it is still a single institutional study. Only students' perspective was covered in this study, future research study may undertake a comparative analysis of supervisors' and supervisees' perspectives. Furthermore, the study did not take into cognizance the disciplinary differences and practices in research which may affect research supervision practices. These and other factors which may account for students' development of research-related skills need to be explored further in research.

6. References

J. Ainley (2001), *The 1999 Postgraduate Research Experience Questionnaire, DETYA*, Australian Council for Educational Research, Evaluations and Investigations Programme, Higher Education Division, Canberra, Australia.

K. M. Elliot and D. Shin (2002), "Student satisfaction: an alternative approach to assessing this important concept," *Journal of Higher Education Policy and Management, vol. 24, no. 2*, pp. 197–209.

L.O. K. Lategan (2008), "Why the fuss about research and postgraduate supervision?" in *An Introduction to Postgraduate Supervision*, L. O. K. Lategan, Ed., African Sun Media, Stellenbosch, South Africa.

M. de Beer and R. B. Mason (2009), "Using a blended approach to facilitate postgraduate supervision," *Innovations in Education and Teaching International, vol. 46, no. 2.*

T. Gruber, S. Fuß, R. Voss, and M. Gl¨aser-Zikuda (2010), "Examining student satisfaction with higher education services: using a new measurement tool," *International Journal of Public Sector Management, vol. 23, no. 2*, pp. 105–123.

T. Wang and L. Y. Li, (2008) "Tell me what to do" vs. "guide me through it": feedback experiences of international master's students," *Active Learning in Higher Education, vol. 12, no. 2.*

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Students' View on Teachers' Approaches to Teaching Literature in Myanmar University Context

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Abstract

The use of literature has recently been revitalized as an essential component of English language programs, including English as a second Language (ESL) or English as a Foreign Language (EFL). This paper discusses the findings of a study carried out to investigate the students' view on teachers' approaches to teaching literature in English language classrooms of Myanmar University context. It has been found that teaching short stories in the EFL classroom exposes learners to distinctive opportunities for educational, cultural and linguistic development. The findings of the study, obtained via quantitative and qualitative approaches, provide insights to help educators in designing more appropriate programs in relation to the incorporation of literature in the EFL programs of undergraduate courses in Myanmar.

Keywords : Short Story, English Teachers' Training Students, Language Skills Classes

1. Introduction

The incorporation of literature in the curriculum is possibly one of the most prominent issues in the field of Second Language (SL) or Foreign Language (FL) teaching since the 1980s. Literature became even more divorced from language teaching with the advent of the communicative approach (Liddicoat & Crozet 2000) which focuses on the teaching of usable and practical contents for enabling students to communicate orally. In this period ESL/EFL classrooms were dominated by dialogues. However, the situation changed quite radically since the 1980s when literature has found its way back into the teaching of EFL. Since then, literature undergoes an extensive reconsideration within the language teaching profession. More and more studies on the use of literature in EFL/ESL classes have been conducted. Many results of some studies strongly recommend the integration of literary texts into the SL/FL curriculum (Lazar, 1993; Cook, 1994; Shanahan, 1997). As a result, the use of literary works for teaching both language skills (listening, speaking, reading and writing) and language areas (vocabulary, grammar and pronunciation) has become more and more popular. This paper discusses the findings of a study undertaken to

investigate students' perceptions on English teachers use of strategies towards inclusion of literary works in their language classes at the selected Universities of Myanmar.

1.1 Inclusion of Literature in English Specialization Curriculum

Collie and Slater, (1991) state that using literature in language teaching is very advantageous, it offers four benefits: authentic material, cultural enrichment, language advancement, and personal growth. As short stories are interesting, readable and short, they help learner's linguistics development and exercise the imagination. Learners can become personally involved in story as they identify with the characters and interpret the story in alternative way. Teaching literature in EFL classroom involves a profound range of grammatical and lexical relations, dialogue or discourse categories, encourages critical thinking and enhances creativity. In fact, techniques are methods and activities used in the classroom to achieve the desired goal of learning foreign language. Although the renewed interest in the inclusion of literary works in worldwide SL/FL curricula has flourished since 1980s, its initiation in the curriculum of the English Departments is relatively new. The nature of poetry, novel, and drama made them impractical and problematical to use in the classes which had limited time and relatively big number of students. The deviated and figurative language of poetry necessitated very long time to grasp. The novels' length made it difficult for such classes to finish. Dramas were found difficult to act out in crowded classes within limited course hours. As a consequence, in this research, supported by their shortness and simple and daily languages, short stories are recommended to be the main study area to use in this research. Theoretically, the use of literature in language teaching is very advantageous. First of all, literary texts can be more beneficial than informational materials in stimulating the acquisition process as they provide authentic contexts for processing new language. Since literary texts contain language intended for native speakers, literature stands as a model for language learners to become familiar with different forms and conventions. Second, using literature in language teaching has the advantage of providing cultural information about the target language. Literary texts increase foreign language learners' insight into the country and the people whose language is being learnt (Collie and Slater, 1991), which fosters learners' ability to interpret discourse in different social and cultural target language contexts (Savvidou, 2004). Third, containing real examples of grammatical structures and vocabulary items, the literary texts raise learners' awareness of the range of the target language and advance their competence in all language skills (Povey, 1967). Finally, since literature enables students to understand and appreciate other cultures, societies and ideologies different from their own, it encourages personal growth and intellectual development (Carter and Long, 1991, 2-4). In line with that, Erkaya (2005) notes four benefits of using of short stories to teach ESL/EFL, i.e. motivational, literary, cultural and higher-order thinking benefits.

1.2 Three Main Approaches to Teaching Literature

The inclusion of short stories in the language classes of the English Department is expected to provide greater opportunities in doing this research to explore the learning activities whether they enhance students' language skills, develop their cultural sensitivity, and sharpen their thinking skills. Carter and Long, (1991) propose the three main approaches to teaching literature: The Language Model (LM), The Cultural Model (CM) and The Personal Growth Model (PM).

The Language Model helps learners' development of specific linguistic goals and enhances their knowledge of the target language. The steps are applied in teaching short story; (i) prediction exercises, (ii) cloze procedure (iii) jumbled sentences, (iv)summary writing, (v) creative writing, and role play. The Cultural Model provides an opportunity for students to understand different cultural values via a literary work in relation to the target culture, interpretation based on the social, historical context of a text; (i) providing cultural and historic background, (ii) explaining unfamiliar usage and socio-cultural attitude related to the context, (iii) interpretation of the theme, (iv) fostering in group discussion (v) writing a review of the story. The Personal Growth Model attempts to link the language model and the cultural model by focusing on the particular use of language in a text. Students are encouraged to express their feelings and opinions and to make connections between their own personal and cultural experiences and those expressed in the text. It helps students develop knowledge of ideas and language—content and formal schemata—through different themes and topics. Since literature enables students to understand and appreciate other cultures, societies and ideologies different from their own, it encourages personal growth and intellectual development; (i) describing characters (ii) group discussion and reproduction a similar or new (iii) creating a new trend of ending and presentation (iv) storytelling activity and (v) role lay activity or acting out the scene of the story.

2. Research Objectives

This research consists of three objectives:

2.1 To investigate the students' view on teachers' approaches to teaching literature in Myanmar University context;

2.2 To explore students' attitude to the activities reconstructed based on the three main approaches to teaching short story;

2.3 To propose the importance of acknowledging literature as one of the best resources for promoting language learning in EFL (English as a Foreign Language) classrooms.

3. Research Methodology

3.1 Samples

There were actually 80 fourth year English specialization students in the study program who were all attending the undergraduate Programs. Since they had experienced the use of short story in literature classes and had got sound knowledge on short stories as a literary genre, they were expected to find no difficulty to properly respond to the questionnaire. 30 students were randomly selected from the researcher's literature class and they were taught short stories with appropriate activities. 50 English specialization students were from five different universities (10 from each university) and they were explained questionnaire data and their agree or disagree to the practices reconstructed in the literature class were collected. The 20-25-minute interview sessions were conducted with 23 student volunteers. The rationale for using focused semi-structured open-ended interviews was to understand the respondents' point of view rather than make generalizations.

3.2 Research Instruments

This experimental study was carried out to investigate the teachers' practice to increase the students' skills. The researchers employed an explanatory mixed method design to gather qualitative input to explain and extend quantitative results, in order to gain a comprehensive insight of the research. A '15 item questionnaire' was administered to obtain quantitative input. The questionnaire was constructed to gauge the views of students towards the incorporation of short story in language classes. The questionnaire was constructed in accordance to the three dimensions to teaching literature: The Language Model (LM), The Cultural Model (CM) and The Personal Growth Model (PM).

3.3. Data Collection

The data were collected at the end of the Academic Year 2018/2019. A 5 item questionnaire of each model was constructed and the students were trained with the help of interactive strategies. Then they were asked to indicate their agreement or disagreement to each statement on a 5-point Likert scale that ranged from strongly disagree, score 1, to strongly agree, score 5. Focused semi-structured open-ended interviews were also conducted to gather qualitative input. SPSS version 17.0 was used to run frequency analysis and to cross tabulation of the data in this study.

4. Research Results

Integrated teaching strategies are adapted based on the concept of three main approaches to teaching literature such as Language Model, Cultural Model and Personal Growth Model proposed by Carter and Long (1991:2). In the language model, they are used for linguistics development, in cultural model, used for understanding cross-cultural value and in personal growth

model, they are considered as a focus of students' personality, intellectual experiences. The lesson plan was adapted with activities with these three main model approaches. Students were encouraged to be aware of the thinking process through questioning, pausing, sharing of ideas and discussion. A questionnaire consisting of 15 items of teaching strategies was distributed to the participants to explore their perceptions on the teaching strategies conducted by the teacher in their literature class. The data were collected and analyzed in terms of five Likert scale agreement form. The researchers hope that this study would provide insights that will help curriculum designers and lecturers in providing more appropriate materials in relation to the incorporation of short story the language skills classes of English teachers training department.

4.1. Quantitative Research — Results

To investigate students' perceptions on the teaching strategies belongs to three main approaches: The Language Model, The Cultural Model and The Personal Growth Model (Carter and Long (1991), students are taught short story with effective and appropriate strategies adopted from the three main approaches. Then students are used as research subjects and teaching strategies as research tools. The collected data are analyzed in number and percentage. Overall findings are discussed.

4.1.1 Language Model

The language model argues that language is the literary medium that literature is made from language. The Language Model relies on the development of students' knowledge by working with familiar grammar, lexical and discourse categories. It focuses on the way language is used in literary texts. According to Carter and Long (1991), short stories offer learners adequate linguistic, intellectual, and emotional involvement and enrich their learning experience.

Table 1 Students' responses on the strategies that belong to the Language Model (n=80)

SN	Sub-strategies	Responses (%)				
		Strongly disagree	Disagree	Not decided	Agree	Strongly agree
1	Teacher makes students' motivation aroused.	2.50	5.00	20.00	50.00	22.50
2	Teachers ask questions to get their prediction from the title.	7.50	7.50	22.00	25.50	37.50
3	Teacher let students rearrange the sequence and describe characters.	5.00	15.00	25.00	40.00	15.00
4	Teacher explain unfamiliar vocabularies and usage.	0.00	7.50	11.00	44.00	37.50
5	Teacher provides key factor for summarizing.	12.5	47.50	3.00	24.50	12.50
	Avg	**5.50%**	**16.50%**	**16.20%**	**36.80%**	**25.00%**
		22.00%		**16.20%**	**61.80%**	

In terms of the data, the distribution of the respondents' agreement indicates that only 22.00% of the respondents disagreed; whereas 36.80% agreed, and 25% strongly agreed. The agreement of the students' responses in dealing with the Language Model towards short stories offer learners adequate linguistic, intellectual and enrich their learning experience was relatively very high (61.80%). Participants reported that they are motivated in teaching short story with applicable activities in the class. Participants also highlight a sub-strategy of explaining unfamiliar vocabularies and usage which is a key strategy that frequently concerns and challenges students in language classrooms. The data support that students can read and study language through literary text in the Language Model.

4.1.2 Cultural Model

The cultural model stresses the value of literature in summarizing the gathered wisdom, the best that has been thought and felt within a culture. Cultural Model represents the possibility literature brings into the picture as regards the understanding and appreciation of different cultures and ideologies together with the developing of one's perception of feelings and artistic forms. The Cultural Model encourages teachers and students how to deal with a literary work in relation to the target language.

Table 2 Students' responses on the strategies that belong to the Cultural Model (n=80)

SN	Sub-strategies	Responses (%)				
		Strongly disagree	Disagree	Not decided	Agree	Strongly agree
1	Teacher provides cultural and historical background.	5.00	7.50	32.00	38.00	17.50
2	Teacher asks questions which are related to the plot.	5.00	5.00	20.00	30.00	40.00
3	Teacher let students foster in group discussion.	0.00	20.00	25.00	30.00	25.00
4	Teacher let students interpret the theme of the text.	0.00	5.00	31.00	42.50	21.50
5	Teacher let students write a review of the story.	10.00	20.00	33.00	22.50	14.50
Avg		**4.00%**	**11.50%**	**28.20%**	**32.60%**	**23.70%**
		15.50%		**28.20%**	**56.30%**	

All the findings indicate that the majority of students basically found short stories interesting to have understanding and appreciation of different cultures. Furthermore, asking questions which are related to the plot and letting students interpret the theme of the text were a bit higher than the other components of Cultural Model. In a narrative or creative writing, a plot is the sequence of events that make up a story, whether it's told, written, filmed, or sung. Thus, a

story is at the core of culture. It is how histories are passed down, how customs are shared and how traditions become endemic to a group. Shared culture is rooted in a shared tradition of communicating. Moreover, the theme of a short story is simply its meaning. It is the main idea explored in the story by the writer. The meaning of a story can be implied, explicitly suggested or embodied in the story. The theme in a story is its underlying message, or 'big idea.'

4.1.3 Personal Growth Model

The personal growth model aims to help students achieve an engagement with the reading of literary texts. It helps students language—content and formal schemata—through different themes and topics. Since students can be able to understand and appreciate other cultures, societies and ideologies through literature, it encourages personal growth and intellectual development;

Table 3 Students' responses on the strategies that belong to the Personal Growth Model (n=80)

SN	Sub-strategies	Responses (%)				
		Strongly disagree	Disagree	Not decided	Agree	Strongly agree
1	Teacher gives preparation period for the activities.	7.50	10.00	20.00	35.00	27.50
2	Teacher let students describe the characters.	0.00	0.00	42.00	12.50	45.50
3	Teacher let students discuss for a similar production.	10.00	42.50	12.00	17.50	18.00
4	Teacher let students tell story and create a new trend of ending.	7.50	15.00	24.00	31.00	22.50
5	Teacher let students perform role play activity and acting out the scene of the story.	17.50	50.00	10.00	20.00	2.50
		8.50%	23.50%	21.60%	23.20%	23.20%
		32.00%		21.60%	46.40%	

The test of success in teaching is the extent to which students carry with them beyond the classroom an enjoyment and love for literature which is renewed as they continue to engage with literature throughout their lives.

4.1.4 Three Models Integration

The three models integration, the language model, the cultural model, and the personal growth model were applied in the research and the following findings are discussed.

Table 4 Students' perceptions on the strategies based on three models (n=80)

SN	SUB-STRATEGIES	RESPONSES (%)				
		Strongly disagree	Disagree	Not decided	Agree	Strongly agree
1	Students' responses on the strategies that belong to the Language Model	5.50%	16.50%	16.20%	36.80%	25.00%
2	Students' responses on the strategies that belong to the Cultural Model	4.00%	11.50%	28.20%	32.60%	23.70%
3	Students' responses on the strategies that belong to the Personal Growth Model	8.50%	23.50%	21.60%	23.20%	23.20%

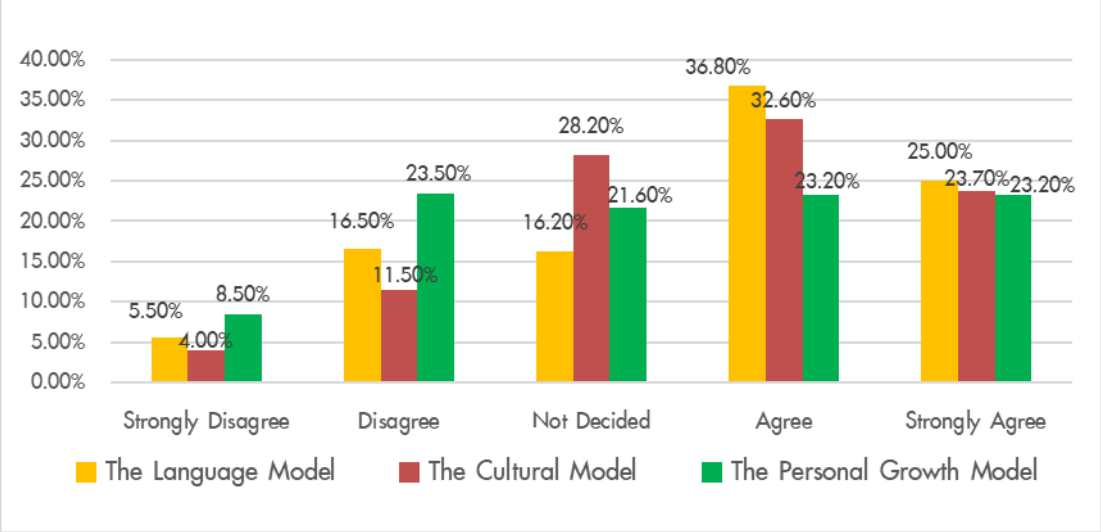

Figure 1 Students' perceptions on the strategies based on three models

According to the statistical analysis, students' perceptions were positively affected on the activities used in the class. To achieve the objective of the study, the students' awareness towards approaches, using appropriate techniques in teaching short stories are effective to engage students' needs as well as impact developing students' language skills. 36.80% + 25% of the participants reported that they agreed on teaching approaches used in the class and these teaching activities based on the concept of the Language Model made them motivated, interested in learning target language through short story. The study concluded investigation to students' attitude or perceptions on the course and the teaching approaches should be considered as an important factor. Since the study focuses on very limited students from selected universities, it would be better covering a large amount of students from various universities in future. It is hoped that the results of the study will contribute to the teachers who may use innovative approaches or

appropriate strategies in teaching literature in order to develop not only language skills but also the thinking skills of students.

4.2 Qualitative Research — Results

The data obtained through interviews strengthen respondents' support for the idea of using short stories in language skills classrooms, as indicated in the following excerpts.

4.2.1. Interview Responses

Qualitative data obtained via focused semi-structured open-ended interviews provide further clarification on respondents' eagerness to enjoy short stories as indicated in the excerpts below.

Table 5 Students' interview responses (n=23)

SN	Themes	Sample Responses
	Do you like reading short stories? How often?	(i) Interviewee A I think short stories are the most rewarding text! Only in a short period of time, I can get entertainment and inspiration by reading them. I love reading short stories. (ii) Interviewee B Short stories are possibly the cheapest but most interesting entertainment. It is not difficult to find good short stories in internet. Many of them are free. (iii) Interviewee C Every week I download and read not less than ten short stories. I even collect short stories I find very interesting. By doing so, I can reread them any time I'd like to.
	In your opinion, is it necessary to include short stories in the language skills classes of English teachers training?	(iv) Interviewee D Well, before extensively facing short stories in language skills classes, I thought studying literature, including short stories let us enjoy imagining ourselves as the characters in it.
	Do you think giving background information concerning a text would make it easier for students to comprehend a text? Why?	(v) Interviewee E Right, I like knowing about author's life and the setting of the story. It helps a lot to understand and arouses the interest to read till the end.

Table 5 (Continue)

SN	Themes	Sample Responses
	Do you think participation in the class activities effective to develop language skill that way?	(vi) Interviewee F That's great! I found it interesting and rewarding at the same time. I think it made me comfortable to share the ideas and it encourages personal growth and understanding each other.
	In your opinion, is it a good idea to include the lesson plan for describing the characters in short stories in language skills classes? Why?	(vii) Interviewee G I think short story is compulsory components of language skills classes. I become active in a period of describing the characters and it develops speaking skill. (viii) Interviewee H We can see short stories as the most complete learning materials. A single short story could be used to enrich vocabulary, to develop reading skill, to study new expressions for conversation of characters and many others.
	Which one do you prefer to deal with in language skills classes, expository passages or short stories? Why?	(ix) Interviewee I Now I realize good short stories not only serve as interesting material to enhance my language skills but also provides good lesson about life. (x)Interviewee J Short stories don't only facilitate language skills development in an interesting way. They also broaden one's horizon.
7	Do you like studying short story with appropriate activities? Why?	(xi) Interviewee K Yes, Of course. It makes us motivated and feel relax. Moreover, learning short story with activities enables us to exchange different ideologies of others.,
8	In your opinion, is story telling or group discussion about the text is a good idea for developing language skills?	(xii) Interviewee L I think it consumes a lot of time. Now I realize that it gives not only peer learning opportunity to enhance my language skills but also provides good lesson about life. (xiii) Interviewee M It's good. Approaching Short stories with activities enhances language skills development in an interesting way. They also broaden one's horizon.
9	Is there anything else you'd like to share?	(xiv) Interviewee O Yes! I absolutely agree that every English teacher needs to read, analyze, or write papers on short stories.

The distribution of the respondents' responses revealed that a majority of the students view short stories are necessary to study in English teaching study program. The findings denoted that the respondents think that short stories are necessary for students of English to study. According to interview responses, respondents reacted positively towards using a variety of activities during literature lessons, probably to reduce teacher's explanation and giving notes in class. Students seemed to be in favor of working in group or interactive activities of the students supporting the idea of doing more group work. Interestingly, respondents were keen to voice their opinions and personal reactions concerning the short story that they read. The positive attitude of respondents towards teachers' approaches to teaching short stories with activities in language skills class was exposed. It was indicated that using short stories with a variety of attractive teaching strategies develops listening, reading, speaking, and writing, the obtained data (table 5) revealed higher degree of the students' interest in this term than that in getting short stories for self-enjoyment. The findings denoted that only 0.37% of the responses went into "Disagree" criterion; and 18.4%, "Neutral". The other 81.5% went into the criteria of "Agree" and "Strongly Agree".

5. Discussion

It was conferred that students' attitude towards using short stories with a variety of attractive and innovative teaching strategies in class shares higher degree of their interest in this term than that in learning language skills through short stories with giving lecture to them traditionally. To investigate students' perceptions on the teaching literature used in the class, five-point Likert scale questionnaire was used for data collection. 80 students were selected via simple random sampling from the literature class and they were distributed to tick one criterion of agreement survey. Participants were expounded to complete all the information and give the true responses for the research. The data were collected in an anonymity format. Data analysis and statistical calculation was mainly done with the Microsoft excel application and then converted into percentage. The questionnaire was to tick for "Strongly Disagree/ Disagree/Not Decided/ Agree/ Strongly Agree with the strategies used in teaching short story". The students' perceptions on the activities used in teaching short stories are investigated: (1) Strongly Disagree (2) Disagree (3) Not Decided (4) Agree and (5) Strongly Agree. Teaching literary works in the language classroom has numerous valuable advantages to EFL learners in relation to language, self-motivation, critical thinking and culture. According to the findings, when taught short stories with appropriate practice, approaches and strategies, students can achieve motivational, literary, and cultural and higher-order thinking skills. Thus, stories are powerful learning materials which provide an accurate reflection of event and character of the text.

6. Conclusion

As revealed through the findings of this research, a majority of the students of the English Department basically found short stories interesting to use both as materials for self-enjoyment and of as components language classes. Most of them also agreed or strongly agreed that the incorporation of short stories in language skills classes help learners achieve better mastery of language skills. It can be concluded that, students' attitude towards the activities used in the classroom has positive impact. Teaching short stories with appropriate strategies in EFL class helps learning more fun and interesting. Such practice supports students' positive learning experience, improves their language skills and develops cultural and social awareness. The results will contribute to the teachers who may use innovative approaches or appropriate activities in teaching literature to develop not only language skills but also the thinking skills of students.

7. Recommendation

The following are some recommendations based on the research results:

7.1. Future study can probably be carried out by covering a larger number of students from various institutions and regions since this study concentrates on the of English specialization students' view on teachers' approaches to teaching literature with limited respondents.

7.2. It is also recommended that further studies should be conducted for exploring the view of lecturers/teachers on the inclusion of short stories in English classes and what strategies used in literature class engage the students' needs for developing language skills.

8. References

Carter, R., and Long, M.N. (1991). *Teaching Literature*. Harlow: Longman.

Carroli, Piera. (2002). "*Perceptions of Literature: a Comparison of Students and Educators views*" Published in Proceedings of Innovations in Italian Teaching Workshop, Griffith University.

Collie, J., and Slater,S.(1991). *Literature in the Language Classroom*. (5th ed.). Glasgow: Cambridge University Press.

Cook, G. (1994). *Discourse and Literature: The Interplay of Form and Mind*. Oxford: Oxford University Press.

Erkaya, Odilea Rocha. (2005). "Benefits of Using Short Stories in the EFL Context." *Asian EFL Journal* v 8 November 2005.

Lazar, Gillian. (1993). *Literature and Language Teaching*. Cambridge University Press.

Liddicoat, A. J. and Crozet, C.(eds).(2000).*Teaching Languages, Teaching Cultures*. Melbourne: Language Australia.

Povey, J.F. (1967). "Literature in TESOL Programs: The Language and the Culture". *TESOL Quarterly*, 1, 40-46.

Savvidou, C. (2004). "An Integrated Approach to the Teaching of Literature in the EFL Classroom." *The Internet TESL Journal*, 10 (12)

Shanahan, D. (1997). "Articulating the Relationship Between Language, Literature and Culture: Toward a New Agenda for Foreign Language Teaching and Research". *The Modern Language Journal,* 81, 2, 164-174.

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COVID-19 : The World Disaster

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Abstract

Coronavirus disease (COVID-19) is an emerging disease in a family of viruses that cause illnesses ranging from the cold to the more serious diseases. The most common symptoms of COVID-19 are fever, cough, fatigue, muscle pain (for some patients), stuffiness, runny nose, sore throat, diarrhea, loss of taste and smell, skin rash, skin color changes of fingers and toes, to shortness of breath. This results in irreversible changes in the way of life of people in the world because people have to wear a face mask, use hand sanitizer, keep social distance between others, and reduce socialization and touching others more increasingly until now. People also take more care of their health and can use digital familiarity until technology will be normal in everyday life and stay healthy with peace of mind in order to be ready to deal with the epidemic crisis consciously.

Keywords : COVID-19, disease, crisis

1. Introduction

Coronavirus disease (COVID-19) is an emerging disease in a family of viruses that cause illnesses ranging from the cold to the more serious disease, which is an emerging species that has never been found before in humans. This causes respiratory illness in people and can spread the infection from person to person. The virus was first found in an outbreak in Wuhan, Hubei Province, China, in late 2019. Currently, the number of patients around the world with the coronavirus disease (COVID-19) has been still increasing, and the outbreaks of coronavirus disease (COVID-19) have been very high on every continent (Sumalee Juthong, 2019). The origin of COVID-19 (stand for Coronavirus Disease 2019) is 2019-nCoV, a new coronavirus strain, found in more than 200 animals and humans, but in the past, humans have known the original 6 strains of the coronavirus that four of all their strains cause several endemics such as cold and respiratory diseases, and two new emerging strains cause acute respiratory disease: SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome Coronavirus) (Emergency Operation Center, Department of Disease Control, 2020) and the 2019-nCoV strain of coronavirus is the seventh member of the family.

2. Coronavirus Disease 2019 or (COVID-19)

Symptoms of COVID-19

The most common symptoms of COVID-19 are fever, cough, fatigue, muscle pain (for some patients), stuffiness, runny nose, sore throat, diarrhea, loss of taste and smell, skin rash, skin color changes of fingers and toes. Severity of these symptoms is usually mild and starts to be gradually severe. Some patients are infected but have mild symptoms. The vast majority of people (80 percent) can recover without hospitalization, and about 1 in 5 of those infected with COVID-19 have severe symptoms and shortness of breath. Moreover, elderly people with underlying diseases, such as high blood pressure, heart disease, diabetes, or cancer, are more likely to have a more serious illness. However, everyone can be ill with COVID-19 and may be severely ill. People of all sexes and ages with fever and/or cough with shortness of breath, chest pain, loss of sound, or inability to move, should consult the doctor immediately, if possible, calling ahead for the hospital to give advice. If there are mild symptoms such as little cough or low fever, there is normally no need to see a doctor but have to stay home, quarantine, monitor symptoms, and follow the official advice to separate yourself from others (World Health Organization, 2020). However, if you are in the outbreak risk areas, you have to watch for fever and see a doctor. When going to a hospital, you have to wear a face mask and keep at least 1 meter apart and do not touch on surfaces. If your child is sick, you should follow this advice as well. Also, you should see a doctor right away if you have shortness of breath and/or chest pain. If possible, you should call ahead so that it can give advice (Information and Communication Technology Center, Office of the Permanent Secretary, Ministry of Public Health, 2020).

Spread of the Disease

This disease can spread from person to person through the respiratory droplet. When a patient with COVID-19 coughs, sneezes, or speaks, these droplets are quite heavy which cannot spread very far and quickly fall to the ground. We take COVID-19 from inhaling. Therefore, it is necessary that we have to keep social distance, at least 1 meter, from others. These droplets also fall onto objects and surfaces such as tables, doorknobs, handrails, etc. and when people take their hands to grab those surfaces and catch their eyes, nose, or mouth, you will take this pathogen as well. It is therefore imperative to wash your hands frequently with soap and water and use hand sanitizer. Keeping your hands clean and maintaining cough/sneeze etiquette are important to do at all times, and it is the best way to protect yourself and your loved ones. If possible, you should keep at least 1 meter from others, especially when standing near someone who is coughing or sneezing because some infected people may not have symptoms, keeping your distance from everyone is also a good idea if you are in an outbreak region of COVID-19 (Department of Mental Health, 2020).

If we come into close contact with someone infected with COVID-19, we might be infected. Close contact means living together or being close to each other within 1 meter of the patient. If you are sick with mild symptoms, you should isolate yourself. Although you think that you are not in close contact with the infection, but you have symptoms, you should isolate yourself and observe the symptoms which are more likely to infect others in the mild early stages. Consequently, self-quarantine is essential. If there are no symptoms but close contact with the patient, you have to quarantine for 14 days. In the case of COVID-19 patients (confirmed by examination), they have to further quarantine for 14 days despite the fact that the symptoms are gone to be careful. It is not yet certain how long people can continue to transmit the infection after recovery, so should follow the official instructions on quarantine strictly (Noppcha Singweratham, 2020).

If someone has to quarantine because of illness but not under the supervision of a doctor, they should stay in a wide and well-ventilated area with hand sanitizer and toilet. If possible, bed should be separated at least 1 meter apart, and at least 1-meter distance should be kept from others including family members. Furthermore, daily symptoms have to be monitored and should quarantine themselves for 14 days, even though they feel like staying healthy. If there is shortness of breath, a medical provider should be contacted by calling in advance. if possible, should stay positive and energize by connecting with loved ones by phone or through online channel and exercising at home.

3. Self-protection to Prevent Disease and the Spread of Disease

In the practice to reduce the risk of infection or transmission, these precautions should be followed as follows: (World Health Organization, 2019)

1. Wash your hands frequently and thoroughly with hand sanitizer or with water and soap because cleaning hands with two methods is to kill pathogens on your hands.

2. Keep a distance of at least 1 meter from others because when people cough, sneeze, or speak, it will cause respiratory droplet which may contain pathogens. If stay too close, those respiratory droplets will be into the body from breathing in case of the sick person.

3. Avoid going to crowded areas because when many people gather, we are at risk of approaching patients with COVID-19, and when people are crowded, it is difficult to keep a distance of 1 meter from others.

4. Avoid touching your eyes, nose, and mouth, with your hands because your hands touch a lot of things and may come in contact with pathogens. When hands are contaminated, they transmit pathogens to the eyes, nose, and mouth, and it can enter our body and make us sick (Department of Mental Health, 2020).

5. We and neighboring people should have good respiratory hygiene, which means that you must cover your mouth every time you cough or sneeze with your elbow or with a tissue, then immediately throw away it, and wash your hands because these droplets can spread infection. If you have good cough/sneeze etiquette, you can protect other people from other pathogens, such as colds, flu, and COVID-19.

6. Stay home and quarantine yourself, with mild symptoms such as cough, headache, fever until recovery. Let someone deliver supplies and necessary items, but if you have to leave the house, you have to wear a mask to prevent infecting others because avoiding contact with others is to protect others from COVID-19 and other pathogens.

7. If you have a fever and/or cough with shortness of breath, you should consult your doctor immediately. If possible, you should call in advance so that a hospital can advise you because the state and local authorities have information of the latest situation in your area. Calling ahead of time will make healthcare workers refer you to the appropriate healthcare facility to protect yourself and prevent the spread of other viruses and pathogens (Department of Mental Health, 2020).

8. Follow the news and information from reliable sources such as World Health Organization and Public Health Authority because the authorities and the local community will provide the best information on what local people should do to protect themselves.

To protect yourself from the Covid-19 crisis, you should wear a face mask every time you leave home, wash your hands, and keep distance from people (Noppcha Singweratham, 2020). All of these methods are to adjust our own lifestyle to reduce the risk of infection. Lifestyle adjustments can be applied to virtually any disease prevention, not just in the presence of COVID, because whenever you continue to live a comfortable life, you will increase the risk of disease and the likelihood of approaching the disease more easily from the same repetitive cycle of life, for example, eating more harmful food than beneficial, not exercising, and so on. The deadly pathogens lurking in the body might take this opportunity to show themselves up. In brief, the most effective way to protect you and others from COVID-19 is to wash your hands frequently, avoid touching your eyes, nose, and mouth, cover your mouth and nose with tissue or elbows when coughing or sneezing and immediately throw tissue paper away, wash your hands, and keep at least 1 meter from others.

How is COVID-19 Changing?

The epidemic situation of the COVID-19 has changed the way of life of people around the world resulting in creating anxiety to people around the world. Several countries and cities are shut down to prevent the spread of disease. The airport and tourist attractions are almost deserted. Many businesses have been affected both directly and indirectly until they have to reduce or dismiss the staff or shut down their businesses. People do not dare to go outside or stay

in a crowded place and stay tuned for updates on the spread of this virus, which the information received was both real and fake, or some of the information that we used to take as a guideline to prevent infection may need to be adjusted to suit the situation. For example, using a middle spoon may cause the risk of infection from touching the spoon together, so people have to change to eat hot food with their own spoon and wash your hands thoroughly (Suwit Mesinsee, 2020). However, if you think positively, the COVID-19 epidemic makes people increasingly aware of the importance of taking care of themselves away from disease. All organizations, governments, and businesses are also increasingly aware of and prioritize adjustments and adaptations to reduce the risk of spreading various pathogens in the future.

Although COVID-19 is a mild disease, there is a widely spread of infection rapidly causing paranoia to all people in every sector. Various economies and businesses are so slow down that some organizations have to halt. On the other hand, it encourages more modifications to become alternatives to survival. For example, substandard face masks are increasingly being rejected by consumers because consumers have better knowledge of how to buy and use. People are turning to wear washable masks instead of a surgery mask because it can be washed and used repeatedly. Supplies and equipment are modified such as doorknob because it is thought to reduce the exposure as much as possible, for example, a switch doorknob operated with an elbow or another material for hand contact or automatic or semi-automatic doorknob. Online payment systems will be more options for spending because both entrepreneurs and consumers have become worried about touching the banknotes or coins which could easily be contaminated with pathogens. Natural packaging is increasingly being used as a disposable alternative in delivery channels and ordering food from the store to reduce the contamination from the contact of the container brought by customers and help reduce environmental problems as well. Some raw materials may not be sufficient to meet the needs of the country, so there is a need to import additional products. Taking advantage of a free trade agreement or FTA will provide more options for Thai manufacturers and entrepreneurs to have access to a wider variety of products and raw materials. From a normal life, for instance, going to work, socializing with friends, and so on, people must stay at home, keep social distance from others, wear a face mask, and wash hands, So how should we deal with this when everything is changing? Everyone has to adapt to survive in various ways such as wearing a mask, washing hands, social distancing, and using a hand sanitize to prevent this disease, which is actually one of the many traditional preventative processes from other diseases that we used to do this as well.

Originally, before the epidemic of COVID-19, everyone enjoyed the important moments, planed their life to do many activities, started to book flight ticket and accommodation, lived their life in the old way without face protection, along with following the news that began to speak of the epidemic coronavirus in China together with thinking that it is not that scary at all. Until the

time passed, Thai people are infected with COVID-19. Then, the Sold-Out phenomena of the face mask and hand sanitizer were started. In the past, we used to live a simple life, we have to finally feel fear and anxious. Actually, COVID-19 can be prevented but lifestyle needs to be adjusted.

Due to COVID-19, it is an emerging disease that affects the way of life, work, and daily life. The emergence and operation of this COVID-19 is a situation that many people expect to happen in a long run until causing permanent changes in many people's behaviors. Uncertainty and unpredictable situations together with receiving information about various impacts may cause stress and fear to Thai people of all ages. Public and private sector officials around the world have been trying to remedy this tremendous impact. However, every crisis has a normal opportunity, including this outbreak. The subsequent key question is when this crisis is over, how will this world change? The epidemic of COVID-19 spreading throughout the world until the World Health Organization or WHO declares that it is a "pandemic" is a geographically wide epidemic of disease affecting many people. However, that effect does not cause only bad things because there is still a positive impact that no one would expect to happen on the day of COVID-19 as follows (Patcharawan Woraphon, 2020).

1. Air around the world is better, and toxic dust and smoke are reduced when people do not travel, stop activities in everyday life, and take less transportation because cars, boats, airplanes are pollution sources. NASA satellite imagery showed that the values of nitrogen dioxide (NO2) and PM 2.5 were significantly reduced.

2. The rivers, canals, and the sea are cleaner which can be clearly seen from the canal in Venice when there are no tourists and ships traveling as crowded as before.

3. People's eating behavior is better.

4. Focus on more public health and hygiene such as eating hot food using middle spoons, washing hands, wearing face masks, preventing disease when coughing or sneezing, and carrying a hand sanitizer to wash hands frequently to prevent pathogens.

5. there is more time for the family. When you are not going anywhere, you have more time to pay attention and focus on your family than before, developing a strong family relationship.

6. People pay more attention to each other, have social responsibility, cooperate, and help each other without discriminating against people of colors or social statuses.

7. Violent events from war are reduced.

8. Changes or new cultures in Europe have been mostly modified such as a culture of greetings because they greet each other using Thai greeting culture instead of holding hands, hugging, or kissing the cheeks like before.

9. People pay more attention to the economy. There will be an inevitably great economic downturn with the epidemic which makes people more aware of their spending (Tidarat Chimluang, 2020).

10. More people are turning to online lives such as work from home business and online learning and teaching to stop the outbreak of COVID-19. The places used to be crowded have to be closed. Each person protects themselves by staying in the house. Learning and teaching and working in some careers have to operate online, and there is a development of various application programs to accommodate this situation.

11. Movies, games, and series made about the plague received more attention and brought about the income of the producers. Although there are many movies receiving less attentions, many of them are now gaining popularity, such as the old film *Contagion*, about a businesswoman who becomes a carrier of the disease back to America unintentionally after shaking hands with a chef in Macau. From the popular number 270 in the same movie category, now it is in the top 10 on the iTunes chart. Plague Inc game is one of the mobile games. With the rules of this game, players have to create pathogens that can globally spread and destroy humanity which is highly popular. Netflix released a quasi-documentary series "*Pandemic*," which reveals the truth about the preparation and prevention of the virus epidemic. This showed that humans are not able to cope well with the new virus strains. (Kwaunchai Kerdubon, 2020).

4. Economic changes

Before the COVID-19 situation in terms of national and economic development, Thailand has faced crises many times, but COVID-19 is a phenomenon that has brought tremendous changes because it is a pandemic around the world, which results in economic changes on the following issues.

Deglobalization will be more concentrated. The global supply chain has changed dramatically in the past two years before this crisis. We have seen many countries implement inward-looking policy or protectionism clearly, especially in the trade war erupted by US President Donald Trump who encouraged more American companies to return to domestic production and caused barrier to foreign trade. The issue became even more clear with the COVID-19 crisis that reinforces the beliefs of conversative parties and non-supporters of globalization that excessive dependence on international production systems is dangerous which will speed up the transformation process of existing global supply chains (Sakorn Srimook, 2020). That is, countries will increasingly rely on their own domestic supply chains and diversify the risk of production and sales of products independent on one country because there is a clear impact from the production process or the market when the businesses have to be closed. This is the result of several measures (Suparit Suwannik, 2020) such as the closure of a city or country to prevent the spread of the

epidemic. The governments may change this crisis to be an "opportunity" in careful thinking about where the country's economic policy will go by trying to diversify the risk of economy by not relying too much on any kind of income, for example, independent on only exports or tourism but domestic consumption and investment as an important machinery.

Structural Problems, Especially in Public Health

Public health problems will be addressed more thoroughly and equitably because the COVID-19 crisis puts pressure on governments to pay attention to the fundamentals of public health and do not let the market mechanisms manipulate the way they used to. The crisis suggests that whether individual can access to healthcare should no longer be an individual concern because a person is a carrier of the disease but he/she cannot go to the virus detection service because he/she cannot afford the examination fee despite wanting to go and continuing to live as usual. This causes the disease to spread further to others unintentionally (Department of Mental Health, 2020). In the end, overall disease control will be difficult to deal with, and it is part of the reason why the state and government has to face with a more severe epidemic crisis than usual. After going through this crisis, we may also see the growing role of the welfare state system in each country.

Entering a Full Digital Society

To keep up with changing consumer behaviors, it can be seen that every crisis has always left its legacy. Date back the epidemic situation of SARS in 2002, it created a major turning point for the use of online technology such as e-commerce in China to be highly popular among the people, especially Alibaba and JD.com, because people avoid infection from public spaces and buy things online more. Coming to this crisis, it will also leave its legacy reinforcing traditional stores and department stores to accelerate their development better to capture more markets from online commerce, including many types of digital technologies (Natthaphat Chalermda, 2020). The crisis forces people to take these technologies seriously and creates opportunities to build more players in the market, such as platforms for telecommunication, organizing meetings or events, etc., making consumers become familiar and change their behavior to use these technology permanently as well as educational institutions using all alternative teaching methods via online channels during the crisis, which may completely transform the world education system after the crisis has passed (Innovation Foresight Institute, 2020). Lastly, people may be afraid to use cash or banknotes because paper may be a carrier of disease even after the COVID-19 crisis and begin to become accustomed to the strictest hygiene and safety-related everyday life. With these factors, electronic payment systems are becoming increasingly popular.

5. Conclusion

If the epidemic of COVID019 is ended, people's behavior across the country will be transformed into a "New Normal" in many behaviors. When people learn to adapt their ways of life in order to survive in that environment regardless of the environment and events affecting human life greatly, they will readapt themselves to survive such as a face mask and hand sanitizer, which are still desired equipment that helps to protect oneself, and people used them more increasingly because it is a way to protect themselves from the risk of infection and the spread of the disease to others. Moreover, people keep physically and mentally social distancing. Trust expressed through Human Touch will be reduced. People turn to focus on eating good, healthy, safe, and clean food focusing on more natural or organic food. People are more likely to do exercise, take more care of their health, pay more attention to love themselves, reduce meeting lots of people in society, and turn to live their life and work at home resulting in having more time with family. It makes people see more ways to balance their lives at home, and it will be a way to balance life between personal, work, and social life more. Also, people avoid unnecessary contact with each other. The culture of greeting people, especially many western nations used to touch each other, has changed. Digital will become a vital necessity for life, and not just people in Gen C, but people of all ages can familiarize themselves with digital. Technology will become the norm in everyday life, such as work from home, food delivery, shopping online, studying online, or banknotes or coins in the system that will be used less, which results in becoming a cashless society completely soon. People are divided into groups causing discrimination for safety reasons or consideration of hygiene, and the public health system will have a health platform as a basic service and have prevention of disease more importantly. However, regardless of the current situation or the future, we still need to take care of ourselves to be healthy and have peace of mind to be ready to deal with many things that will happen in the future. Every crisis has a hidden opportunity, so we must deal with it consciously. The epidemic makes us terrified, but it allows us to learn more ways to protect ourselves. Although the epidemic halts businesses, it may be an opportunity to return to stay calm in order to prepare for receiving changes in the future for the better.

6. References

Department of Mental Health. (2020). *Addressing Mental Health and Psychosocial Aspects of COVID-19 Outbreak. IASC Reference Group on Mental Health and Psychosocial Support in Emergency Settings*. Nonthaburi: Department of Mental Health.

Emergency Operation Center, Department of Disease Control. (2020). *Coronavirus Disease 2019*. Nonthaburi: Ministry of Public Health. Information and Communication Technology Center, Office of the Permanent

Secretary, Ministry of Public Health. (2020). *Coronavirus Disease 2019*. Nonthaburi: Ministry of Public Health.

Kwaunchai Kerdubon. (2020). *HR Magazine Society*. Bangkok: Thamniti Press. Innovation Foresight Institute. (2020). *Covid 19 crisis and the changing of innovation*. Retrieved from https://ifi.nia.or.th/. (October 1, 2020).

Natthaphat Chalermda. (2020). Consumers' Behavior on Buying Delivery Food Via Mobile Application During New Species of Corona Virus 2019 (COVID-19) in Bangkok. *Journal of Industrial business administration*. 2(1), 93-106

Noppcha Singweratham. (2020). Perception and preventive behaviors on the coronavirus disease-2019 (COVID-19) among dental nurses under the Ministry of Public Health. *Journal of Bamrasnaradura Infectious Diseases Institute*. 14(2), 104-115.

Patcharawan Woraphon. (2020). *When Disease Changes Into The Good World*. Retrieved from https://thai.tourismthailand.org/Articles/เมื่อโรคร้านเปลี่ยนให้โลกดี (October 1, 2020).

Sakorn Srimook. (2020). Thailand's Fruit Exports during the Coronavirus 2019 Outbreak. *Journal of Academic*. 10(11) 2-20.

Sumalee Juthong. (2019). Disaster *management for COVID - 19 in the Rimklong Hua Mak Noi community, Bangkapi District*. Master of Public Administration, Ramkamhaeng University.

Suparit Suwannik. (2020). *How Will The World Change? After The COVID-19 Crisis Ended*. Retrieved from https://www.bot.or.th/Thai/ResearchAndPublications/articles/Pages/ **(**October 1, 2020**)**

Suwit Mesinsee. (2020). *Global Metamorphosis*. Bangkok: Ministry of Higher Education.

Tidarat Chimluang. (2020). *Managing in the new normal:Financial and operational considerationsfor manufacturers post COVID-19*. Bangkok: KPMG Phoomchai Business Advisory Ltd.

World Health Organization. (2019). *coronavirus (COVID-19)*. Retrieved from https://www.who.int/thailand/emergencies/novel-coronavirus-2019/q-a-on-covid-19 (October 1, 2020).

_____. (2020). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*. Geneva: World Health Organization.

Education

(Oral Presentation)

Student Attitudes toward Chemistry Lessons to Enhance Teaching at Undergraduate Level in Myanmar

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Abstract

Aims of science education are concerned not only with students' cognition but also with students' affect, an umbrella term for emotions, feelings, moods, and attitudes. Many studies have been conducted on student attitudes toward learning science in general; however, studies concerning attitudes toward chemistry are limited in number (Cheung, 2009a). Chemistry is exciting, there's no doubt about it. As one of the three main branches of science, its impact is wide-reaching and impressive. Through chemistry we have made great discoveries and Chemistry plays a role in almost every action on earth and in every object we touch. It's the study of substances, and their composition, structure, and properties. The purpose of this study was to demonstrate how chemistry teachers in Myanmar can evaluate their students' attitudes toward chemistry lessons by means of the 12 item Attitude toward Chemistry Lessons Scale (ATCLS). Following the translation and adaptation procedures, the inventory questionnaire was administered to a total of 503 undergraduate students and interviews with 47 senior teaching staff members of chemistry departments at selected universities in Myanmar. Factor analysis was conducted to explore the internal structure of the instrument and compare factors across cultures. The teachers found that overall their students had a positive attitude toward chemistry lessons, but the percentage on two of the four subscales were slightly lower than expected. They were interviewed to identify the underlying reasons. The information about student attitude toward chemistry lessons served as a catalyst to help the teachers to reflect on the curriculum planning and teaching effectiveness. The nature of the four subscales and the interview results are discussed. According to descriptive analyses, the students in the sample had average positive attitudes.

Keywords : Student Attitudes, Chemistry Lessons, Undergraduate Level, Myanmar

1. Introduction

Chemistry is, in the simplest terms, the science of substances and how they change. It is the exploration of the qualities of atoms, some of the most basic building blocks of all matter, and how those atoms join together to form new kinds of matter, called compounds. Everything in the universe, from the gas in a distant nebula to the tips of your fingers, is a mixture of atoms of different elements. Chemistry teachers are the people who help students understand this physical world, from the reactions within our own bodies to how soaps and detergents work and why egg proteins can keep a cookie from crumbling. They prepare the next generation of scientists and engineers, including all healthcare professionals. Chemistry teacher educators worldwide have long been asking the question: How can we help chemistry teachers improve their curriculum planning and classroom teaching? One of the ways to enhance teacher professionalism is to develop their ability to conduct curriculum evaluation (Preedy, 2001). According to Preedy (2001), curriculum evaluation is the process of gathering evidence to make judgments about the value or worth of curriculum plans, processes and outcomes, as a basis for developing and improving them. Chemistry teachers can make their curricula and teaching more effective if they identify where they are weak and strong. The learning outcomes of chemistry can be broadly classified into three domains: cognitive, psychomotor, and affective. The affective domain includes learning outcomes such as students' attitudes, motivation, values, self- esteem, and self-efficacy. However, many chemistry teachers do not know how to evaluate their students' attitudes toward chemistry lessons. Even educational researchers are generally weak in this area of empirical research (Cheung, 2009a). Law (2002) has pointed out this problem succinctly: Although values, attitudes, and habits of mind are mentioned in many national science curriculum documents, they do not generally form part of formal assessment procedutributes can be assessed. In consequence, they are unlikely to receive any significant attention in the teaching and learning process (Law, 2002). Student attitudes are important dependent variables in the evaluation of science curricula (Gardner, 1975). Unfortunately, the literature on student attitude toward chemistry lessons is limited, as many previous studies focused mainly on attitudes toward science (Gardner, 1975). Students may show different attitudes toward chemistry lessons and science because they are different attitude objects. To our knowledge, no study has been published where information about student attitude toward chemistry lessons was utilized to facilitate teachers to evaluate curriculum planning and classroom teaching in Myanmar. The purpose of this research is to demonstrate how student attitudes can be evaluated by means of a questionnaire and utilized to help teachers in Myanmar to reflect on their chemistry teaching.

Formation and Measurement of Attitudes

Attitude is a hypothetical construct used by social psychologists to understand and predict the behaviors of humans (Eagly & Chaiken, 1993). An attitude may be defined as a

predisposition to respond in a favorable or unfavorable manner with respect to a given attitude object (Oskamp & Schultz, 2005). The attitude object can be anything, such as chemistry, chemists, chemistry lessons, topics taught in chemistry, inquiry-based chemistry laboratory experiments, chemical education research, chemical weapons, and industrial chemistry. Thus, every student has many attitudes, on different aspects of chemistry. Chemistry teachers want to help students to engage them with chemistry, to inspire them to continue their chemistry studies and to show them the importance of chemistry in society. And, teachers work in an environment that is supportive of their development and wellbeing are likely to be more motivated and engaging in the classroom. Chemistry educators should specify the attitude object clearly when conducting attitude research. The focus of this research is on student attitude toward chemistry lessons taught in ordinary classrooms. The term 'lessons' refers to chemistry theory classes and laboratory classes (i.e., chemistry as experienced by students at university rather than out-of-university experiences obtained from external sources such as the media, museums, field trips, and friends). It is noteworthy that an attitude is not behavior. To date, three major theoretical viewpoints have been used by social psychologists to conduct research on attitudes: the tri-component viewpoint, the separate entities viewpoint, and the latent process viewpoint (Oskamp & Schultz, 2005). The latent process viewpoint conceptualizes attitude as a latent variable that can be used as an explanation of the relationship between a stimulus and a person's behaviors. This viewpoint is better than the other two viewpoints because it is more consistent with the findings of contemporary attitude research. According to the latent process viewpoint, the chemistry lessons implemented at undergraduate level can arouse a student's cognitive, affective, and / or behavioral processes (Oskamp & Schultz, 2005). These processes occur within the student and thus are not observable. Together or separately, they can form an attitude toward chemistry lessons. In other words, psychologists have postulated that the chemistry lessons implemented can trigger some hidden processes within the student and an attitude is a general evaluative summary of the information derived from those hidden processes.

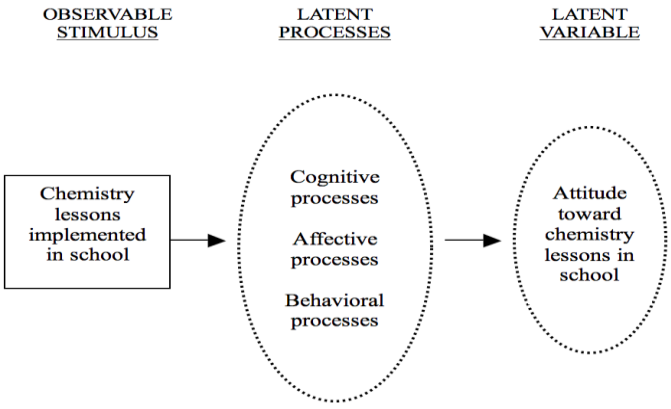

Figure 1 Formation of an attitude toward chemistry lessons

Teaching Chemistry aims to help students deliver inspirational chemistry teaching inside the classroom and create a supportive and effective department at university. The support focuses on themes of good practice within the classroom and within the department. It is important to develop students' positive attitudes to chemistry lessons due to two main reasons. Research has confirmed that attitudes are linked with academic achievement. Bennett, Rollnick, Green and White (2001) found that undergraduate students who had a less positive attitude to chemistry almost invariably obtained lower examination marks. Kelly (1988) reported that British students' liking for a particular science subject was a good predictor of their actual choice of physics, chemistry, or biology. Obviously, the development of students' positive attitudes regarding chemistry as a subject is one of the major responsibilities of every chemistry teacher. But if attitude is an internal state, how can a chemistry teacher know that students possess a positive or negative attitude toward chemistry lessons? Because attitude is a latent variable, the existence of an attitude can only be inferred from some observable attitudinal responses (Eagly & Chaiken, 1998). There are generally three classes of observable attitudinal responses: affective, cognitive, and behavioral (Oskamp & Schultz, 2005). The affective attitudinal responses are the feelings and emotions that a person has toward the attitude object. The cognitive attitudinal responses refer to a person's evaluative beliefs that she or he has about the attitude object. The behavioral attitudinal responses are not behaviors per se, but are the person's action tendencies toward the attitude object.

To quantify student attitudes toward chemistry lessons, Cheung (2009a) has developed an instrument for students based on these three classes of attitudinal responses. It is called Attitude toward Chemistry Lessons Scale (ATCLS). The first subscale focuses on the feelings a student has toward the chemistry theory lessons implemented, while the second sub-scale evaluates whether a student likes chemistry laboratory classes. Thus, the first and second subscales are concerned with affective attitudinal responses. The third subscale is cognitive in nature and refers to the evaluative beliefs that a student holds about the importance and usefulness of chemistry. The fourth subscale is concerned with a student's behavioral tendencies to respond to chemistry. Cheung (2009a) administered the 12-item ATCLS to a sample of Chemistry students.

2. Research Methodology

In Myanmar, Chemistry is offered as a separate subject to undergraduate students at Arts and Science universities. Academic year begins in September every year. Fourty-seven chemistry teachers and 503 students participated in this research to evaluate their students' attitudes toward chemistry lessons in November 2019. They also received formal preparation in chemistry specialization at university. Teacher participants had over 10 years of teaching experience. The survey was conducted anonymously and lasted about five minutes. Student responses to the 12

ATCLS items coded on a scale of 1 (strongly disagree) to 5 (strongly agree) so that higher frequency represented more positive attitudes.

To teach chemistry at university for the specialization in chemistry, students must complete the core professional education coursework to earn a degree certification in that subject. Teaching Chemistry can be used in courses focusing on training in chemistry. The authors, who have been actively involved in the development of a new chemistry curriculum in higher education and is currently working as teaching staff members of Departments of Chemistry, offer the existing learning models and give practical sessions of teaching chemistry at different levels. The teachers were interviewed and they were asked to comment on the survey results and reflect on their curriculum planning and classroom teaching. Table 2 shows the responses of the teachers on their curriculum planning and classroom teaching.

Table 2 Responses of the teachers on their curriculum planning and classroom teaching (n=81 chemistry teachers)

SN			Responses				
			Strongly disagree	Disagree	Not decided	Agree	Strongly agree
1	Curriculum planning	Teachers mainly covered the prescribed topics.	3%	4%	10%	44%	39%
		These topics were difficult for students, particularly the discussions.	8%	23%	21%	30%	18%
2	Classroom teaching	Students like the extra chemistry lessons.	23%	31%	11%	20%	15%

Regarding curriculum planning, teachers mainly covered the prescribed topics. Some participants admitted that these topics were difficult for students, particularly the discussions. Even worse, a few chemistry laboratory work or other student-centered activities such as project work and guided inquiry was used as a teaching and learning aid. Therefore, the data reflected that quite naturally, some students did not like the extra chemistry lessons.

The students were more likely to agree that "I like to do Chemistry experiments" (45.00%) than "When I am working in the Chemistry lab, I feel I am doing something important" and that "Doing Chemistry experiments is fun."

Moreover, the students were less likely to agree that "Chemistry is useful for solving everyday problems." than "People must understand Chemistry because it affects their lives." and that "Chemistry is one of the most important subjects for people to study." It can be seen from Table

2 that the percentages of the positive responses on this subscale was also significant. The positive responses of the participants on the behavioral tendencies to learn Chemistry subscale (33.00%) was even lower than that on the liking for Chemistry lessons subscale (50.33%).

After a solid background in the theory of learning, practical guidance is provided helping students develop skills and practices focused on the learning process within their classrooms. Table 3 shows the responses of the students on the four subscales proposed by Cheung (2009a).

Table 3 Responses of the students on the four subscales (n=268) (Source: Cheung, 2009a)

Sr No	Subscale	Q item	Statements	Responses				
				Strongly Disagree 1	Disagree 2	Not Sure 3	Agree 4	Strongly Agree 5
1	Liking for chemistry theory lessons	Q 1	I like Chemistry more than any other subjects.	13%	16%	17%	34%	20%
		Q 5	Chemistry lessons are interesting.	3%	22%	31%	23%	21%
		Q 9	Chemistry is one of my favorite subjects.	4%	5%	38%	35%	18%
		Avg		6.67%	14.33%	28.67%	30.67%	19.66%
				21.00%			50.33%	
2	Liking for chemistry laboratory work	Q 2	I like to do Chemistry experiments.	1%	1%	9%	10%	11%
		Q 6	When I am working in the Chemistry lab, I feel I am doing something important.	3%	4%	11%	5%	8%
		Q 10	Doing Chemistry experiments is fun.	1%	1%	24%	6%	5%
		Avg		5.00%	6.00%	44.00%	21.00%	24.00%
				11.00%			45.00%	
3	Evaluative beliefs about Chemistry	Q 3	Chemistry is useful for solving everyday problems.	5%	11%	10%	4%	3%
		Q 7	People must understand Chemistry because it affects their lives.	6%	6%	14%	11%	5%
		Q 11	Chemistry is one of the most important subjects for people to study.	3%	3%	7%	8%	4%
		Avg		14%	20%	31%	23%	12%
				34%			35.00%	

Table 3 (Continue)

Sr No	Subscale	Q item	Statements	Responses				
				Strongly Disagree 1	Disagree 2	Not Sure 3	Agree 4	Strongly Agree 5
4	Behavioral tendencies to learn Chemistry	Q 4	I am willing to spend more time reading Chemistry books.	10%	17%	19%	33%	21%
		Q 8	I like trying to solve new problems in Chemistry.	8%	31%	37%	14%	10%
		Q 12	If I had a chance, I would do a project in Chemistry.	9%	11%	41%	20%	19%
Avg				9.00%	19.67%	32.33%	22.33%	16.67%
				28.67%			33.00%	

The above findings were a major concern to this research. It was very surprised to learn that the positive response on the liking for Chemistry theory lessons subscale was just 50.33%. During the interview which lasted for 15 minutes, they emphasized that the students were free to choose elective subjects. Since they decided to take chemistry, the students were supposed to possess a positive attitude toward chemistry as a subject in the curriculum. The possible reasons were given by them. Therefore, the students were likely to agree that "I like to do Chemistry experiments" (45.00%) than "When I am working in the Chemistry lab, I feel I am doing something important" and that "Doing Chemistry experiments is fun." Moreover, the students were less likely to agree that "Chemistry is useful for solving everyday problems." than "People must understand Chemistry because it affects their lives." and that "Chemistry is one of the most important subjects for people to study." It can be seen from Table 2 that the percentages of the positive responses on this subscale was also significant. The positive responses of the participants on the behavioral tendencies to learn Chemistry subscale (33.00%) was even lower than that on the liking for Chemistry lessons subscale (50.33%).

3. Results and Discussion

Participants include 81 chemistry teachers for interview survey as well as first year students (n = 137) and second year students (n = 131). On a questionnaire, from 'strongly disagree' to 'strongly agree' regarding attitude toward chemistry lessons, indicating that on average the students had a slightly positive attitude toward chemistry lessons. No statistically significant difference was noted between males and females regarding attitude toward chemistry lessons. Compared with other subscales, the attitude toward behavioral tendencies to learn Chemistry was lower among the students. It was most noticeable for the positive responses on the first subscale which was 'Liking for chemistry theory lessons'. Secondly, students had to learn chemistry when

the academic year began. Although some laboratory experiments were organized by first year, most of them were done as teacher demonstration experiments due to insufficient apparatus. Overall, students were allowed to perform less laboratory work in first year and in second year. It can be guessed that students may have liked chemistry lessons significantly more if they had followed the textbook and started with the teaching of chemistry. When considered why the frequency on the behavioral tendencies to learn Chemistry subscale was even the lowest, participants pointed out that a lot of the students may have lacked a sense of satisfaction. Myanmar teachers are under great pressure to prepare students for examinations because university places are limited. To motivate the students to learn chemistry, they require taking tutorials and practical sessions every two weeks as part of course work assessment. This may have resulted in a lack of sense of satisfaction. Additionally, learner diversity was serious and attendance was compulsory. Very often, most of the students were present, but a few relatively weak students could not attend the class. Thus, they may feel doubtful about the effectiveness of their lessons. There are many factors affecting student attitudes toward chemistry lessons. These factors include examinations, grade level and gender (Cheung, 2009b). During the interview, some teachers were eager to explore how to make chemistry curriculum and teaching more attractive to students to foster a more positive attitude toward chemistry lessons. They felt the need to make chemistry lessons more enjoyable and engaging for his students. They also hoped that the number of students wanting to further learn about chemistry would increase in third year. The strategies that they planned to implement include the following:

(i) Reducing the pace of teaching a bit to allow students to master all the key concepts;

(ii) Letting students carry out a variety of hands-on activities (e.g., perform laboratory work, make molecular models) when teaching organic chemistry;

(iii) Constructing both low-order and higher-order questions when designing revision chemistry tests to give students a sense of achievement; and

(iv) Modify the teaching sequence so that less abstract concepts are discussed in first year and second year (e.g., teach fossil fuels rather than redox reactions in first year).

4. Discussion

Chemistry educators have investigated various aspects of chemistry teaching and learning, but the attitudinal aspect of chemistry learning has been neglected in many countries around the world. My small-scale questionnaire survey dealt with chemistry lessons implemented in two secondary schools in Myanmar and revealed that the 12-item ATCLS can facilitate class B to evaluate his students' attitudes toward chemistry lessons. Although his mean scores on the four subscales were above the midpoint of the rating scale, student responses to the first and fourth

subscales were worrying, particularly in light of the fact that the students themselves had opted for chemistry as a subject in the secondary school curriculum. Gavin felt that the 45-min interview was an excellent opportunity to do self-reflection based on the ATCLS survey results. My next step is to encourage him to chart student attitudinal change over time. For example, he may collect attitudinal data again toward the end of the Secondary 5 academic year. I also encouraged him to talk with some students to identify their needs and concerns. Although the 12-item ATCLS was tailor-made for chemistry in other countries, researchers and teachers in Myanmar are most welcome to use or adapt the items. Hopefully, the atcls could serve as an effective tool for teachers around the world to collect information about the chemistry lessons experienced by students.

5. References

Bennett, J., Rollnick, M., Green, G. and White, M., (2001) The development and use of an instrument to assess students' attitude to the study of chemistry, *International Journal of Science Education*, 23(8).

Cheung, D., (2009a) Development of a scale to measure students' attitudes toward chemistry lessons, *International Journal of Science Education*, 31(16).

Cheung, D., (2009b.) Students' attitudes toward chemistry lessons: the interaction effect between grade level and gender, *Research in Science Education*, 39(1) College Publishers.

Gardner, P. L., (1975), *Attitudes to science: a review, Studies in Science Education*, 2.

Kelly, A., (1988) The customer is always right: girls' and boys' reactions to science lessons, *School Science Review, 69(249)*.

Kind, V., (2004) *Beyond appearances: Students' misconceptions about basic chemical ideas* (2nd ed.), Royal Society of Chemistry, London.

Law, N., (2002) Scientific literacy: charting the terrains of a multifaceted enterprise, *Canadian Journal of Science, Mathematics and Technology Educatio*n, 2(2).

Osborne, J., Simon, S. and Collins, S., (2003) Attitudes towards science: a review of the literature and its implications, *International Journal of Science Education*, 25(9).

Oskamp, S. and Schultz, P. W., (2005) *Attitudes and opinions (3rd ed.)*, Mahwah, New Jersey: Lawrence Erlbaum.

Popham, W. J., *Classroom assessment: what teachers need to know* (4th ed.), Boston: Pearson, 2005.

Preedy, M., (2001). Curriculum evaluation: measuring what we value. In Middlewood, D. and Burton, N. (Eds.), *Managing the curriculum, London*: Paul Chapman Publishing.

Taber, K.S., (2013) Revisiting the chemistry triplet: Drawing upon the nature of chemical knowledge and the psychology of learning to inform chemistry education, *Chemistry Education Research and Practice*, 14 (2)

Taber, K.S., (2014) The significance of implicit knowledge in teaching and learning chemistry, *Chemistry Education Research and Practice*, 15 (4)

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Perceptions of Master's Students on Quality of Research and Performance of Research Supervisors at Myanmar Universities

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Abstract

Academic research is of fundamental importance in our society. Myanmar Higher Education Institutions tend to be biased towards research. Nevertheless, ultimate responsibility for quality supervision processes lies with institutions, in particular with their units of activity, policies and processes. The purposes of this research were 1) to investigate the practices in Master's supervision at the eleven selected Universities in Myanmar 2018-2019 academic years, 2) to find out research supervisors' supervision training or experiences and 3) to explore the supervision quality of research supervisors. A multi-sectioned, self-constructed Supervisor-Supervisee Relationship Questionnaire (Saleem, 2017) was conducted at eleven selected Universities in Myanmar. The data were collected from 171 supervisors and 216 master's students. The results indicated that issues relating to ethical and evaluation of the research procedures were not always handled according to established methodological standards. The data also highlighted the need for supervisory training programs in Myanmar Universities. The result revealed most of the students agreed that the quality of research outputs depend on the performance of research supervisors. It is recommended that the formal supervisory training will improve the quality of research supervisors and their students' academic researches through sharing their knowledge and expertise.

Keywords : Quality of Research Outputs, Performance of Research Supervisors, Myanmar Higher Education

1. Introduction

Governments play an important role in providing an appropriate national framework and structure for the development of higher education. Research and development is increasingly becoming the mainstay of higher education (Wahid & Le Grange, 2003). Research discovers, elucidates and evaluates new knowledge as well as ideas and society benefit from quality research and should rally to support and defend it. Research is an opportunity to make a difference and it

is open to everyone and thrives on a diversity of approaches and perspectives. According to Bassey (1995), research is systematic, critical and self-critical enquiry which aims to contribute to the advancement of knowledge. This research presents a study of recent developments in the quality enhancement of Master's supervision in selected universities in Myanmar. In doing so it looks at three areas in particular: 1) the practices in Master's supervision, 2) communication, induction, and acculturation processes between students and staff and 3) supervision quality of research supervisors. The research concludes by highlighting key issues for future research development.

1.1 Aspects of research procedures used in Master's theses of various disciplines

There are a vast number of types of master's degrees in a variety of disciplines and specialty areas. A master's degree is an academic degree awarded by universities upon completion of a course of study demonstrating mastery or a high-order overview of a specific field of study or area of professional practice. A master's degree normally requires previous bachelor's degree. Within the area studied, master's graduates are expected to possess advanced knowledge of a specialized body of theoretical and applied topics; high order skills in analysis, critical evaluation, or professional application; and the ability to solve complex problems and think rigorously and independently. The Master of Arts (M.A.) degree is typically awarded in the disciplines of arts, social sciences and humanities. The Master of Science (M.Sc.) degree is typically awarded to students in the fields such as Physics, Chemistry, Mathematics, Zoology, Botany and Geology. In that regard Gomm (2004) observed that a sound thesis is a product of ethically obtained and scientifically valid data. Furthermore, data collection, processing and dissemination also raise important ethical questions. Payne and Lessing, & Schulze (2002) emphasized the fact that ethical practice is fundamental to any research: Ethical conduct provides the basis which legitimates the whole enterprise; it permeates research design and project organization; and extends to minute and momentary decisions, like politeness to informants during fieldwork. Even the decision to do research is based on an ethical judgment that the project is worthwhile. Therefore, researchers are morally obliged to discuss the ethically issues that informed their investigation.

Research methods are the various procedures, schemes and algorithms used in research. All the methods used by a researcher during a research study are termed as research methods. They are essentially planned, scientific and value neutral. They include theoretical procedures, experimental studies, numerical schemes, statistical approaches, etc. Research methods help us collect samples, data and find a solution to a problem. Particularly, scientific research methods call for explanations based on collected facts, measurements, and observations and not on reasoning alone. They accept only those explanations which can be verified by experiments. Research methodology is a systematic way to solve a problem. It is a science of studying how

research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan of research. It is necessary for a researcher to design a methodology for the problem chosen. One should note that even if the method considered in two problems are the same although the methodology may be different. It is important for the researcher to know not only the research methods necessary for the research undertaken but also the methodology. For example, a researcher not only needs to know how to calculate mean, variance and distribution function for a set of data, how to find a solution of a physical system described by mathematical model, how to determine the roots of algebraic equations and how to apply a particular method but also need to know; (i) Which is a suitable method for the chosen problem? (ii) What is the order of accuracy of the result of a method? (iii) What is the efficiency of the method? Consideration of these aspects constitutes a research methodology.

1.2 Research supervisors and quality assurance in thesis writing

The quality of postgraduate education and the production of postgraduates are correlated to the caliber of research supervisors (Babbie, 2001). In fact, sound research procedures are keys to the production of valid knowledge. Research supervisors are supposed to be expert guides and advisers who should guarantee quality control in the thesis-writing processes and enable institutions of higher learning to supply postgraduates to society (Babbie & Mouton, 2001). Research has shown that supervisors might have different roles (Dane, 1990). However, only two traditional roles of supervisors are highlighted here as they were deemed to be pertinent to the current study. Among other things, the research supervisors ensure that

(i) The research supervisors use the correct methods to solve the problem and appropriate sources in reviewing the literature (Mouton, 2001).

(ii) The research problem is solved according to the requirements of the methods employed (Mouton,2001).It is evident that research supervisors are pivotal to the research process. The fundamental role of supervisors is to impart to the student the skills necessary to plan and conduct original research. Therefore, their knowledge and advice in the use and application of appropriate research procedures are the keys to the production of theses of high quality. In Myanmar, a master's degree is awarded for a thesis plus course work.

2. Research Objectives

This research consisted of three objectives:

2.1 To investigate the practice of Master's supervision at the selected Universities of Myanmar in 2018-2019 academic year;

2.2 To find out research supervisors' supervision training or experiences;

2.3 To explore the supervision quality of research supervisors.

3. Methodology

This a multi-sectioned, self-constructed Supervisor-Supervisee Relationship Questionnaire (Saleem, 2017) was conducted from June 2018 to March 2019 Academic Year in eleven selected Universities in Myanmar namely, University of Distance Education Mandalay, Mandalay University, Monywa University, Pakokku University, Myitkyina University, Magway University, Taungoo University, University of Distance Education Yangon, Yangon University, East Yangon University and West Yangon University. Data were collected from 171 supervisors and 216 Master's students through questionnaire survey to find out the performances of supervisors including training or experience in research supervision. The statistical data shown in percentages were calculated in excel.

4. Findings

The research revealed that, in spite of the fact that there is a steady improvement in the utilization of research procedures in the master's theses at the selected universities, the theses did not have a uniform approach in dealing with the definition of the population of the study, sampling procedures used, data collection techniques, questions of reliability and validity, response rates, data analysis procedures and evaluation of the research procedures. According to Frame and Allen (2002), there have been increasing moves in universities to introduce formal guidelines for master's supervision, intended to clarify expectations, establish minimum standards of training, and improve research training quality. The establishment of formal guidelines for research supervision would immensely benefit the studies program as well as bridge the knowledge gap of less experienced research supervisors.

4.1 Demographic characteristics

The population of the study was 171 master's thesis supervisors and 216 master students of selected universities in Myanmar from June 2018 to March 2019 academic year. The size of the population was considered to be sufficient for the study. Table 1 shows the demographic characteristics of the respondents.

Table 1 Demographic characteristics of respondents (n=171supervisors, 216 master students)

S.N.	Number of respondents	Male	Female	Study background	
				Arts, Social sciences, Humanities,	Natural science and Economics
1	Supervisors (n=171)	52(30.41%)	119(69.59%)	81(47.37%)	90(52.63%)
2	Master's students(n=216)	60(27.78%)	156(72.22%)	125(57.87%)	91(42.13%)
3	Master's theses students(n=69)	22(31.88%)	47(68.12%)	33(47.83%)	36(52.17%)

4.2 Aspects of research procedures used in Master's theses of various disciplines

Research procedure of the thesis or dissertation includes all research-related activities to be undertaken in order to achieve the objectives of the study and to offer some possible solutions to the problem. In the light of aspects of research procedures, the quality of supervision was assessed from the supervisors' perspective. Table 2 gives a summary of the aspects of procedures used in sixty-nine theses.

Table 2 Responses of the master's thesis supervisors on aspects of research procedures used in master's theses of various disciplines (n = 171)

S.N.	Aspect of research procedure	Desciplines				Average
		Science	Arts	Economics	Law	
1	Definition of population ofthe study	36%	48%	53%	49%	46.50%
2	Sampling procedures used	27%	63%	62%	38%	47.50%
3	Data collection techniques	64%	71%	74%	73%	70.50%
4	Ethical issues	11%	42%	26%	52%	32.75%
5	Reliability and validity	12%	53%	52%	61%	44.50%
6	Response rates	9%	73%	66%	71%	54.75%
7	Rationale for data analysisprocedures	5%	61%	62%	41%	42.25%
8	Evaluation of the researchprocedures	43%	51%	33%	26%	38.25%
9	**Overall average**	**25.87%**	**57.75%**	**53.50%**	**51.37%**	**47.12%**

Table 2 summarizes the research methodologies used by the master's theses that were submitted to and approved by the universities during the period under review. It is evident from Table 2 that one of the major steps in survey design is to define the population before collecting the samples, only 46.50% clearly defined the population and outlined how the population was determined. 47.50% of the participants indicate how their samples were drawn. The characteristics of populations from which the samples were drawn were not fully discussed. The sampling frame was only evaluated and justified even though sampling frames that contain every member of the population are an exception rather than the norm. Little attention was given to using adequate sample sizes. It is evident that most of the samples that were used in the theses were not representative of the total population. Most of the research shares similarities with the traditional experimental design or randomized controlled trial, but it specifically lacks the element of random assignment to treatment or control. According to the 70% of the participants, data collection techniques include interviews, observations (direct and participant), questionnaires, and relevant documents. For detailed discussions of rationale for data analysis only 42.25% follow the procedures. Readers were not given enough information to be able to estimate there liability and validity of some of the research procedures used. Only some theses (54.75%) out of 68 theses discussed their response rates. The rationale behind selecting data analysis procedures was not always given by the theses. Tables, charts, graphs and statistical summaries were used for displaying and communicating the findings. Some theses employed line or arithmetic charts to

portray survey data, others used pie charts, bar charts and all the theses used percentages or frequency distributions. Some of the theses used statistics to test the relationships between variables. The descriptive statistic that was found in all theses was the mean (average of all scores in the data). All research designs are imperfect. In that regard, it is mandatory for researchers to evaluate their investigation procedures. Only 38.25% of the theses attempted to do a methodological evaluation of the research procedures. It implies that various limitations under which research could have been carried out were not adequately narrated in the theses. Researchers should understand the variety of possible research strategies, approaches and techniques available to them, and be able to justify the choices they make (Blaxter, Hughes & Tight 2001). It should be noted that nearly half of the research supervisors (47.12%) use the various aspects of the research procedures consistently. Whatever research methodology one uses, the interpretation of reality will remain subjective, conditional and tentative. Only a few theses that were investigated (32.75%) discussed ethical issues relating to how the research was conducted. However, all researchers are subject to a moral requirement to do research truthfully (Gomm, 2004). For instance, committing plagiarism, and falsification and fabrication of data constitute unethical conduct (Coetzee, 2003).

4.3 Research supervisors and quality assurance in thesis writing

According to the national quality assurance (QA) system introduced in Myanmar, higher education institutions (HEIs) have missions and features. The following table offers research supervisors' knowledge of supervision through training or experience.

Table 3 Research supervisors who gain knowledge of supervision through training or experience (n = 171)

S.N.	Knowledge, training and experience	Responses	
		Yes	No
1	My university provides training to research supervisors to ensure that the quality of our academic support to research students is enhanced.	47%	53%
2	We attended formal training programmes such as the training and accreditation program for postgraduate supervisors and postgraduate certificates in international research collaboration.	43%	57%
3	**Average**	**45%**	**55%**

The data highlighted the need for supervisory training programmes for supervisors of universities in Myanmar. The findings of the study highlighted the need to train the supervisors to manage their time not just in terms of teaching and supervision of research students, but also keeping the stages of their research in mind. Supervisors reported a number of challenges in supervision, including students displaying limited knowledge of their topic, inadequate research

skills, carelessness and a lack of initiative (Haafkens, Blomstedt, Eriksson, Becher, Ramroth, Kinsman, 2014). By addressing the stage specific needs of supervisees, the quality of supervision could be improved. Research supervision is central to the higher education program and of particular relevance for scientific development. The research-related tasks of research supervision comprised monitoring the research process, providing encouragement and critical comments on drafts as well as fostering an academic role.

The key role of a research degree supervisor is to assist and support a student throughout their academic studies. Duties and key responsibilities of a research supervisor are ensuring compliance with all university policies and regulations, including the key policies and procedures relating to supervision and examination. Table 3 shows the knowledge, training and experience of research supervisors.

4.4 The quality of research and research supervisors' knowledge of supervision

Table 4 Responses of the master's students on quality of research and research supervisors' knowledge of supervision (n = 216)

Sr No	Quality of research and research supervisors'knowledge of supervision	Responses		
		Agree	Not Sure	Disagree
1	The quality of theses partly depends on the academic support provided by research supervisors.	87%	12%	1%
2	Research supervisors are expected to have expertise in their specific domain, be successful researchers, have experience in the topic of research and have time to supervise.	93%	4%	3%
	Avg	**90%**	**8%**	**2%**

The perception of the master's students towards quality of research and research supervisors' knowledge of supervision has been shown in the above table. Overall satisfaction with the quality of the research and research supervisors' knowledge of supervision was high with average 90% of students believed that the quality of theses partly depends on the academic support provided by research supervisors' expertise and experiences. Research supervision is a mutual, interactive process aimed at improving the supervisor's ability to be sensitive to the students' competence and limitations. Changiz et al. (2003) also studied the obstacles the students engaged in when doing research and thesis activities. According to this study, over 60% of the students considered that quality of the research depends on research supervisors' knowledge of supervision, financial problems and lack of technical supports, while over 40% believed that students' lack of time, attention and inconsistency of decisions made by different levels of supervising committees were the barriers to research.

4.5 Comments on the levels of expertise in relation to research supervisors

The findings revealed that the supervisors might have had varying levels of expertise in relation to research procedures. Paradoxically, co-supervision of theses was an exception rather than a norm during the period under review. Co-supervision could give the academics a chance to share knowledge on research methods that were distributed among different supervisor(s) and to tackle areas where they had limited expertise. For instance, mentoring or co-supervision systems are one of the components of formal research supervision guidelines and training contracts. What is also evident from the findings is that much of the knowledge that the supervisors needed to supervise research projects efficiently was there among some of the academics but was not necessarily accessible or available to the whole program. That explains why some theses supervised by certain individuals used sound research methods, while those promoted by others only used few elements of rigorous research design and excluded some of the essential elements that are critical to producing valid knowledge in a research environment. The findings are also suggestive of either a lack of standards for thesis writing and supervision within the program or non-compliance with the guidelines stipulated by the university.

5. Discussion

A study of the perception of master's supervisors at the universities of Myanmar revealed that there was a lack of support with some research skills, indicating that lecturers themselves might have lacked the necessary experience in this regard. In that light, professional expertise should be developed and nurtured through knowledge sharing and transfer in order to enhance performance. Students would benefit considerably from their research experience if supervisors shared what they knew. It is essential that students be given adequate and effective supervision as they are initiated into the world of professional research. As Mouton (2001) argued, the master's degree is an 'apprenticeship degree'. In that regard, for the training of the apprentice to be effective and productive, the supervisor should be an established and experienced scholar (Mouton 2001). Lack of experience on the part of the supervisor may compromise the quality of the thesis and jeopardize the chances of the graduate trainee to receive effective training. What an important about the findings summarized above are not the shortcomings that they reveal. The findings show that the available knowledge on research procedures was unevenly distributed among the staff. A strong research ethos can be chiefly promoted through teamwork rather than individualism. In the analysis of research output in the United Kingdom, Bassey (1995) underscored the fact that researchers should not work in isolation as individualism might negatively impact on research. That observation also applies to research supervision in higher education. Collaboration could enhance the quality of supervision and avoid the production of students with sub-standard postgraduate qualifications. In reality, it is practically impossible for academics to have expertise in all aspects of supervision.

In that regard, institutions of higher learning must identify internal expertise and nurture it in order to produce efficient and credible research. Sharing knowledge may be helpful in inducting research supervisors who are new to an institution or discipline. Additionally, supervisors would understand what they would be supervising their students to achieve. Knowledge sharing may also motivate academics to ask for help to deal with those areas where their expertise is limited and also easily share their work in circumstances they find themselves overloaded. That would obviously improve services to the graduate trainees and enhance their quality. In addition, academic programmes should have a system that can indicate and locate knowledge holders or carriers.

6. Conclusion

This research investigated the research procedures used by Master's students at the selected Universities between 2018 and 2019 academic year. The findings revealed that although the thesis writers were committed to producing projects of a high standard, they did not uniformly relate their research stories. The discrepancies and variability in the research procedures among the theses that were reviewed may be attributed to the different levels of expertise of the supervisors. Indeed, research supervisors are keys to the production of sound theses. It is evident from the research outputs that knowledge that is scattered among research supervisors is not shared and used effectively. Mobilizing, harnessing and sharing knowledge scattered among research supervisors is one of the keys to improving the quality of research outputs and scholarship. Research supervisors should be encouraged to share their research experiences and relate them to the vision of their institution. Thus, a culture that encourages knowledge sharing among research supervisors should be promoted so that the supervisors can produce graduates with strong research skills. Trust, systems thinking, teamwork and leadership would be key elements to the development of the knowledge sharing processes among research supervisors on the program. Systems thinking can act as a catalyst to foster collaboration and teamwork among research supervisors. Furthermore, a climate of mutual trust and respect for other people's knowledge could promote knowledge sharing and teamwork. Teamwork in the academic environments may be encouraged through job sharing, co-authorship of chapters in books, conference papers and journal articles, co-supervising students, and joint research projects. A mentoring system for research supervisors could be developed to enhance the role of higher-level research in higher education. Knowledge sharing may reduce the learning curve of novices. Sharing knowledge and information on problems and issues encountered during supervision may induce research supervisors to reflect on their expertise and experiences in another light. A knowledge management strategy can be easily developed where a culture of sharing exists.

7. Recommendations

A good experienced supervisor does a proper research. Without an experienced advisor, the student will not receive the practical training required. The research supervisors should have the following qualities:

7.1 Experience of a supervisor

Students should check if he has published articles on the topic and in which journals, and see how many citations the articles that the teacher has received. The supervisor should be a professional who devotes attention to the academic training of students, giving them autonomy to think alone and be happy with their success.

7.2 Support

Supportiveness is the quality that research students value most highly in supervisors such as encouraging, mentoring, and having awareness that students' lives extend beyond the research. Supportive supervisors make an effort to understand how the student prefers to work and attend to the student as a whole person, rather than purely as a research student.

7.3 Availability

Availability of supervisors for students contains meeting regularly with students, setting aside adequate time and being contactable through several media (e.g., email, phone) – particularly if they are not physically present.

7.4 Interest and Enthusiasm

Supervisor who is interested, enthusiastic, positive, empowering, motivational, and committed show an interest in the student's progress.

7.5 Knowledge and Expertise in the Field Surrounding the Research

Ideal supervisors are those who have expertise in the field surrounding the student's research. Students value highly a supervisor who can use their knowledge of the area to understand and demonstrate how the student's research topic fits within the wider field. Having a supervisor with expertise in the methodologies required in their research is particularly important.

7.5.1 Interest in the Student's Career

Ideal supervisors interested in the establishment of the student's career, having good contacts and introducing students to their network of colleagues, looking out for and informing students of conferences and seminars relevant to their research and career and encouraging and facilitating the publication of the student's research.

7.5.2 Good Communication

Ideal supervisors have good communication skills. In particular: good listening skills; the tendency to maintain an open dialogue about the project, its progress and problems; the ability to communicate in an open, honest, and fair manner about issues that arise as they arise; and making expectations clear with regard to matters such as the process of completing a Research

or Master's thesis, budget considerations, and the role each party must play in performing the project research.

7.5.3 Constructive Feedback

An ideal supervisor provides feedback and criticism of their work that is constructive and prompt in addition, where more than one supervisor is responsible for providing feedback, consistency between supervisors is important.

7.6 Provides Direction and Structure

The ideal supervisor is one who provides an appropriate amount of direction and structure to the student's research project, prepare to create deadlines, challenge, and push the student a little when required. Such a supervisor is informative, helpful when it comes to areas of uncertainty and joyful to encourage good work habits to achieve the desired outcomes from their research.

7.6.1 Approachability and Rapport

The ideal supervisor is approachable and works to establish a good rapport with their students.

7.6.2 Experience and Interest in Supervision

Part of being experienced and interested in supervision, a key quality of an ideal supervisor, is having a complete understanding of the requirements and process of completing a thesis. In addition, students value supervisors who consider the needs of particular subgroups of the student population (e.g., international students, those with children, those with disabilities, and those with cultural differences). It is important that supervisors recognize the individual supervisory needs of each student. These vary between students and different stages of their studies.

8. References

Babbie, E. (2001). *The practice of social research. 9th ed.* Belmont: Wadsworth.

Babbie, E. & Mouton, J. (2001). *The practice of social research*. Cape Town: Oxford UniversityPress Southern Africa.

Bassey, M. (1995). Creating education through research: a global perspective of *educationalresearch for the 21st century*. Kirklington: Kirklington Moor Press.

Changiz, T., Adibi, P., Hosseini, M., &Tootoonchi, M. (2003). Viewpoints of supervisors about the problems in the process of dissertations for general medicine program Isfahan University of Medical Sciences. *Iranian Journal of Medical Education*, *3*(1), 23-33.

Coetzee, S. (2003). Research ethics: A strategy for promoting professional ethics. *Perspectives in Education, 21*(2), 113-125.

Dane, F. C. (1990). *Research methods*. Pacific Grove, CA: Brooks/Cole Publishing.

Frame, Ian A., and Liz Allen. 2002. "A flexible approach to PhD research training." *Quality Assurance in Education* 10 (2):6.

Gomm, R. (2004). *Social research methodology: a critical introduction*. New York: PalgraveMacmillan.

Haafkens, J., Blomstedt, Y., Eriksson, M., Becher, H., Ramroth, H., & Kinsman, J. (2014). Training needs for research in health inequities among health and demographic researchers from eight African and Asian countries. *BMC Public Health*, *14*(1), 1254.

Hackett, B. (2000).*Beyond Knowledge Management: New Ways to Work*. New York: The Conference Board, March.

Lessing, A. C., & Schulze, S. (2002). Postgraduate supervision and academic support: students' perceptions. *South African Journal of Higher Education*, *16*(2), 139-149.

Mouton, J. (2001). How to succeed in your masters and doctoral studies. Pretoria: Van Schaik Publishers.

Saleem, T., & Mahmood, N. (2017). Influence of the supervision related background variables on the supervisees' supervision experiences at postgraduate level. *Pakistan Journal of Education*, *34*(2), 73-99.

Waghid, Y., & Le Grange, L. (2003). Research and development in higher education: rating or not?. *South African Journal of Higher Education*, *17*(1), 5-8.

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Increasing Students' Research Interests through Research-Based Learning as a University-wide Approach

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Abstract

Research-based teaching and learning means that students carry out research in their courses independently and with an open outcome (Brew & Evan, 2012). This form of teaching and learning focuses on the joint acquisition of new knowledge by lecturers and students. Research-based learning provides a promising method for facilitating development through active engagement in several steps of the research cycle (Deicke *et al.*, 2014). The purpose of this research was to increase students' research interests through research-based learning as a university-wide approach. Quantitative survey data as well as in-depth qualitative data were collected from survey questionnaires and semi-structured interviews over a period of two months. Participants in the research were 81Master's students, 86 Bachelor students, 63 teachers of Bachelor's Degree programs and 51 teachers of Master's Degree programs from selected universities in Myanmar. Their research capabilities were established using their self-reported research experience.The analysis indicates that working with research literature, developing a research design and carrying out empirical research leads to a larger increase (or lower decrease) in research interest compared to students who did not have the opportunity to conduct the research activities. Interpreting these results on a more general level, research-based learning works if the students can engage in reading research literature, developing a research design or undertaking empirical research, calls for proposals and the training program, greater emphasis on research activities, giving students the opportunity to develop the research designs. The current research results indicate that actively engaging in research activities tends to increase the general interest of students in doing research. However, the effectiveness of research-based learning seems to be greatly associated with how it is implemented. Based on the findings, in environments of research-based learning, students need to have the opportunity to work with actual

research literature, develop research designs, and embark on empirical research in order to increase their interest in research.

Keywords : Students' Research Interests, Research-Based Learning, University-wide Approach

1. Introduction

This research explores that university students in Higher Education Institutions should experience learning through and about research and inquiry. In university, research students learn and are assessed in ways that come as close as possible to the experience of academic staff carrying out their disciplinary research.They suggest here a fundamental conceptual shift from the notion of students as a passive audience for the research output of individual academics to the idea of students as active stakeholders in a research community in which their experience of research within the core curriculum mirrors that of their lecturers.This study explores key issues around the nature of university research and inquiry considers the potential of opportunities for and strategies to support student engagement in research. Healey (2005) envisaged the university as a scholarly community where the proximity and overlap between teaching and research had great potential both to further the advance of science and to imbue students with the mind-set required for independent, self-guided study.

1.1 Research-Based Education

Current academic debates over the link between research and teaching to coincide with wider attempts to reform the Higher Education sector. Student-researchers should have the opportunity:

(i) To independently choose a research topic and develop a research question.

(ii) To independently determine the research strategy (choice of methods,experimental design, etc.);

(iii) To experience research as a process with the possibility of errors, sidetracks, and unexpected discoveries.

(iv) To work according to the standards of the scientific community.

(v) To reflect critically on the relationships among hypotheses, methods, and results in their findings; and

(vi) To present their results in such a way that they and their significance are transparent to others.

The emphasis in educational policy is on delivering relevant knowledge to students of degree programs and also to shift the emphasis from "teaching content" to "developing students' skills and competencies". The process aims at harmonizing the higher-education systems by implementing consecutive degree programs (Bachelors / Masters) in Myanmar.

1.2 Research-based Learning at University

Universities aimed at supporting the receptive learning to active independent study and postgraduate research or employment. Universities serves as an experimental platform for the development, piloting, and evaluation of innovative forms and formats of teaching that bring together teaching staff and students. Research-based teaching and learning become more important in higher education with every passing decade Clark, B. R. (1997). Our research project is an initiative specifically aimed at the promotion of research-based learning program and qualification in activities in which students are encouraged to develop independent research questions, query the received wisdom of their disciplines, embark on a quest for answers, and develop new skills and qualifications in the process.

2. Research Objectives

This research consisted of two objectives:

2.1 To investigate the perceptions of students and teachers on degree programs and research.

2.2 To find out Myanmar teachers' conceptual understanding and methodological skills to conduct research.

3. Methodology

With regard to the research-teaching nexus, a 167-student survey was conducted between 2018 and 2019 at 28 Higher Education Institutions in Myanmar. Quantitative survey data as well as in-depth qualitative data were collected from survey questionnaires and semi-structured interviews over a period of two months.

Table 1 Interview responses of the teachers on links between Master's Degree programs and research (n=51)

Sr No	Statements	Responses of the teachers of Master's Degree programs				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	There is a link between teaching and research in the degree programs generally.	50%	22%	15%	10%	3%
2	There is a link between teaching and research in lectures and seminars.	41%	21%	8%	23%	7%
3	There are opportunities to participate in research.	2%	15%	23%	39%	21%
Avg		50.33%		15.33%	34.34%	

Perhaps most significant here in table 1 is the perceived difference of the teachers in opportunities to actively participate in genuine research among university students in the degree system which has the lowest frequency (only 2% for strongly agree and 15% for agree). Students complained during the semi-structured interview about poor staff-student ratios, heavy workloads, and assessment in the degree programs.

The objective of the interview is to collect the data on an introductory experience to university-research strategies while developing a solid foundation for links between Master's degree programs and research skills. Students' responses have been shown in Table 2.

Table 2 Interview responses of the postgraduate students on links between Master's Degree programs and research (n=81)

Sr No	Statements	Responses of Master's students				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Have the instructor or a lecturer discuss research in a class.	46%	20%	13%	14%	7%
2	Receive opportunities to undertake independent research projects (either inside or outside of a class).	41%	21%	8%	23%	7%
3	Work as research assistants.	-	-	-	51%	49%
4	Contribute to some form of research output (conference paper / poster, publication, etc.).	2%	15%	23%	39%	21%
Avg		36.25%		11%	52.75%	

Only 46% of the students reported having their instructor or a lecturer discuss research in a class, but relatively very few students are receiving opportunities to undertake independent research projects (either inside or outside of a class), to work as research assistants, or to contribute to some form of research output (conference paper / poster, publication, etc.). Few university students were significantly more likely to report having participated in a research seminar outside of a class or having contributed to a research project / paper / conference abstract or working as a research assistant.The teachers' perception of the positive or negative impacts of research on the learning environment, however, may be more revealing.

Bachelor's Degrees are the most common level of degree studied and are usually entered after the completion of high school. The data have been collected from two main categories of Bachelor's degree are B.A. (Bachelor of Arts) and B.Sc. (Bachelor of Science).

Table 3 Interview responses of the teachers on links between Bachelor's Degree programs and research (n=63)

Sr No	Statements	Responses of teachers of Bachelor Degree programs				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	There is a link between teaching and research in the degree programs generally.	42%	23%	17%	18%	-
2	There is a link between teaching and research in lectures and seminars.	17%	24%	27%	22%	10%
3	There are opportunities to participate in research.	-	3%	30%	42%	25%
Average		36.33%		24.67%	39%	

Table 3 shows the percentage of respondents endorsing the respective statement. About 36.33% of the teachers responded that research positively impacted the students' learning by increasing their understanding or stimulating their interest in the subject area. On the other hand, 39% of teachers responded that there is no link between teaching and research in lectures and seminars. Research negatively impacted their students' learning environment as there are no opportunities to participate in research, their instructor's lack of interest in teaching or the students' well-being, the instructors' lack of availability to university students, the distortion of course content towards research interests, and the inability of the instructor to communicate at an appropriate level.

On the whole, students placed a low importance on research when compared to other academic priorities, such as having instructors who are good teachers or who care about student learning, and courses or programs that help prepare them for a future career.

Table 4 Interview responses of the undergraduate students on links between Bachelor Degree programs and research (n=86)

Sr No	Statements	Responses of Bachelor students				
		Strongly agree	Agree	Natural	Disagree	Strongly disagree
1	Have the instructor or a lecturer discuss research in a class.	25%	21%	11%	16%	27%
2	Receive opportunities to undertake independent research projects (either inside or outside of a class).	20%	21%	10%	25%	24%

Table 4 (Continue)

Sr No	Statements	Responses of Bachelor students				
		Strongly agree	Agree	Natural	Disagree	Strongly disagree
3	Work as research assistants	-	-	-	55%	45%
4	Contribute to some form of research output (conference paper / poster, publication, etc.).	2%	15%	23%	39%	21%
Avg		26%		11%	63%	

Table 4 states the percentage of respondents endorsing the respective statement. Over 40% of respondents in the study indicated that they have the instructors or lecturers discuss research in a class to be engaged with research while just over 40 per cent responded that there is a link between teaching and research in lectures and seminars.Students largely disagreed, however, that there are opportunities to participate in research. They report that Instructors actively engaged in research are more likely to be enthusiastic about their subject matter, that the most effective teaching is when the lecturer involves them in aspects of the research process, and that they learn the most when undertaking their own research project.

One of the most interesting results of this study was the increased positive perception of research among students in academic programs (including the faculties of science and arts). For example, significantly more students in academic programs perceived a positive impact through their increased understanding, stimulated interest and enthusiasm, and motivation to pursue postgraduate studies. As well, students in academic programs were significantly more likely to feel that engagement with research throughout the university experience was important. More than 80 percent of all Master's and Bachelor students want to apply for funding.

Table 5 Students perceptions on links between degree programs and research

Sr No	Degree Programs	Responses of the students		
		Agree	Neutral	Disagree
1	Master's	36.25%	11%	52.75%
2	Bachelor	26%	11%	63%

According to Table 5, his research shows that only some of the students responding perceived their programmes as particularly oriented and relevant to research. The research-based learning in Myanmar can be traced back and linked to a rapid expansion of the Higher Education sector on one hand and new influences in pedagogy on the other. More than 30% of master's and 20% of the Bachelor students aimed at improvingand enhancing the provision of research-

oriented studyformats and components. Currently, Myanmar Universities aimed at supporting the receptive learning to active independent study at theuniversity, and from the university to postgraduate researchor employment. Universities serves as anexperimental platform for the development, piloting, andevaluation of innovative forms and formats of teaching thatbring together teaching staff and students. Our research project is an initiative specifically aimedat the promotion of research-based learning program and qualification inactivities in which students are encouraged to develop independentresearch questions, query the received wisdomof their disciplines, embark on a quest for answers, and developnew skills and qualifications in the process.

4. Results

Quantitative survey data as well as in-depth qualitative data were collected from survey questionnaires and semi-structured interviews over a period of two months. According to the data, it has been suggested that the structure of the Bachelors / Masters Degrees should aim to develop broad sets of skills and competences. Among them, the ability to synthesize and structure knowledge and information and to take charge of their own future learning, precisely the set of skills that research-based learning claims to foster and develop.

Table 6 Interviewed responses of professionals, professors, policy makers, teachers, and students on identification of Myanmar teachers whether they are equipped with the conceptual understanding and methodological skills to conduct research (n=75)

Sr No	Participants	Responses towards the statement whether Myanmar teachers are equipped with the conceptual understanding and methodological skills to conduct research		
		Yes	Not Sure	No
1	Professionals	23%	21%	56%
2	Professors	52%	11%	37%
3	Policy makers	50%	5%	45%
4	Teachers	31%	35%	34%
5	Students	35%	28%	37%
Avg		38.20%	20.00%	41.80%

The data in Table 6 explicitly mentioned research-based learning as a key recommendation for future degree programs to strive to attain and recognized this learning approach as a key component of all degree-level training and education. University training can qualify (graduates) for qualified work where it aims to develop the ability to independently develop questions, to systematically engage with problems, methodically generate new insights and critically reflect on fundamental questions. This can be achieved by teaching that demonstrates

and discusses the scientific process and actively involves students in this process. Research-based learning thus is essential to every degree program of studies.

Higher Education plays an essential role in society by creating new knowledge, transmitting it to students and fostering innovation. Research-based education has lately received increasing interest both among researchers in Higher Education and in public discussion. This research attempts to discuss the research strategies and practices in education and the contributions of research in developing high quality teaching. Findings of this research is expected to make research-informed contributions to contemporary issues, initiatives and reforms in Myanmar Higher Education, and will at least serve to initiate a debate about research-based teacher education and contribute to the decisions that need to be made regarding the future of Higher Education in Myanmar.

This research presents a number of recommendations aimed at promoting research-based teacher education and improving the understanding of research. There is general agreement among educationalists that the Higher Education system in various countries and regions needs to evolve in ways that can effectively accommodate the rapid changes currently taking place in all societies and regions. For greater relevance and effectiveness, Higher Education system should seek to accommodate the emerging education has the potential to make an important contribution to the rational understanding and management of these major issues and concerns. With a new emphasis on promoting research in teacher education, the teaching of research methodology and skills must be changed to align with teachers' changing role in society.

To conclude, the findings of this research study demonstrate the need for teachers prepare to meet the new trend of “teachers as researchers.” In addition, in light of the findings of the research, the approaches and methods used for teacher education should provide space for discussion and debate on its curriculum. This discussion and debate are the basis for developing research-based teacher education. As a starting point to evolve new ways of engaging teachers in research, decision-makers need to develop new educational research practices in universities. In this way, teachers would be able to take an active part in, and express their personal opinions, ideals and attitudes towards their teaching practices. The concept of research-based learning spawned some innovative and experimental degree programs, notably in teacher-training at the Universities. The emphasis in educational policy is on delivering relevant knowledge to students of degree programs and also to shift the emphasis from “teaching content” to developing students’ skills and competencies. The process aims at harmonizing the Higher Education systems by implementing consecutive degree programs (Bachelors / Masters) in Myanmar.

5. Discussion

Research-based learning is widely regarded as a panacea when looking for demanding and stimulating didactic formats in Higher Education settings. It has been suggested to improve a wide array of research-related competencies and is thus recommended to be experienced by any undergraduate student. However, whether research-based learning is as effective as postulated has not been systematically examined. In this research, we employed a questionnaire to examine the effectiveness of research-based learning in selected universities. Different types of research-based learning were identified and used for further analysis.Some types of research-based learning proved effective to develop cognitive research competence. These results provide recommendations on how to design effective research-based learning courses. However, affective-motivational competencies could not be fostered; possible explanations for this finding will be discussed.As we have discussed, the findings about the relationship between research and teaching in Myanmar is in full flow.While the concept of research-based learning has, at longlast, achieved official recognition (Healey & Jenkins, 2009), the challenge now is to develop strategies for its systematic implementation in the curricula. One of these attempts to implementresearch-based learning in a university-wide approach is to give students opportunities for independent research or research in small teams. Early research results indicate that actively engaging in research activities tends to increase the general interestof students in doing research. However, the effectiveness of research-based learning seems to be greatly associated withhow it is implemented. Based on our findings, we argue that in environments of research-based learning, students need to have the opportunity to work with actual research literature,develop research designs, and embark on empirical researchin order to increase their interest in research.

6. References

Brew, A., & Jewell, E. (2012). Enhancing quality learning through experiences of research-based learning: Implications for academic development. *International Journal for Academic Development*, *17*(1), 47-58.

Clark, B. R. (1997). The modern integration of research activities with teaching and learning. *The journal of higher education*, *68*(3), 241-255.

Deicke, W., Gess, C., &Rueß, J.(2014). Increasing students' research interests through research-based learning at Humboldt University. *Council on Undergraduate Research Quarterly*, *35*(1), 27-34.

Healey, M. (2005). Linking research and teaching: exploring disciplinary spaces and the role of inquiry-based learning. In: R. Barnett (Ed.), *Reshaping the University. New Relationships between Research, Scholarship and Teaching*. McGraw-Hill: Open University Press.

Healey, M., & Jenkins, A. (2009). *Developing undergraduate research and inquiry*. York: Higher Education Academy.

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Challenges Faced by Teachers of English as a Foreign Language in Myanmar Universities

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Abstract

English language holds a key importance in present day globalized environment, as it is the single language accepted in several areas of business, education, society, economy and politics. Therefore, long back Myanmar government introduced English as a foreign language in schools as well as universities to help younger generation acquire skills in reading, writing, speaking and listening of EFL. However, there are several challenges that act as major barriers to imparting of EFL at university level and make it important to understand these challenges and find strategies to avoid negative impact of such barriers. This study is mixed method research.The present study is conducted through interview method to identify the perception of teachers teaching EFL at universities of the country about the challenges faced by them and associated strategies to meet the objectives of teaching EFL. According to the data, the results of the interviews with EFL teaching staff at various Myanmar Universities revealed some challenges and barriers faced by them while imparting English education to students at university level. The teachers as respondents to semi-structured interview were contacted through telephonic method to get the results confirming the present barriers related to teacher preparation as a major obstacle, lack of student motivation to learn English language and lack of training of teachers that makes it challenging for EFL teachers to impart efficient language skills.

Keywords : EFL Teachers, Challenges, Barriers, Myanmar Universities

1. Introduction

The importance of English language is widely accepted in various areas of business, education, society, economy and politics across the globe. Moreover, the leading role played by English speaking people in various spheres of life like trade and business, commerce and geopolitical issues further gives the language a key position in our society. It has been recognized

in Myanmar also and therefore the Ministry of Education introduced English as a Foreign Language (EFL) in the region. Since then there has been an increase in the attitude of people in Myanmar society towards importance of English language despite of their basic language being Myanmar. There are several reasons of such change in attitude of people towards a positive outlook for English language and generally attributed to the globalization of the business world, use of English language as a major communication means in various sectors like education, politics, economics and trade and commerce. However, there are several challenges that are faced by teachers of English foreign language while imparting education at University level in the region. The major reason of such issues and problems are associated with the teacher-centered nature of Myanmar teaching and lack of proficient and trained teachers along with lack of latest technology to impart an efficient learning and skills in English language. Such issues arise due to certain specific constraints that can be categorized as constraints of socio-cultural barriers, negative attitude of learners towards English language, issues related with university policies and competence and training of teachers. These constraints are discussed as follows.

1.1 Socio-cultural barriers

As argued by Tudor (2001) the socio-cultural beliefs of students and the overall society has affected the overall environment of the classrooms. It is not always right to assume that people does not value English as a language vital to the country's future prosperity as people do consider English as important in various domains, but it is the lack of various aspects in education system of the nation that the outcome has not remain satisfying. As argued by Khan (2011) the experience and background knowledge of teachers in relation to knowledge of the culture assist them in managing the challenges of socio-cultural nature. However, it is not possible for teachers to do much about changing the negative attitude of people or the society towards education of English. The teacher-centered approach is also reported to be a major challenge as it limits the participation of students and further demotivate them to explore the possibilities of learning English. There is no involvement of technology driven strategies and plans to impart education to EFL students. As argued by Alhawasi (2013) and Fareh (2010), a major obstacle faced by EFL teachers in Myanmar is reliance on traditional methods such as the use of Myanmar to teach English language. Expatriate teachers complaining of university management as well as students expecting them to conduct classes primarily in Myanmar, which again minimize learners' exposure to the language, presented similar arguments. There is a lack of practice and communication in English in classes and lessons where Myanmar is the language of instruction.

1.2 Negative attitude of learners towards English language

Scheidecker and Freeman (1999) believe that motivated individuals integrating linguistic and non-linguistic results of the learning experience are capable of attaining a higher degree in language proficiency. Any lack of motivation among learners results in several factors causing

frustration to teachers while teaching in classrooms. Further, the preferences and objectives of students in universities are limited to passing the examination and assessments. Their ultimate goal is not associated with attainment of proficiency in language but to achieve good grades and certificate.

1.3 Issues related with university policies

Hall (2011) views about the pressures enforce by institutions may contradict the cognition, beliefs and established practices as followed by language teachers. He also pointed out that teachers in Myanmar are not free to make a choice about methods of teaching and are bound by social conventions, expectations of students as well as policies of schools and ministry. Experience of students and their personal engagements outside the EFL classrooms has a strong impact on teaching and learning within the classroom.

1.4 Competence and training of teachers

As argued by Candlin & Mercer (2001), training is required at initial level as well as at regular intervals to help teachers gain confidence in making efforts to achieve goals set for themselves as well as for their students. This is so as beliefs and perception of teachers about their skills of teaching have a key impact on effectiveness of their teaching and this is indicated through their willingness of acquiring and overcoming the challenges of classrooms.

2. Research Questions

The present research study aims to analyse the challenges that teachers of EFL face by looking at the case of EFL teachers in Myanmar universities and exploring what difficulties and challenges do they encounter in teaching English to Myanmar university students. The major research questions for which the present study is conducted are listed as follows:

2.1 What are the challenges faced by EFL teachers in Myanmar that arise from the Socio-cultural barriers?

2.2 What are the challenges faced by EFL teachers in Myanmar that arise from the students' motivation to learn the English language and their English language proficiency?

2.3 What are the challenges faced by EFL teachers in Myanmar that arise from the university policies?

2.4 What are the challenges faced by EFL teachers in Myanmar that arise from the teachers' competence and preparation to teach English language?

2.5 How can the challenges faced by EFL teachers in Myanmar universities be overcome?

3. Research Methodology

3.1 Research Design

The design of the research may take the form of qualitative or quantitative study depending upon the nature of study and objectives of the research work. Under the present study the data is collected in qualitative manner through direct interviews and questionnaire survey as here the aim is to understand the human behavior in relation to learning of English as a foreign language in Myanmar Universities. The focus of the study remains on the real time experience of English language teachers while imparting learning to students of the University level, which makes it necessary to collect their statements and views for analysis and answering the research questions.

3.2 Data Collection Method

In the context of present study, the data or information required for analysis is collected through primary method of data collection. Under this primary method, direct interviews were conducted with teachers of English language in different Myanmar Universities, all of which are located in Upper Myanmar. The interviews were conducted through telephonic way for 112 teachers teaching English language in these universities. The interviews were semi-structured in nature to conduct a detailed discussion over the issues and challenges faced by teachers. The interviews focused on asking questions obstacles or challenges faced by them because of inappropriate institutional policies, socio-cultural situation in Myanmar and negative attitude of students towards English language. To make the data more valid, the questionnaire data was also collected from 183 teachers from Myanmar Universities. All these questions were directed to identify some efficient strategies to impart better learning of EFL in Myanmar Universities to be practical and effective for designing future plan of action.

4. Research Results

The EFL teachers were contacted through telephonic mode and the first question asked to them was associated to any significant obstacles or challenges faced by them at Myanmar Universities. Here similar answers were received from teachers belonging to same university and therefore the teachers of the selected Universities reported that there are several social and religious factors acting as challenges to EFL teaching. These teachers were of Myanmar origin and therefore find it difficult to impart learning in a subject that is difficult for them also. Keeping the above facts in mind, the actual challenges associated with negative attitude of learners towards English language (78%) followed by socio-cultural attitude (74%) competence and institutional policies (65.50%) and training of teachers (26.5%) are found as tensions faced by EFL teachers in Myanmar Universities.

4.1 Interview Responses

Table 1 Interview responses of the participants on closed ended interview questions (n= 112)

SN	Interview Questions	Responses		
		Yes	Not Decided	No
1	Do you think there are any significant obstacles or challenges faced by EFL teachers at Myanmar universities?	80%	18%	2%
2	Are there any socio-cultural challenges associated with EFL teaching in Myanmar? Explain.	60%	25%	15%
3	Are there any challenges faced by learner's negative attitude towards English language?	64%	14%	22%
4	Do you consider weakness of the teacher preparation as a major obstacle here?	63%	18%	19%
5	Do students of EFL lack a motivation to learn English language?	56%	31%	13%
6	Do you think you have efficient teaching methods or consider the use of technology and teaching aids to be efficient in meeting the challenges of teaching EFL at university level?	50%	20%	30%
7	Have you faced challenges or barriers because of some inappropriate institutional policies or practice in Myanmar Universities?	53%	30%	17%
8	Can you consider any strategies to help impart better learning of EFL in Myanmar Universities?	51.5%	38%	10.5%

According to the responses of question no 1, the results of the interviews with EFL teaching staff at various Myanmar Universities revealed several challenges and barriers faced by them while imparting English education to students at university level. In question no. 4, 63% of the teacher participants argue that teachers as well as management of universities need to understand that innovative methodologies in learning can prove to be effective in accelerating qualitative English education and developing the motivational level of students. Therefore, all elements associated with imparting education are interrelated and no single factor can prove to be efficient without cooperation from other elements or factors related to qualitative education of the language. Among these questions, teacher participants (56%) pointed to lack of motivation and difference in goals and preferences of learners as one of the major challenges they face

while teaching English as a foreign language in Myanmar Universities. They explained that there is a lack of motivation to integrate linguistic and non-linguistic results of the learning of English language. Such lack of motivation impedes the efforts put by teachers too. With reference to Myanmar universities, instrumental motivation holds key importance in acquisition of language.

In question no. 6, half of the teachers (50%) were asked about their thinking and experience on availability of efficient teaching methods and technology usage in meeting the challenges of teaching EFL at university level. The teacher participants agreed that there is a dire need of technology usage in ELF teaching so as to meet the challenges specific to University level students. There is a lack of online assessment programs, audio-visual aids, lack of computers as a medium of instruction and usage of multi-media functions and graphical user interfaces in the university. These technological innovations have become critical to the successful imparting of education in any field and make it possible to allocate more assignments and activities to students on an individual level as well within a group. A technology driven model can reduce the time spent on lecture model and time of faculty can be shifted to other activities focus on improving students' motivation. Teachers pointed out that discussions mediated by computers are more diverse as several different topics can be discussed in a short span of time and more people can participate and present their view as well as learn from each other's views.

Next, teachers were asked whether they are being provided with any in-service training by the University management. To this question, some teachers of Myanmar Universities responded negatively saying that the management is not concerned here with improving the quality of teaching. The focus is only on making students learn the language to the extent it is required to pass the exam and get good grades. Therefore, management of the University does not seem to be concerned about any in-service training for teachers. However, teachers believe that such training is necessary specially to get strategies of motivating students with limited learning goals in relation to EFL at Myanmar Universities.

Table 2 Interview responses of the participants on open ended interview questions (n= 112)

SN	Interview Questions	Responses		
		Yes, enough.	Yes, not enough.	No, not at all.
1	Are you being provided any in-service training by the University management? If yes, are they enough or good?	15%	65%	20%

Teachers (15%) admitted that they are offered some preparation training also where focus is on introducing the teaching methods and a teaching practicum course. The teachers (20%)

said that there is no special training to them in relation to EFL teaching at the university. 65% of the teachers reported that some training is offered to them but the training is not enough as it gives them an overview of importance of language and ways of teaching prevalent in the university. However, there is a lack of any professional cultural sessions or training to handle major barriers and challenges associated with motivating students to grasp reading, writing as well as speaking skills in the English language.

4.2 Questionnaire Survey

1. What are the challenges faced by EFL teachers in Myanmar that arise from the Socio-cultural barriers?

There is a need to prepare teachers to face the challenges that are socio-cultural in nature and those associated with motivation factor of students at the Universities. Such training can help in designing strategies and preparing better to impart learning despite of some serious challenges.

Table 3 Socio-cultural barriers as faced by EFL teachers in Myanmar Universities (n=183) (Source: Tudor, 2001)

SN	Socio-cultural barriers	Responses		
		Agree	Not Decided	Disagree
1	People in Myanmar value English as a language vital to the country's future prosperity.	68%	26%	6%
2	People here do consider English as important in various domains although the outcome has not remained satisfying.	71%	20.5%	8.5%
3	The teacher-centered approach as followed at universities of Myanmar limits the participation of students and further demotivates them to explore the possibilities of learning English.	82%	11%	7%
4	EFL teachers in Myanmar are reliance on traditional methods such as the use of Myanmar to teach English language.	75%	15%	10%
	Average	**74%**	**18.125%**	**7.875%**

Further, the teachers of Myanmar Universities also explained the need of preparing teachers to adopt a student-centered approach to make learners involved in the learning process of EFL. A preparation of teachers to understand cultural background of students, issues and beliefs

acting as hindrances to education and possible ways of motivating students is essential before actually entering the EFL classrooms and start teaching the subject. A major issue hindering the English competence of students in Myanmar is reliance of teachers on traditional methods of teaching that involve the usage of Myanmar language in teaching the English language. Conducting English classes in Myanmar language results in minimizing the exposure of students to the language as these students do not have any possibility or scope of using English outside their classrooms due to prevalence of Myanmar in the society. Teachers whose first language is Myanmar lacks proficiency, knowledge and confidence to use English as a medium of instruction and thus they choose Myanmar as the medium of instruction that make their job easy and simple. However, such practice is a major cause of deterring communicative competence of students in English language (Alfahadi, 2014). These results goes in line with the arguments presented in literature review explaining that a major reason of low competence of students in English language is associated with teacher-centered instructions (Ahmed, 2014 and Alrabai, 2014) and reliance of teachers on traditional methods of instruction.

2. What are the challenges faced by EFL teachers in Myanmar that arise from the students' motivation to learn the English language and their English language proficiency?

Table 4 Negative Attitude of learners towards English language as faced by EFL teachers in Myanmar Universities (n=183) (Source: Scheidecker and freeman, 1999)

SN	Negative Attitude of learners	Responses		
		Agree	Not Decided	Disagree
1	Learners' lack of motivation in several factors causes frustration to teachers while teaching in classrooms.	80%	12%	8%
2	Motivating students is the biggest challenge in Myanmar universities as the subject is considered only as a qualifying one to pass the exam.	78%	15%	7%
3	Ultimate goal of my students is not associated with attainment of proficiency in language but to achieve good grades and certificate.	76%	20%	4%
	Average	**78%**	**15.66%**	**6.33%**

Similar to findings of Liton (2012), the teachers in present study reported a lack of motivation among students, which is a cause of several other issues while implementing any new activities in classroom setting. The findings confirm assertion of Shehdeh's (2010) explaining that there is a lack of motivation among learners along with having a poor attitude towards English language. The results of interview are also in line with arguments presented in literature review

about the objectives; goals and references of students affect their performance in classrooms (Candlin and Mercer, 2001). Further, teachers explain that in Myanmar Universities, students follow a grade-driven approach to learning of EFL. Their ultimate goal is to get good grades and certificates without focusing on gaining proficiency in the subject. This is so because students do not need the language outside the classroom to conduct most of the tasks and thus they limit their learning to basic skills required to pass the examination.

3. What are the challenges faced by EFL teachers in Myanmar that arise from the university policies?

Table 5 Issues related with university policies as faced by EFL teachers in Myanmar Universities (n=183) (Source: Hall, 2011)

SN	Issues related with university policies	Responses		
		Agree	Not Decided	Disagree
1	Teachers are forced to comply with policies and procedures of the universities.	63%	21%	16%
2	Teachers in Myanmar are not free to make a choice about methods of teaching and are bound by social conventions, expectations of students as well as policies of schools, universities and ministry.	61%	24%	15%
3	In Myanmar, English is not used as a local medium of communication, students fail to practice it once they are out of classroom and therefore fails to attain competence in the language.	80%	13%	7%
4	Lack of authentic materials, lack of proper resources and irrelevant materials in textbooks are major issues.	58%	24%	18%
	Average	**65.50%**	**20.50%**	**14%**

According to the results of questionnaires, some teachers (63%) are forced to comply with policies and procedures of the universities. They lack any autonomy or flexibility to make their choices of teaching methods and activities to meet the basic challenges. The non-availability of authentic classrooms, results in a negative impact on language proficiency, which is a common issue experienced in the world. Candlin and Mercer (2001) explains that experience of students and their personal engagements outside the EFL classrooms has a strong impact on teaching and learning within the classroom. As in Myanmar, English is not used as a local medium of communication, thud students fail to practice it once they are out of classroom and therefore fail

to attain competence in the language. Further, Shehdeh (2010) explained that students lack any outside usage of English language making it necessary to allow them to spend more time in language labs to participate in activities associated with development of linguistic skills.

4. What are the challenges faced by EFL teachers in Myanmar that arise from the teachers' competence and preparation to teach English language?

Table 6 Competence and training of teachers as faced by EFL teachers in Myanmar Universities (n=183) (Source: Candlin & Mercer, 2001)

SN	Competence and training of teachers	Responses		
		Agree	Not Decided	Disagree
1	My university offers training programs to help me improve my teaching skills.	26%	20%	54%
2	I get specialized training to improve my effectiveness by bringing in improvements in my instructional behaviors in different ways.	27%	26%	47%
Average		**26.5%**	**23.00%**	**50.5%**

The teachers of Myanmar Universities reported that some training is offered to them when they join the University but it is mainly of induction in nature. There is no special training provided to EFL teachers to make them comfortable with socio-cultural issues faced with the students in this particular region. Such preparation programs are inefficient in developing any skills or acquiring of latest knowledge in the field of teaching language.

5. How can the challenges faced by EFL teachers in Myanmar universities be overcome?

(i) Teachers were asked to talk about some strategies that they think can help impart better learning of EFL in Myanmar Universities. The teachers emphasized on the need of teacher preparation and professional training to handle socio-cultural issues prevalent in Universities of Myanmar in relation to EFL teaching. Further, a cooperative approach is required from university management to provide latest technological equipment, techniques and relevant material as asked by teachers to ensure availability of latest knowledge and information related with the subject. Above all the teachers reported that students attending EFL classes should be given some orientation about importance and usage of learning English and acquiring proficiency in this global language. Teachers will ask students to do some learning activities such as playing games, acting-out, and some kinds of drill and so on. This will result in creating awareness about the language and bring a change in attitude and preferences of learning English as a foreign

language in Myanmar Universities. Moreover, collaboration and communication between students in learning are improved and learning English will be more natural and effective.

(ii) A favorable learning environment is the basic need at Myanmar Universities and respect for expatriate teachers is another issue that needs immediate resolution. Considering some of the key strategies, it is suggested that authentic text should be made available or designed with the help of EFL teachers to incorporate students' expectations, cultural values and beliefs and competent English lessons required to impart better education and skills to students at University level. Congenial relationship between EFL teacher and the students can help in developing an environment that is mutually motivating and communicative in nature. Therefore, formal training as well as informal interaction sessions should be designed and offered to develop better relations among EFL teachers and their students. Students need to move out of the formal long duration classed and discuss the issues related with language skills openly. There are many competitions (like roundtable discussion, impromptu talks, etc.) and celebration (like farewell, welcome, water festivals and funfairs, etc.) in Myanmar Universities which students can participate in to improve not only their language competency but also their cultural awareness. This will help teachers to understand the challenges better and redesign strategies suiting the needs and expectations as well as learning capacity of students at University level in Myanmar. In addition, students in Myanmar Universities can have better life experiences than in the classrooms. And they can also grasp chances to learn English in the more natural and practical environment.

5. Discussion

The results of the interviews with EFL teaching staff at various Myanmar Universities revealed several challenges and barriers faced by them while imparting English education to students at university level. There are serious concerns and issuers associated with proficiency in English language among students in schools and universities of Myanmar. The issues have been considered by the government of the region as well as the educationists and despite of several efforts by the government, the proficiency in English remains unsatisfactory and below expectations. Students often considers the language as being useless in real world scenario and their social life making it difficult for teachers to motivate them to attain a high level of proficiency in English language. In Myanmar the teaching and learning of English language is teacher-centered rather than student-centered. Mostly students can be seen applying the techniques of memorizing in English classes. They try to memorise paragraphs, rules of grammar and vocabulary without understanding the rules of work formation and sound systems in English language. They get high marks in examination by relying on memorizing of textbook on which exams are based and thus their goal is achieved without even giving an effort to learn the language. An effective learning strategy that proves to be successful for students in EFL classes is memorization as there is no need

to be creative or develop ideas to attain good grades (Alkubaidi, 2014; Fareh, 2010). There is a lack of motivation among students of Myanmar confounding to their progress in developing proficiency of language (Al-Johani, 2009; Almutairi, 2008; Fareh, 2010 and Khan, 2011). Students generally do not want to learn English at elementary as well as university level.

It is necessary to understand the impact of motivation in EFL teaching as Myanmar schools and colleges are characterised with demotivated learners due to several social-cultural constraints. This makes it difficult for EFL teachers to attain targets of English curriculum. It is challenging for teachers to motivate a demotivated class environment that is formed due to certain factors that are out of control of teachers as well as learners. Here the need is to promote cultural awareness among teachers as well as students and that too in the English language, which will help in working on barriers associated with cross-cultural issues. It is to be noted that compatibility with culture and adaptation to issues related with cross cultural scenario act as the motivating actors in acquisition of foreign language like English.

In Myanmar, English is not utilised in daily life as it is considered a foreign language that is of no use in Myanmar culture (Alrabai, 2014). However, Rababah (2005) argued that students are required to use the language in every life if they really want to grasp English language. While in Myanmar, English is limited to academic subject level, people use Myanmar to communicate with family, and friends and also in business transactions offering fewer opportunities to students to practice their English speaking or listening skills on a regular and continuous basis.

6. Conclusion

Teachers teaching EFL in Myanmar Universities are facing several challenges and barriers to impart competitive education in English language skills. These challenges arise mostly due to socio-cultural beliefs and values that demotivate people in Myanmar to get proficiency in English language as they prefer to conduct all transactions in their own Myanmar language. Several other factors associated with lack of motivation among students, lack of proper resources and equipment in universities, lack of teacher friendly policies, prevalence of teacher centered approach to learning and lack of technological resources at University level also affect the teaching of language in a negative manner. Along with this, the university level management is also not much interested in promoting the education of EFL and most of the universities have status of EFL as a qualifying subject where students need to get good grades and even can repeat the course several times to pass the compulsory examination. Therefore, it can be concluded that Myanmar universities lack appropriate strategies and methods required to impact English language education to students. Such a situation results in some significant barriers and challenges for local as well as expatriate EFL teachers due to a limited autonomy of selecting the teaching method and strategy in a scenario affected by several socio-cultural beliefs and values. This calls for an overall strategic

approach to be adopted that influence the universities' management, students and their parents as well as EFL teachers to ensure setting up of priorities and improve speaking, listening, writing as well as reading skills of learners' at the university level.

7. Recommendations

The interviews conducted with teachers of different universities in Myanmar offered some remarkable recommendations and insights into the issues and challenges faced by teachers of EFL in Universities of the country. These recommendations include the facilitation of technological equipment such as audio-visual aids, computers, Internet connection and dedicated language labs to offer a wide exposure to students aiming at reducing the level of demotivation as prevailing among learners in Universities. Further improvement in relevant course material is expected by teachers, which should be coupled with regular training to improve teaching skills in light of various socio-cultural barriers prevailing in Myanmar in relation to learning of English as a foreign language. The text should be redesigned in consultation with EFL teachers to improve the content as well as learning methods. The focus of this content should be on grammar, writing, listening, speaking, vocabulary and practice of language usage in daily life.

Students should be given a chance to use technological equipment to participate in diverse discussions where they can learn from each other's experience and knowledge and at the same time collaborate with their teachers to sharpen their skills of English language. Teachers should be given training on handling intercultural issues associated with EFL classes in Myanmar and there should be more chances of interacting with students in an informal manner so as to improve the relations between teachers and students of EFL at the Universities of Myanmar. They should be able to collaborate their teaching styles with socio-cultural background of the nation so as to make students comfortable in the class allowing them to share their views related to language skills and its importance in a globalized world. A major revelation in the present research is related to the need of using English as a medium of instruction at the University level. Finally, there is a need to change the teacher centered approach to learning and introduce task based language teaching where a students centered approach is used to involve learners in the process of learning making them motivated and confident to take responsibility of their tasks and learning. Only after implementation of the suggested modifications, an effective teaching of EFL can be expected in universities of Myanmar. Such efforts can bring the language in mainstream of Myanmar society and culture making it easy for students to understand its importance and learn it in a manner that they can be benefited with the usage of English language in advancing their career and growth in future.

There is also a requirement of covering the socio-cultural factors in the course contents so as to meet the attitudinal needs of learners. As argued by Mishan (2005) when text is more

related to personal concerns and interests of students, it is possible to ensure a rapid processing of the lessons. The findings goes in line with previous studies conducted by Bacon and Finnerman (1990) and Al-Nofaile (2010) arguing in favor of the teaching material that is relevant to personalities, background, needs and interest of students as well that of teachers.

8. References

Alhawsawi, S. (2013). *Investigating Student Experiences of Learning English as a Foreign Language in a Preparatory Programme in a Saudi university.*

Candlin, C., & Mercer, N. (Eds.). (2001). *English language teaching in its social context: A reader*. Psychology Press.

Fareh, S. (2010). *Challenges of teaching English in the Arab world: Why can't EFL programs deliver as expected*? Procedia-Social and Behavioral Sciences, 2(2), pp. 3600-3604.

Hall, G. (2011). *Exploring English Language Teaching. Language in Action*. Taylor & Francis Group. Routledge

Khan, I. A. (2011). Learning difficulties in English: Diagnosis and pedagogy in Saudi Arabia. *Educational Research*, 2(7), 1248-1257.

Liton, H.A.(2012). Developing EFL Teaching and Learning Practices in Myanmar Colleges: A Review. *International Journal of Instruction*,5,2,129-152.

Scheidecker, D. and W. Freeman. (1999). *Bringing out the Best in Students: How Legendary Teachers Motivate Kids*. Thousand Oaks, CA: Corwin Press.

Shehdeh, F.S.(2010). *Challenges of Teaching English in the Arab world: Why can't EFL programs deliver as expected?* Procedia Social and Behavioural Sciences,2,3600-3604.

Tudor, I. (2001). *The Dynamics of the language classroom*. Cambridge: CUP.

Interview Questions

1. Do you think there are any significant obstacles or challenges faced by EFL teachers at Myanmar universities?
2. Are there any socio-cultural challenges associated with EFL teaching in Myanmar? Explain.
3. Are there any challenges faced by learner's negative attitude towards English language? Explain
4. Do you consider weakness of the teacher preparation as a major obstacle here?
5. Are you being provided any in-service training by the University management? If yes, are they enough or good? Why or Why not?
6. Do students of EFL lack a motivation to learn English language? Is it a major obstacle?

7. Do you think you have efficient teaching methods or consider the use of technology and teaching aids to be efficient in meeting the challenges of teaching EFL at university level?
8. What challenges or barriers you have faced because of some inappropriate institutional policies or practice in Myanmar Universities?
9. What strategies can be considered to help impart better learning of EFL in Myanmar Universities?
10. What strategies can be used to help students write academically in English language?

English as a Lingua Franca Used by Myanmar Teachers in the Classroom

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Abstract

This paper offered a brief overview of English as lingua franca taught in the classroom by Myanmar teachers at Mae Fah Luang University, Thailand, in order to have effective communication. The aim of this paper is to investigate how Myanmar teachers taught English as lingua franca in their classroom. The objective is to know Myanmar teachers' beliefs and attitudes towards teaching to the students at Mae Fah Luang University. The teachers' opinions were classified into three categories described by Macaro's "continuum of prspective". The continuum illustrated three personal beliefs that teachers might hold regarding their potential language choice in the L2 classroom: (1) virtual position (2) maximal position and (3) optimal position. It was found that Myanmar teachers' perspectives corresponded to what Macaro (2001) referred to were these three positions. Myanmar teachers have the different beliefs on their teaching due to their respective subjects. But they have the same attitude that English is the medium of teaching. It was concluded that the use of English as a lingua franca between the teachers from Myanmar and the students studying in Thailand was appropriate and effective in teaching in the classroom.

Keywords : Attitude, Belief, Communication, Lingua Franca, Medium

1. Introduction

English is used through the world as a lingua franca. It is used as a medium of communication by people who do not speak the same first language. Kachru (2005 cited in Baker, 2012) points out that English is an ASEAN language and World English studies have shown many varieties of Asian English (McArthur, 2003; Kachru, 2005 cited in Baker, 2012). English is used as an official lingua franca in ASEAN and ASEAN +3 countries which are China, Japan and South Korea. This paper is to present English as lingua franca taught in the classroom by Myanmar teachers at Mae Fah Luang University, Thailand.

According to Swaan, (2010), the human species is divided into some 6,000 groups, each one of which speaks a different language and does not understand any of the others. But the fragmentation is overcome by people who speak more than one language and thus ensure

communication between different groups. Multilingual speakers have kept together humanity, separated as it is by so many language barriers.

According to Kirkpatrick, A. (2007), the most common classification of English has been to distinguish between English as a native language (ENL), English as a second language (ESL) and English as a foreign language (EFL). ENL is spoken in the countries in which the great majority of the population uses English as the primary language. The global spread of English has resulted in the use of English as lingua franca and it is used by speakers of English from Inner, Outer, and Expanding circles (Burns, 2005; Seidlhofer, 2004 cited in Snow, M.A, 2006).

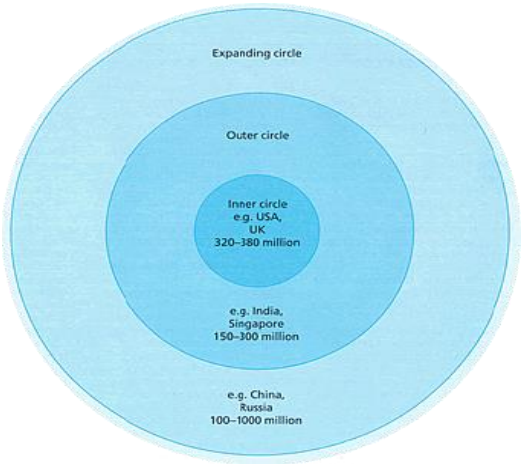

Figure 1 Kachru's Three-Circle Model (1985)

Since the 1980s, the concepts of ENL, ESL and EFL have become blurred in the globalized world (Graddol 2006: cited in Majanen, 2008). Kachru has suggested another kind of circle in which the inner circle in the core represents highly proficient speakers of English – native or nonnative – and the former outer and expanding circles have emerged into a community of less proficient users (Kachru 2004, cited in Majanen, 2008). This depicts the nature of English as Lingua Franca (ELF) better: ELF concerns all the users of English, the whole community of English speakers, including natives (Seidlhofer 2004, cited in Majanen, 2008).

Additionally, around the world, there are more English speakers who come from Expanding Circles than those who come from inner Circle contexts (Canagarajah,2005; Kachru 1992; Kachru & Nelson, 2001, cited in Snow, M.A.et al, 2006). Therefore, English is being taught by non-native speakers of English to other non-native English speakers.

According to Ur (2009), billions of people in the world probably speak English. According to Kachru's three circles, these may be defined as inner, outer and expanding. English has become spread all over the world, and so both Myanmar teachers and international students use English as a lingua franca to assist the teaching and learning of English at Mae Fah Luang

University. English is widely used as many roles to play in Thailand: It serves as a compulsory subject in school and in higher education, as a medium of instruction in the education programmes, as the language of international organizations and conferences including ASEAN and ASEAN + 3.(Wongsatorn et al 1996; 2003; Foley, 2005: cited in Baker, 2012)

The teachers who teach English may be native-speaker or the fully skillful non-native speaker. Many teachers and learners today are still likely a 'native speaker' model. They try to immediate the accent of the native speakers. However, native speakers are often bounded to their own local dialect and they may not have the awareness of international usages; and many English speakers who were originally non-native are today 'fully competent' (Ur. 1990).

There are many researches which have been done on English as a Lingua franca used by many Asian teachers such as Japanese and Chinese in the classroom. However, there is no research that has been done on this field for Myanmar teachers taught in the international classroom. It is needed to fulfill this gap how Myanmar teachers teach the international students at the classroom in the foreign countries. Hence this research is conducted to explore how Myanmar teachers use English as a Lingua Franca (EFL) in their language classroom and what native Myanmar teachers' beliefs are about ELF.

2.Research Objectives

There are three objectives in this research, they are

2.1 to examine how Myanmar teachers teach in the international classroom

2.2 to explore Myanmar teachers' beliefs and attitude towards teaching international students, and

2.3 to investigate what kind of teaching method is the most appropriate and effective for the students in the international classroom.

3. Research Methodology

The present study was based on the case study of Myanmar teachers' beliefs and attitudes towards using English lingua franca in their teaching in the classroom. There are only three Myanmar teachers teaching at Mae Fah Luang University. In that study, they were interviewed in Myanmar and translated into English. They are Myanmar and non-native speakers of English. Many international students are attending at Mae Luang University although mostly are Thai students.

Teacher's beliefs are teachers' pedagogical beliefs or the beliefs of relevance to an individual teaching situation (Borg, 2006 cited in Danping, 2012). The teachers' opinions were divided into three criteria described by Macaro's (2005-2009; cited in Danping, 2012) "continuum of perspective". The continuum shows three personal beliefs that teachers might measure their

potential language choice in the classroom: (1) virtual position (acknowledging that exclusive use of the target language); (2)maximal position (acknowledging that exclusive use of the target language is not attainable, yet feeling guilty when resorting to students' L1);and (3) optimal position (a multilingual perspective).

Three Myanmar teachers were interviewed and the researcher also attended their class to observe how they used the ELF in teaching their respective subjects in the classroom. They had different perspectives on teaching their students. In this study three native Myanmar teachers from Mae Fah Luang University were invited to participate in the interview and it was indicated as case (1), (2) and (3). The data were collected by using qualitative method.

3.1 Case (1) U Pho Tha Gyar

He has got M.A. (TESOL) and B. Ecom. He has lived in Thailand for 23 years and so he can speak Thai language as well. But in Mae Fah Luang University, his service year is just over four years. He is an experienced teacher. For him, Myanmar language is his first language, Thai language is his second language and English is his third language. He said that he teaches the students by using third language. He teaches Intensive English in the class which has about 50 students. Most of the students are Thai and a few are Myanmar students. When the question "Sayargyi, do you always speak in English while teaching?" is asked, he answered as follows: "As I teach Intensive English, I have to speak English all the time. I don't allow my students speak their native tongue in the class. Some difficult words are translated from English into their native tongue. Sometimes, I show the picture from the power point and sometimes I teach them from my gesture. Questions and response are emphasized to be asked to speak in English. After showing video, I ask them what the video is about. Thai students are very shy to speak in English so I encourage them to do so. Some Myanmar students want me to help them to translate into Myanmar from English. But I don't do like that. The students are international students and the class is also the EFL class. But I speak both Thai language and Myanmar language for the small things not concerned with my lecture".

He shares his teaching method of explaining certain difficult English words by using pictures from the power-point and gestures. He tries to avoid speaking Myanmar language which is his first language even to Myanmar students in the classroom. He regards that the students who attend at the Mae Fah Luang University are international students who come from different countries. Sometimes, teacher U Po Tha Gyar corrected the pronunciation of Thai students. As an example,

Student : There are **feed** in the sea.
Teacher : What...feed?
Student : Feed....feed. (Showing her finger swaying to and fro)
Teacher : Aww, **fish**.... fish in the sea. Right!

Student : Yeah. Fish.....

And then another student makes the following mistake:

Student : It is the **cane** city.

Teacher : What do you mean cane city? Spell it.

Student :c..a..l..m

Teacher : Oh. It is a **calm** city. It means a quiet city.

Saya U Po Tha Gyar said as the following:

"Thai students make mistakes the pronunciation of "r" sound and "l" sound, "ch" /tʃ/ sound and "sh" / ʃ/ sound and "w" sound and "v' sound. I make them practice of speaking English. At first, they don't like to be asked to speak in English. Sometimes, I speak them in Thai language and Myanmar language for the small talk not concerned with the lecture so that they feel relax in their mind."

Therefore, U Po Tha Gyar's perspective corresponded to what Macaro (2001) refers to as the maximal position. He provided the English only pedagogy and believed that English should only be taught through exclusive use of English because it is EFL classroom for the students. However he admitted that he sometimes talked in Thai language to Thai students and Myanmar language to Myanmar students just for fun. It was observed from his teaching that he talked both Myanmar and Thai to the students.

3.2 Case (2) Miss Chit Su Po Po

She teaches "Spoken Myanmar language" in the classroom. She has got M.A. degree in Philosophy. She has been teaching at Mae Fah Luang University for five years. She is also Myanmar and Shan race. In her classroom, the students are Thai, Chinese and Korea, but Myanmar students are not included. I asked her "when you teach spoken Myanmar language, how do you teach them in English or Myanmar?'. Her response is as the following.

"Although the course is "Spoken Myanmar Language", I teach them Myanmar language in English. So if the students do not understand Myanmar word, I have to translate them into English. I teach them Myanmar by using mainly English, teaching the pronunciation by using Myanmar alphabets. I explain the meaning of Myanmar in English. Some students do not know some words of Myanmar at all. For example, The students don't understand the word "Hpoo (ဖူး)" in "Payar Hpoo Twar Thi (ဘုရားဖူးသွားသည်)" which means "go to the pagoda". So I explain the word "Hpoo (ဖူး)" means "worship". But they feel confused with the words pagoda and temple. Sometimes, I teach them by using gesture if they don't know Myanmar words"

She continued "teaching Spoken Myanmar to Thai students is very easy for me because I am Shan race. The accent of Shan and the accent of Thai are nearly 90%. similar. So there is no problem between me and the students. First of all I translated the vocabularies into English. I asked my students to repeat the pronunciation of Myanmar after me. I asked them to repeat the

pronunciation after me until their pronunciation is good. I have to use English and Burglish to teach Myanmar spoken language".

She said that in teaching Spoken Myanmar language, she has the problems because some students are not perfect in English skill. But she explains them as much as she can. She has to explain the students Myanmar culture, custom, traditional food, costumes, weather, climate and so on. Although in the Spoken Myanmar Language classroom, she has to teach mostly in English except using Burglish. So she also has to use bilingual (Myanmar pronunciation and English writing). Therefore, her perspective corresponded to what Macaro (2001) refers to as optimal position.

3.3 Case (3) Mr. Khen Suan Khai (Sayar Khen)

He is also Myanmar and Chin race. He has got M.A. (International Development Studies). He teaches Social Science in the classroom at Mae Fah Luang Unversity. He has been serving at MFU for over three years. The students are international students: Thai, France, Chinese, Myanmar, Korean, Kenyan and American. So he uses mainly English in teaching his subject although he can also speak Thai language. In his class, there are many international students who come from different countries. The question "how do you teach in teaching social science to the students in your class?'' is answered as follows:

"I teach them my subject only in English. I don't speak either Thai or Myanmar in the classroom. But it is very difficult for me to control the class because France and Americans are very good at English. They can speak English very well because it is their native language. The other students such as Chinese, Korean and Myanmar are also clever at English. Thai students are weak in English because all subjects are taught in Thai language except English. They have the weakness of vocabulary. So, I just use concept mapping instead of so many words."

He asked the conceptual questions and told them the concept of the religion. For example, "what are the four noble truth in Buddhism.....?" he gives the students the brainstorming questions to be able to think and speak out. He avoids big words and uses simple words with a medium tone with moderate spoken style.

And then he continued, "if YES, why Yes? If NO, why No?" because the lazy students just said "I don't know" or "No" easily, so I asked my students the reason why, YES? NO? I divide the group into three persons per each group so that everyone can speak English. Asking the questions is the effective for the students to speak in English. While teaching, I speak more slowly than the normal, because my spoken English is very fast.

Sayar Khen emphasizes on the questions and answer session because some students are weak in speaking although they are good at writing. In his classroom, he does not use any languages except English Language. Sayar Khen is Chin race and so his pronunciation is nearly same with the native speakers. He never corrects the errors of the students while speaking English

because the students can lose the confidence. After their speaking is finished, he gives the comments only in English.

4. Findings

According to Macaro's "continuum of perspective", the three Myanmar teachers have different beliefs on their teaching due to their respective subjects. But they have the same perspective that they all use English as lingua franca in their classroom. English is not their native tongue and similarly, it is not the native tongue of the students. So they speak and teach mostly English in their classroom. They want their students to be good at English. Both teachers and most of the students are all non-native speakers. So, the teachers have to teach their students slowly to catch all the lectures they are teaching because most of the students are beginners.

U Po Tha Gyar and Sayar Khen teach in the classroom by using English mostly although they can speak Thai language and Myanmar language. Sayar Khen does not speak Thai and Myanmar language at all in the classroom. Therefore, it can be said that his perspective corresponded to what Macaro (2001) refers to as the virtual position because he uses almost English in the classroom. He used to teach the concept mapping of words instead of many words. The following dialogues appear between the teacher and the students

Teacher : What's religion....?
Students : It is something we believe in.
Teacher : If so, what's belief....?
Students : something that we have accepted as True and Right.
Teacher : Well.... And so what's truth?
Is it true that the sun rises in the East?....

U Po Tha Gyar speak a little of Thai and Myanmar languages about small things for the refreshment of the students in the classroom. So his belief is referred as the maximal position in Macaro's model. They supported the English only pedagogy and believed that English should only be taught through exclusive use of English. The followings are some of U Po Tha Gyar's talk to his students.

- Awwei, listen carefully to the CD ....and fill the blank!
- Please... see the power point ...and what it is about?
- Hey, wake up, wake up, (laughing) what does it mean? Please speak out.... speak out. Whay, speak.....speak out. (to Myanmar students "Pyaw Mae (ေပ်ာ့ေမ့)).....Pyaw Mae(ေပ်ာ့ေမ့)"
- Any questions? (When the students say "No" , "Mai Mi?" turning to the Thai students)

- Are u ok in your studies, my baby? (Turning to Myanmar students " Kalaylay Sar Ya Yet Lar (ကလေးေလးစာရရဲ့လား)'", not concerned with the lessons and but small talk.)
- Right! ("Chai Mai" looking to the Thai students)
- (Clapping) Whey Whey, listen to me (to pay attention)
- I .....play.....the video .....and .....listen.....carefully.....and....fill ....the blanks. (speak slowly to understand as the students are beginners)
- O...kay. Let's...start!

Miss Chit Su Po Po has to teach Spoken Myanmar Language. For the students in Mae Fah Luang University, Myanmar language is not their first native language. Miss Chit Su uses bilingual method in teaching this subject. Before she teaches her subject, she has to explain the background of Myanmar culture. And then she teaches the pronunciation of Myanmar language by using Burglish. She has to speak both Myanmar language and English language. So it can be said that she held a multilingual perspective which Macaro referred to as the optimal position. Some of the examples she teaches in the classroom are as follows:

She asked the students to repeat the pronunciation of Myanmar words written in English alphabets matching with English vocabulary.

Myanmar vocabulary (written by using English alphabets)	**English vocabulary**
1. Na net sar	breakfast
2. Yaaung/ paw	let's
3. La phye ye saine	tea shop
4. Twar (V)	go
5. Sarr (V)	eat
6. Kaw phee	coffee
7. Hnit	two

After teaching vocabularies, she teaches the sentences by using the words as mentioned above:

A : Na net sar sarr ya aung
Let's go and eat breakfast
B : Bae mar le?
Where?
A : La phye ye saine mar lay.

At the tea shop.

B : Twar kya dar paw.

OK let's go.

A : bar sarr mar le?

What would you like to eat?

B : Ee Kyar Kway net sa muu sar (Here, most of the students don't understand these kinds of food and so Miss Chit Su has to draw the pictures and explain, what they are made of, in English)

5. Discussion

The three teachers use the three perspectives in teaching the students in the classroom although they have the different beliefs, they have the same attitude that English is used as the media for communication. So they all use English as lingua franca in their classroom. Although they use different model respectively in teaching to the students, each one is effective for the students in its own way. To have proficiency in English as a Lingua France, it is essential for teachers and students to attend at the international conferences and seminars, and to have the practice to listen to the accents talked by different speakers who have different mother tongue. The big challenges for Myanmar teachers taught in the international universities are the pronunciations of students from different countries and different levels of students from different contexts.

6. Conclusions

In this paper, it is described the importance of English as Lingua Franca in the world. It mainly focuses on English as lingua franca used in the classroom by Myanmar teachers at Mae Fah Luang University. Both the teachers and the students at MFU are non-native speakers of English and how the teachers teach the students in the classroom is mentioned above. A challenge for teaching staff lies in the recognition of their own use of language and practice in adult education as a possible source of problems or misunderstandings. Weil (2011) claims that this may be related to weak English language skill or lack of awareness of how embedded course content is in local culture.

Although the teachers use different methods in the classroom using English as Lingua Franca (ELF), they have the same point that English is used as lingua franca to be effective in teaching to the students in the classroom. In this paper the researcher has conducted the case study of how Myanmar teachers use English as ELF when teaching Intensive English, Spoken Myanmar Language and Social Science at Mae Fah Luang University, Thailand. It is important to encourage interaction and create a learning context that is comfortable for the learners (Weil,

2011). In Thailand and in Myanmar, English is used as a foreign language. Therefore, it can be concluded that the use of English as a lingua franca between the teachers from Myanmar and the students studying in Thailand is appropriate and effective in teaching in the classroom.

7. Recommendations

The results on this study are significant because they reflect the way English is used as medium language among non-native speakers for EFL purpose. In teaching in EFL classroom. It is noted that lingua franca does not include all the elements that influence intelligibility. However, intonation, words stress, pause and rhythm are needed to emphasize in the class. It should be focused on non-linguistic forms rather than linguistic form to have to have the effect of mutual understanding. To have effective teaching to the students in EFL classroom, the interactive activities like interviewing students each other, role pay, group discussion, and so on to improve their communication skills. This method foster active learning and helps to overcome difficulties encountered from cultural differences. the My study investigates just only Myanmar teachers who use lingua franca in the international university from the foreign country. It is suggested that it is needed to do further research how the other foreigner teachers teach in Myanmar and how they use English in teaching the students from Myanmar universities to be effective in their teaching in the language classroom. Some more research how the Thai teachers teach the international students who come from different countries at the language classroom in Thailand, should also be done.

8. References

Baker, W. (2012). English as lingua franca in Thailand: characterizations and implications. *English in practice, Academia.edu*.Retrieved from May 1, 2012 http://www.academia.edu/3830294/English_as_a_Lingua_Franca_in_Thailand_Characterisations_and_Implications

Danping, W. (2013). The use of English as a lingua franca in teaching Chinese as a *foreign* language: A case study of native Chinese teachers in Beijing. *Language alternation, language choice and language encounter in international tertiary education multilingual education, 5*,161-177. doi: 10.1007/978-94-007-6476-7-8

Kirkpatrick, A. (2007). World Englishes: Implications for international communication and English language teaching. *EA Journal 24* (2) , 27 – 37.

Majanen, S. (2008).*English as a lingua franca: Teachers' discourses on accent and identity* (master's thesis). University of Helsinki, Retrieved from October, 2008 http://www.helsinki.fi/englanti/elfa/ProGradu_Silke_Majanen.pdf

Snow,M.A. (2006). Teaching training for English as a lingua franca.*Annual Review of applied Linguistics 26*, 261 – 281.

Swaan, A. D. (2010). Language system. In N. Coupland (ed.) *Handbook of language and Globalization* (pp.287-288) Oxford: Blackwell.

Ur, P. (2009). *English as a lingua franca and some implications for English teachers.* Retrieved from 2009, http://www.tesolfrance.org/Colloquium09/Ur_Plenary_Handouts.pdf

Weil, M. (2011). English as lingua franca in education – Internationalisation speaks English. *Academia.edu, share research.* Retrieved from 2011, http://www.academia.edu/459366/English_as_a_lingua_franca_in_education_Internationalisation_speaks_EnglishITEM_ENT_ID=5632985&COLLSPEC_ENT_ID=7

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Preparing the Teachers to Meet the Challenges of a Changing World

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Abstract

It is tempting to say that no matter how much technology pushes on education, every teacher will always need to know iconic teacher practices like assessment, curriculum design, classroom management, and cognitive coaching. While receiving training in teacher preparation programs, many teachers are not adequately equipped with the theoretical understanding and professional skills to effectively engage and enable students to become global citizens who can be responsible for creating a more peaceful, environmentally secure and just world (Merryfield, 2000; Pike, 2008; Reimer & McLean, 2009; Weber, Evans, MacDonald, & Ingram, 2013). The urgency of preparing teachers to educate for global citizenship in Myanmar is two-fold. First, Myanmar classrooms are becoming increasingly diverse linguistically, culturally, and ethnically because of a rapid increase in the population. This environment demands that teachers be culturally competent to address the diversity issues and promote inclusive educational practices. Second, globalization has increased interconnectedness among countries, notably in the areas of economic security, culture, technology, health, and peace. This context requires teachers to be pedagogically competent to help students intellectually and morally examine the complex and controversial global issues, act as responsible global citizens for sustainable development of local and international communities, and promote holistic thinking and cross-cultural understanding. Research to date indicates that although teachers recognize the importance of global citizenship as a theme in the university curriculum and interest among them in integrating global citizenship into their practice is high, many teachers lack the confidence and pedagogic skills to educate for global citizenship (Desveaux & Guo, 2011; Kelly, 2004; McLean, Cook, & Crowe, 2006; Reimer & McLean, 2009; Richardson & Blades, 2006; Schweisfurth, 2006; Sears & Hughes, 2006). Teachers need to develop their global competencies in order to teach for 21st century global citizenship. A teacher's global competence refers to a set of skills and knowledge that she/he needs in order: In this 21st century, there have been changes in almost all the aspects of human Endeavour. This has created numerous challenges which need to be tackled by the current educational systems of all nations. One of the aims of education is to train the individuals in societies to acquire appropriate skills to benefit self and also to contribute meaningfully to the development of the society. Such training builds capacity, thus arming the individual to acquire requisite skills, desirable virtues, good morals,

tolerance and other acceptable social behaviour that are valuable in nation building, promoting coexistence and the development of the society. Education has long been recognized as a veritable tool for socialization and the development of positive social behaviours among individuals and groups. Sanders & Rivers (1996) have documented that the most important factor affecting student learning is the teacher.

In this research, participants agreed that identified critical attributes, 21st century literacy and survival skills must be developed and reinforced in learners for effective participation in today's knowledge economy. This research emphasizes that teachers cannot give what they do not have. Therefore a call is made to examine and review teacher preparatory programmes and other support arrangements in the educational system, to adequately prepare teachers for their emerging roles.

Keywords : Preparing the Teacher, Challenges, Changing World

1. Introduction

There are lots of changes taking place in all sectors of the society in the 21st century. Some of the changes are occurring more frequently and at a much more rapid pace than in the preceding centuries. There has been advancement in science and technology, communications, space technology and research. There are also other challenges to human coexistence which include adjustment problems, increased intolerance among individuals and groups, increased poverty, increased financial burdens, religious bigotry, insurgencies and increased criminal activities. Each of these problems presents enormous challenges to the educational system. It is a known fact that youths in nations of the world are regarded as leaders of tomorrow, but the youth cannot play this role except they have been trained. Secondly, moral values and the basic skills for the development of societies are shaped in a decisive manner during adolescence / formative and the youthful period of people's lives. Thus, time is usually spent drawing up appropriate educational programmes to adequately prepare the youths for their future roles. In recent times, adequately educating the youth for their future roles has dominated the agenda of many local and international organization deliberations. Thus developing functional programmes in education is a very complicated and delicate task because programmes in education have to be relevant in the present society of learners and also in the future society in which the learners will live and work in their adult age. For educational programmes to be successful, high caliber professional teachers prepared to uphold the desirable behaviours being sort, have to be brought into the system. With the curriculum at their disposal, the right caliber of teaching, support staff, and an efficient teaching / learning environment, all societal aspirations can be achieved through education.

Rationale for Teacher Preparation for the 21st Century Challenges

Faced with all the changes and challenges discussed above, the educational institution acting as an organ of socialization assumes the enormous task of training individuals who should proffer solutions to these emerging needs in the society to meet the resulting emerging challenges. The focus of this research study therefore is to identify what can possibly be done to improve the teacher's preparedness to meeting the needs of students in the face of the current challenges. To do this, desirable 21st Century survival skills, literacies and other current practices have been examined to bring to light best practices to ensure teachers are sufficiently equipped to pass on the requisite skills to the students. Unfolding developments show that current global knowledge economy is highly competitive as all students now require new skills to acquire university education, careers and citizenship. Thus universities would be seen as outdated if they are unable to graduate students with the requisite skills to meet the needs of today's society. In the words of Wagner (2008b), "In this 21st century, mastery of the basic skills of reading, writing and arithmetic; the 3R's, are no longer sufficient for survival". Almost all jobs now require employees who must know how to solve a wide range of intellectual and technical problems. The Partnership for 21st Century Skills (2010) commenting on the "Fundamental Changes in the Economy, Jobs and Businesses" have noted that there is a shift in skill demands. They explained that individuals today must be able to perform non-routine creative tasks. Thus skills like self-direction, creativity, critical thinking, and innovation are gaining a prominent place in people's life today. It is now a requirement in every aspect of life to think critically, solve problems, communicate, collaborate, find good information quickly and use technology effectively. These are today's survival skills, which are not only for career success, but also for personal and civic quality of life as well (The Partnership for 21st Century Skills, 2010). In many countries of the world, today's students have been referred to as "digital natives" and today's educators as "digital immigrants" (Prensky, 2001). Teachers are working with students whose entire lives are immersed in the 21st century media culture. Today's students are digital learners; because they literally take in the world via the filter of computing devices: the cellular phones, handheld gaming devices and laptops they take everywhere in addition to computers, TVs and game consoles at home (Wagner, 2008b). Additionally, as Wesch (2008) has pointed out that, although today's students understand how to access and utilize these tools, many of them are used for entertainment purposes only, and the students are not media literate. This challenge has to be addressed in the educational system and who is in a good position to do this but the teacher. This buttresses the need for today's teachers to be adequately prepared to teach the students how to use the tools to enable the students become truly media literate as they function in an online collaborative, research-based environment; researching, analyzing, synthesizing, critiquing, evaluating and creating knowledge.

(1) Developing 21st Century Teacher Education

Shaw, Holmes, Preston, Smith, & Bourke (2013) identified three compasses to be followed to develop education that can be categorized as 21st century. According to him, critical attributes must be developed and reinforced in learners for effective participation in today's knowledge economy. The first direction is that the educational programmes must have the critical attributes of being:

(i) Integrated and interdisciplinary
(ii) Student-centered
(iii) Project based and Research-driven
(iv) Relevant, rigorous and Real world
(v) Technologies and multimedia
(vi) Global classrooms and globalization
(vii) Adapting to and creating constant personal and social change and lifelong learning.

(2) Developing Multiple Literacies for the 21st Century

The second emphasis or direction should be in developing multiple literacies for the 21st century. 21st century literacy skills must be developed and reinforced in learners for effective participation in today's knowledge economy. According to Shaw (2013),
this should include:

(i) The Arts and Creativity
(ii) Financial literacy
(iii) Media literacy
(iv) Ecoliteracy
(v) Cyberliteracy
(vi) Social / Emotional literacy
(vii) Physical Fitness and Health literacy
(viii)Global competencies and Multicultural literacy.

All of which describes the various capabilities and competencies needed for successful living in this century.

(3) Developing 21st Century Survival Skills

The third focus she points out should be based on the seven 21st century survival skills identified by Wagner (2008b). Survival skills must be developed and reinforced in learners for effective participation in today's knowledge economy.
The seven survival skills are:

(i) Critical thinking and problem solving
(ii) Collaboration across networks and leading by influence

(iii) Agility and adaptability
(iv) Initiative and entrepreneurialism
(v) Effective oral and written communication
(vi) Accessing and analyzing information
(vii) Curiosity and imagination

According to Wagner (2008b), these seven survival skills can be learned within a curriculum that is interdisciplinary, integrated, and project based. This goes to demonstrate the relevance and interdependence of the three compasses or areas of focus (discussed above) advocated by Shaw (2013) which are critical attributes, multiple literacies and the seven survival skills for the achievement of 21st century education.

2. Methodology

The rapid changes and increased complexity of today's world present new challenges and put new demands on our education system. There has been generally a growing awareness of the necessity to change and improve the preparation of students for productive functioning in the continually changing and highly demanding environment. In confronting this challenge it is necessary to consider the complexity of the education system itself and the multitude of problems that must be addressed. Shaw (2013) identified three compasses to be followed to develop education that can be categorized as 21st century: Developing 21st century teacher education, developing multiple literacies for the 21st century survival skills and developing 21st century survival skills. Participants in this study included 145 university teachers who have diverse teaching experiences. To ensure the anonymity and confidentiality of participants, all names used in this research are pseudonyms. Teachers have been asked to fill in a questionnaire about developing 21st century teacher education, developing multiple literacies for the 21st century and developing 21st century survival skills. The main aim was to explore the ideas and practices of the teachers with different training backgrounds. The questionnaire included three groups of questions which aimed to reveal teacher's thoughts on the preparation of the teachers to meet the challenges of a changing world.

(1) Developing 21st Century Teacher Education (Avg = 67.86%)

The first direction is that the educational programmes must have the critical attributes. In Table 1, 67.86% of the participants describe that the first direction is important for the educational programmes.

Table 1 Responses of the participants on critical attributes of the first direction of the educational programmes (First Direction)

Sr No	Statements of the first direction	Responses		
		Agree	Not Sure	Disagree
(i)	Educational programmes must have the critical attributes of being integrated and interdisciplinary.	66%	15%	19%
(ii)	Educational programmes must have the critical attributes of being student-centered.	90%	-	10%
(iii)	Educational programmes must have the critical attributes of being project based and research-driven.	62%	25%	13%
(iv)	Educational programmes must have the critical attributes of being relevant, rigorous and real world.	50%	27%	23%
(v)	Educational programmes must have the critical attributes of being technologies and multimedia.	74%	10%	16%
(vi)	Educational programmes must have the critical attributes of being global classrooms and globalization.	80%	2%	18%
(vii)	Educational programmes must have the critical attributes of being adapting to and creating constant personal and social change and lifelong learning.	53 %	11%	36%
	Avg	**67.86%**	**12.86%**	**19.29%**

We have learned a great deal from the above table about how to create stronger, more effective teacher education programs. According to the participants, three critical components of such programs include the critical attributes of being student-centered (90%), being global classrooms and globalization (80%), and being technologies and multimedia (74%). The research also urges that education should prepare the reputation of education and the strength of the profession.

(2) Developing Multiple Literacies for the 21st Century (Avg = 59.38%)

The second emphasis or direction should be in developing multiple literacies for the 21st century. Among the participants, 59.38% describes that various capabilities and competencies to develop multiple literacies for the 21st century are needed for successful living in this century.

Table 2 Responses of the participants on critical attributes of the second direction of the educational programmes (Second Direction)

Sr No	Statements of the second direction	Responses		
		Agree	Not Sure	Disagree
(i)	The arts and creativity are needed for successful living in this century.	57%	14%	29%
(ii)	Financial literacy is needed for successful living in this century.	52%	11%	37%
(iii)	Media literacy is needed for successful living in this century.	67%	13%	20%
(iv)	Ecoliteracy is needed for successful living in this century.	70%	7%	23%
(v)	Cyberliteracy is needed for successful living in this century.	47%	3%	50%
(vi)	Social / Emotional literacy is needed for successful living in this century.	41%	11%	48%
(vii)	Physical Fitness and health literacy are needed for successful living in this century.	68%	7%	25%
(viii)	Global competencies and multicultural literacy are needed for successful living in this century.	73%	5%	22%
	Avg	**59.38%**	**8.88%**	**31.75%**

Multicultural literacy refers to the skills involved when uncovering bias in regards to culture, as well as the ability to take different perspectives to gain a more humane perspective. According to the 73% of the participants, it is important for students to be multi-culturally literate because Myanmar itself is very multicultural. Students need to be able to take the perspectives of different cultures to allow them to grow into responsible citizens, who consider other people's opinions. This activity can be integrated with other subject areas. For instance, it can be connected to language arts, where students can research the chosen culture and communicate their findings. In addition, students can write a reflection piece about the research and dance experience. In social studies, students can compare their chosen culture to the culture being studied in class. Students gain a sense of why cultures eat the foods they do, and will build and appreciation for ethnic cuisines.

Ecoliteracy is the ability to understand the natural systems that make life on earth possible. Ecoliteracy is important that comes from the knowledge and consciousness of how nature's living systems operate. To be ecoliterate means understanding the principles of

organization of ecological communities, collaboration, and using these principles for creating sustainable human communities.

(3) Developing 21st Century Survival Skills (Avg = 57.43%)

The third focus has been based on the seven 21st century survival skills identified by Wagner (2008b). Current practices have been examined to bring to light best practices to ensure teachers are sufficiently equipped to pass on the requisite skills to the students

Table 3 Responses of the participants on desirable 21st Century survival skills of the third direction of the educational programmes (Third Direction)

Sr No	Statements of the third direction	Responses		
		Agree	Not Sure	Disagree
(i)	Teachers are sufficiently equipped to pass on the critical thinking skills and problem-solving skills to the students.	37%	34%	29%
(ii)	Teachers are sufficiently equipped to pass on the collaboration across networks and leading by influence on the students.	52%	11%	37%
(iii)	Teachers are sufficiently equipped to pass on the agility and adaptability to the students.	67%	13%	20%
(iv)	Teachers are sufficiently equipped to pass on the initiative and entrepreneurialism to the students.	30%	47%	23%
(v)	Teachers are sufficiently equipped to pass on the effective oral and written communication to the students.	47%	3%	50%
(vi)	Teachers are sufficiently equipped to pass on the accessing and analyzing information to the students.	41%	11%	48%
(vii)	Teachers are sufficiently equipped to pass on the curiosity and imagination to the students.	68%	7%	25%
	Avg	**48.85%**	**18.00%**	**33.15%**

According to 48.85% of the participants, these seven survival skills can be learned within a curriculum that is interdisciplinary, integrated, and project based. This goes to demonstrate the relevance and interdependence of the three compasses or areas of focus advocated by Shaw (2013) which is critical attributes, multiple literacies and the seven survival skills for the achievement of 21st Century education. The participants agree that entrepreneurship education is beneficial to students in higher education.

3. Results

In the fast-changing world of the early 21st century, education is also changing. As part of the changes the role of universities and education will also be different both in the educational system and in the society. Together with them the role of teachers will also change. In this research, I am examining how the new challenges and demands towards education and teachers change universities with modern aims. To be an expert in teaching, like experts in other fields, teachers need to be trained to analyse complex situations and bring to bear many sources of knowledge about how to respond to them. They also have to be trained to have broader and more flexible repertoire of skills they can use to achieve their teaching goals. Meeting this challenge requires much more than simply knowing one's subject matter or discussing ideas about teaching. As teachers become more mature on their jobs some aspects of teaching may become somewhat routine, but they will still be influenced by students' changing needs and unexpected classroom events. Even though in practice many other decisions in teaching cannot be made routine because they are still contingent upon student responses and the particular objectives sought at a given moment, developing routines can be helpful and can free up teacher's attention for other aspects of their work. Thus teacher preparatory programmes should develop in them abilities to analyse and expand their repertoire of teaching strategies, along with the knowledge of when different strategies are likely to be useful and to quickly move from "novice" to expert thinking. That way, they will become more able to deal with many aspects of classroom life and also attend to the intellectual needs of their students. Teachers need to continue to learn all their lives; this ensures their personal and professional growth and development. In addition, the quality of teachers' understandings influence to a large degree what teachers do in the classrooms. Thus the teachers' intentions and actions in the classroom will inevitably be affected by the assumptions they make regarding human nature and human possibilities. If they are limited in their thinking, so limited will be what they will achieve in the classrooms. The quality of teacher's understanding needs to be expanded. This consequently means that as experts in education are concerned about learners acquiring 21st century knowledge and survival skills to effectively play their roles in the world they live in, the same should be applicable to the teachers. The teachers cannot give what they do not possess. To be effective, the teachers too must be trained to acquire these literacy and skills

that they must promote in their classrooms. The discussions so far point to the fact that the 21st century teachers should move from the primary role as dispensers of information to orchestrators of learning and helping students turn information into knowledge, and knowledge into wisdom. As shown above, this century require knowledge generation, not just information delivery, and schools will need to be able to create a "culture of inquiry" to elicit curiosity and imagination in their learners. To this Darlington Hammond (2006) notes that in previous decades, teachers were expected to prepare only a small minority of students for ambitious intellectual work, today they are expected to prepare virtually all students for higher order thinking and performance skills once reserved for only a few.

Research has shown that an inspiring and informed teacher is the most important university-related factor influencing student achievement. The best teacher preparatory programmes should emphasize subject matter mastery and provide many opportunities for teachers to spend time in real classrooms under the supervision of an experienced mentor. Just as professionals in medicine, architecture, law and others, have opportunities to learn through examining case studies, learning best practices and participating in internships, exemplary teacher preparation programmes should allow teacher trainee the time to apply their learning of theory in the context of teaching in a real classroom (Edutopia, 2011). Therefore it is critical to pay close attention to how both new and experienced educators are trained and supported in the educational system. In preparing and supporting teachers to be successful in their roles, it is proposed that three important strategic points during the duration of their involvement in the educational system should be targeted. These should include:

(i) Teacher preparatory programmes should be reviewed and enriched with 21st century literacies and skills to meet today challenges. Mentoring and coaching from veteran instructors and colleagues is critical to the successful development of a new teacher.

(ii) The existence of various induction programmes at the point of their offer of employment into the educational system at whatever level. Induction programmes create opportunities for novice teachers to learn from best practices and analyse and reflect on their own teaching.

(iii) The various developmental programmes in the form of in-service programmes, online courses and other opportunities for collaborations with peers.

Ongoing professional development keeps teachers up to date on new research on how students learn, emerging technology, tools for classroom, new curriculum resources, etc.

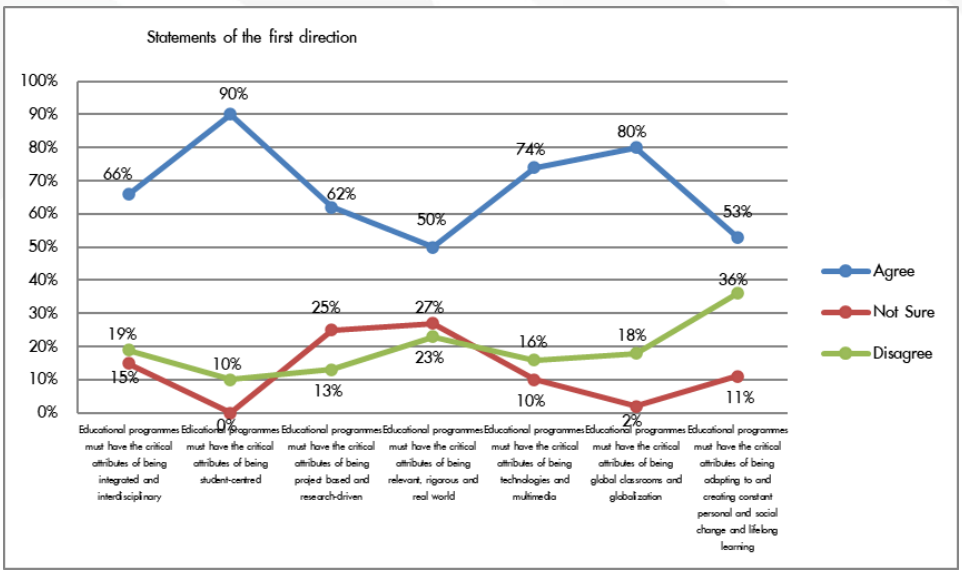

Figure 1 Responses of the participants on critical attributes of the first direction of the educational programmes

According to the data, participants suggest that educational programmes must have the critical attributes of being student-centered (90%) and they must also have the critical attributes of being global classrooms and globalization (80%). These programs are where prospective teachers gain a foundation of knowledge about pedagogy and subject matter, as well as early exposure to practical classroom experience. Although competence in teaching, as in all professions, is shaped significantly by on-the-job experiences and continuous learning, the programs that prepare teachers to work in classrooms can be early and important contributors to the quality of instruction. This research aims to fill that need in the first direction.

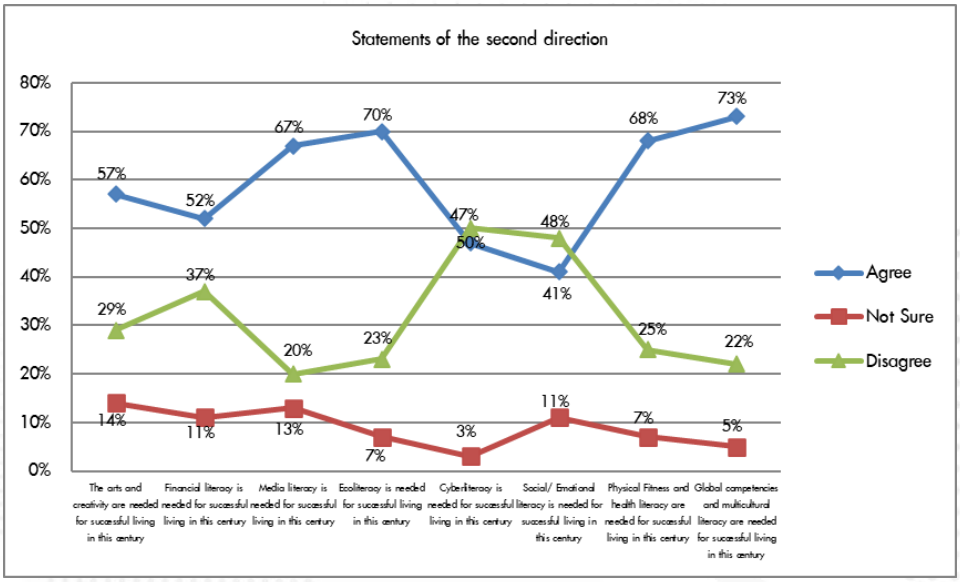

Figure 2 Responses of the participants on critical attributes of the second direction of the educational programmes

In the second direction, 73% of the participants agree that global competencies and multicultural literacy are needed for successful living in this century. Global literacy aims to address issues of globalization, racism, diversity and social justice (Guo, 2014). It requires awareness and action, consistent with a broad understanding of humanity, the planet, and the impact of human decision on both. Participants also agree that Ecoliteracy is needed for successful living in this century. It also aims to empower students with knowledge and take action to make a positive impact in the world and their local community.

Tony Wagner suggests learning environments that prepare students for the work world that awaits them with the help of these Seven Survival Skills: Critical Thinking and Problem Solving; Collaboration across Networks and Leading by Influence; Agility and Adaptability; Initiative and Entrepreneurialism; Effective Oral and Written Communication; Accessing and Analyzing Information; Curiosity and Imagination.

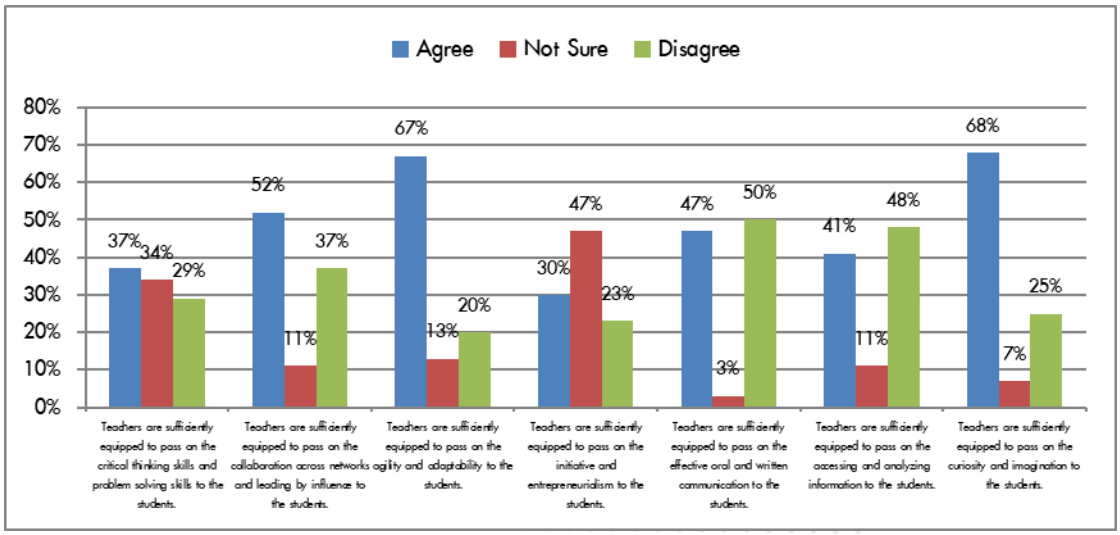

Figure 3 Responses of the participants on desirable 21st Century survival skills of the third direction of the educational programmes

The data states that teachers in higher education understand quite well the limitations of the knowledge they develop about entrepreneurship and to pass on the critical thinking skills and problem-solving skills to the students. That they (the educators) need to better understand the students' journeys so that they can better develop learning environments within which the students' personal development can be advanced.

4. Discussion

The changing educational landscape in the global context and the increasing interconnectedness and interdependence of the world have placed unprecedented demands on

teacher education programs in preparing teachers to educate for 21st century global citizenship at universities. This research has been done based on examining teachers' experiences in learning to educate the students and the challenges and achievements they experienced in educational practices. Findings from this research indicate the unique opportunities and challenges teachers face in learning to educate for global citizenship and suggest the necessity of integrating global citizenship education in teacher education programs through a holistic approach. Teacher development at all stages of a teacher's career is vital to the success of her students and job satisfaction. With this in mind, the teacher educational programmes should include high social and community content because they need to be sensitive to the needs of students and environment, recognize individual differences and collaborative work among educators. This is the trend in today's world. The students are being trained to live in the 21st century society, therefore the skills they should possess, must be those relevant for survival in the society they live in. Thus every educational system in the world must improve and embrace these best practices.

5. Recommendations

In the light of the above and to ensure that teachers are differently prepared to play their roles in the 21st century, the researcher recommends the following:

(i) That appropriate authorities developing policies on teacher education and those supervising teacher preparatory programmes in tertiary institutions and other agencies should review the programmes to make room for the development of 21st century literacies and survival skills.

(ii) That induction programmes for freshly employed teachers into the educational system should be taken more seriously. Deliberately planned induction programmes of specific duration should be put in place. During the induction period, 21st century literacies and survival skills should be re-introduced and or reinforced.

(iii) Need for participation in developmental programmes in the duration of a teacher's career must be emphasized. Promotions and other remunerations should be based on them.

(iv) Re-certification of teachers for continuous participation in the educational system after a specific period should be given serious considerations where such practice is not already in existence. This will go a long way to convince the teachers that a one off teacher training program is inadequate for effectiveness and to reinforce the idea of lifelong learning among teachers.

6. References

Darling-Hammond, L. (2006). Constructing 21st Century Teacher Education. *Journal of Teacher Education.* May/June 2006. Vol.57, No 3, 300-314.

edUTOPIA. (2011). *Why teach with project-based learning? Providing students with a well-rounded classroom experience*. Retrieved 11 August 2011 from http://www.edutopia.org/project-learningintroduction.

Greene, M. (1973). *Teacher as stranger.* New York: Wadsworth.

Sanders, W. L., & Rivers, J. C. (1996). *Cumulative and residual effects of teachers on future student academic achievement. Research Progress Report. Knoxville: University of Tennessee Value-Added Research and Assessment Center.*

Shaw, K. Holmes, K., Preston, K. Smith, M. & Bourke, S. (2013), *ITL research Australia: 2011-2012 phase two report*, Centre for Research Training & Impact (SORTI), The University of Newcastle, accessed 25 January 2018.

Wagner, T. (2008b). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need, and what we can do about it*. New York, NY: Basic Books.

Wesch, M. (2009). *From knowledgeable to knowledge-able: Learning in new media environments*. Academic Commons. Retrieved from http://www. acAdemiccommons. org/ commons/essay/knowledge-knowledge-able on 2 July 2012.

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Perceptions on English Language Teaching and Learning : University Context in Myanmar and Thailand

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Abstract

Language and culture have an inextricable and interdependent relationship. In this era of technology, globalization, immigration and mass media, it is even more imperative for EFL teachers to equip students with high level of intercultural communicative competence. This research focuses to explore the perceptions of Myanmar and Thai University students on English language learning and to investigate the perceptions of Myanmar and Thai University teachers on importance of cultural background knowledge on language teaching. This research addresses university students' perception of English language learning and language teachers' views on importance of cultural background knowledge in language teaching on a comparison between university students in Myanmar and Thailand. This quantitative research investigates perceptions of English language learning and importance of cultural background knowledge in language teaching. The questionnaire was given to language classes at Myanmar and Thai universities with English specializations. A total of 384 Myanmar students and 113 Thai students enrolled in the academic year 2018-2019 in selected universities responded. Moreover, 67 Myanmar university teachers and 54 Thai university teachers' perceptions on importance of cultural background knowledge in language teaching have been also explored. Two sets of questionnaires for students and teachers were used as the research instrument. These questionnaires had to be adapted to make it suitable for use. Each question was measured using a Likert Scale ranging from 1 to 3, with 1 being 'yes', 2 'not sure' and 3 being 'no'. The data collected were analyzed by means of percentage. The relationship between language and culture in teaching university level students is of interest to scholars in the field of language teaching. The results showed that it is important for language learners to understand something of the culture of speakers of the target language. To focus on native language and culture, “cultural fluency” needs to be emphasized. Cultural fluency means familiarity with cultures: their natures, how they work, and ways they intertwine with our

relationships in times of conflict and harmony. This helps students to build communication skills and confidence necessary for social, travel and business situations.

Keywords : Perceptions, Language, Culture, Society, EFL Teaching and Learning

1. Introduction

One of the movements at the tertiary level which affects language teaching is the attempt to standardize foundation courses. As English is compulsory, the Commission of Higher education (CHE) thinks it necessary to monitor English language teaching so that all universities, both governmental and private, will possess the same standards in their courses. Therefore, the Consortium for English compulsory courses was set up in the year 2000 to help develop an English language curriculum. One of the targets aimed at was standardizing the compulsory curriculum by mandating 12 credits or 4 courses and proposing goals and standards for English Foundations I and II. The workshop, which involved representatives from the universities throughout Thailand, was held in order to brainstorm what should constitute the goals and standards. The finalized goals for English Foundations I and II cover the developments of social language and academic language. To develop social language, the students have to be able to use both spoken and written English to communicate in social settings both inside and outside the university. Thus, they would need to know and understand learning strategies to achieve communicative competence. They would also have to be able to recognize and understand cultural differences. With regard to developing academic language, students are expected to access and process information, and to construct knowledge in both spoken and written forms. The objective of learning foreign languages is to facilitate communication, education, and business as it is important for the country to gain economic competitiveness in this era of globalization. We need to learn about other cultures and countries in order to broaden our vision. At the same time, through learning a foreign language, it is expected that students will understand their own Thai culture better and be more able to represent Thai culture. The idea of standardizing language learning has started to cover standardizing students' proficiency by adopting the same measures as some other countries have, which is requiring university students to take an English exit examination before graduating. The provision of an English programme is also a new phenomenon in Thai education as a result of the new National Education Act which encourages the involvement of the community and stakeholders in providing education. It is regarded as one means to help students acquire English by providing more English exposure to the learners. Language and culture have an inextricable and interdependent relationship. Learning a foreign language without learning the culture can only produce a "fluent fool," that is someone who speaks the language well but does not understand the social or philosophical context in which it exists. In this era of technology, globalization,

immigration and mass media, it is even more imperative for EFL teachers to equip students with high level of intercultural communicative competence. The fact that English is the dominant international language means that English is being used more and more in the above interactions and that intercultural competence is needed to successfully negotiate them. Becoming inter-culturally competent involves recognizing differences and variations within one's own culture and within other cultures. Teaching language in isolation cannot make a learner of the language competent in that language. Students need to be aware, for example, of the culturally appropriate ways to address people, express gratitude, make requests, and agree or disagree with someone. They should know that the behaviors and intonation patterns that are appropriate in their own speech community may be considered otherwise by members of the target language speech community. They have to realize that, in order for communication to be successful, language use must be in harmony with the culturally appropriate behavior. Culture refers to the values, norms, and beliefs of a society. Our culture can be thought of as a lens through which we experience the world and develop shared meaning. It follows that the language that we use is created in response to cultural needs. One important question that many intellectuals have asked is how the language that our society uses influences its culture. Anthropologist and linguist Edward Sapir and his student Benjamin Whorf were interested in answering this question. Together, they created the Sapir-Whorf hypothesis, which states that how we look at the world is largely determined by our thought processes, and our language limits our thought processes. It suggests that different languages encode different categories and therefore speakers of different languages think about the world in different ways. With regard to vocabulary, the Sapir-Whorf Hypothesis has been applied to observations that some Eskimo languages have a number of words for snow, while in some Asian languages; the same word may be used for both food and rice. The implication is that snow is an important aspect of Eskimo experience and that in many Asian societies rice is an important staple food. Also, in some Asian languages such as Myanmar and Thai, family members are addressed according to their age and whether they are maternal or paternal relatives, while in English and many other European languages, there are fewer words. This underlines the importance of family ties and hierarchy in many Asian societies, an aspect which is less important in Europe. The implication of this is that words acquire meaning according to how important something is in that society. This may also result in the development of a large vocabulary of words for that particular aspect of reality. In Myanmar, for example, there is a rich vocabulary for the seasons of the year.

1.1 Importance of English Language Learning for University Students

In more traditional societies, EFL students are hardly aware of the importance of cultural orientation. They consider communication as merely the application of grammatical rules in oral and written practice. In some cases, learning about the target culture is seen as a threat to the

native values, and the importance of linguistically relevant information is neglected. Since having a close contact with the target culture and its speakers is a rare opportunity for all language learners in countries from outer and expanding circles (Kachru & Nelson, 2009), learners cannot appreciate the importance of learning the cultural aspects of communication unless they visit a foreign country and experience the difficulties. Nonverbal aspects of target culture are sometimes acquired from movies and TV serials, which are far from being helpful for communicative purposes or may sometimes develop misconceptions or stereotypes. Thanasoulas (2001) claims that culture influences language learning in two important ways: linguistically and pedagogically. Linguistically, culture is significant in the linguistic dimension of the language itself, affecting the semantic, pragmatic, and discourse levels of the language. Pedagogically, it influences the choice of language materials because cultural content of the language materials and the cultural basis of the learning materials are to be taken into consideration while deciding upon the language materials. He argues that in order to master a language, students have to learn both, its linguistic and cultural norms.

1.2 Importance of Cultural Background Knowledge in Language Teaching

In English teaching, teachers should not only pass on knowledge and train learners' competence of utilizing language, but also enhance teaching relative cultural background knowledge.

1.2.1 Necessity of Cultural Background Knowledge in Aural Comprehension

In teaching of aural comprehension, we find many students complain that much time has been spent in listening, but little achievement has been acquired. What is the reason? On the one hand, maybe some students' English is very poor and the material is rather difficult. On the other hand, a more important reason is that they are unfamiliar with cultural background of the USA and England. Aural comprehension, which is closely related to the knowledge of American and British culture, politics and economy, in fact, is an examination of one's comprehensive competence which includes one's English level, range of knowledge, competence of analysis and imaginative power. Maybe we have this experience: when we listen to something familiar to us, no matter what is concerned, usually we are easy to understand. Even if there are some new words in the material, we are able to guess their meanings according to its context. However, when we encounter some unfamiliar material or something closely related to cultural background, we may feel rather difficult. Even if the material is easy, we only know the literal meaning, but can't understand the connotation, because we lack knowledge of cultural background. But students are often unable to understand them without teacher's explanation. In view of this, the introduction of cultural background is necessary in the teaching of English listening.

1.2.2 Necessity of Cultural Background Knowledge in Oral Comprehension

Likewise, speaking is not merely concerned with pronunciation and intonation. Students can only improve their oral English and reach the aim of communication by means of enormous reading, mastering rich language material and acquaintance of western culture. Therefore, in oral training, teachers should lay stress on factuality of language and adopt some material approaching to daily life, such as daily dialogues with tape, magazines, newspapers and report etc., because the material is from real life, and it helps students to be well acquainted with standard pronunciation and intonation, to speak English appropriate to the occasion, to understand western way of life and customs etc. Otherwise, misunderstanding and displeasure are inevitably aroused. Let's look at some examples. Many fixed English ways of expression cannot be changed randomly. During oral communication, speakers need standard pronunciation and intonation, as well as the suitable use of language for the occasion. There are numerous examples that we could cite of expressions that are correct according to grammatical rules, but unsuitable for the occasion.

1.2.3 Necessity of Cultural Background Knowledge in Reading

Reading English articles requires a certain language basis, but the competence of reading comprehension is not entirely related to one's language level. Knowledge of cultural background is also important. Reading is a process affected by integration of one's language knowledge, cultural background knowledge and other professional knowledge, and a process of continuous guesses and corrections according to available language material, cultural background and logical reasoning. Generally speaking, Myanmar people study Myanmar without the difficulties aroused by cultural background. However, when we read English articles, differences between Myanmar and western cultures often bring us many difficulties. Effect of cultural background on reading will be discussed, with some common terms or expressions in reading material, which is often not understood by Myanmar learners who are unfamiliar with western culture, as illustration. Therefore, first of all, a student should learn not to look down on such idioms just because they are made up of such simple and easy words. It is thus clear that difficulties in reading cannot be completely solved by one's language knowledge, because works of a people cannot be separated from the people's cultural tradition. Thus, in teaching reading, a teacher should explain grammatical difficulties as well as expound cultural background.

1.2.4 Necessity of Cultural Background Knowledge in Writing and Translating

Similarly, writing and translating cannot be separated from cultural background knowledge. In translation, even the very simple expressions cannot be dealt without any consideration of specific context and customs. In writing, cultural background knowledge is also important. Why it is that one can fairly easily tell whether an article was written by a Myanmar or by a native speaker of English? On the one hand, it is probably because most Myanmar

students have not yet mastered the language. On the other hand, it is probably because of differences in Myanmar and English writing styles that reflect cultural differences.

1.3 Improving English Teaching of Different Culture

Knowing language forms only is inadequate for English learners. English learning has rich culture meaning. It's not only the process of mastering, but also that of touching and recognizing cultural thought patterns of the English people.

1.3.1 Exploring Culture-based Activities

Linguistic behavior is part of human behavior that differs from culture to culture. The communicative activities here refer to those involving learners' active participation in communication, such as role-play, information-gap activities, problem-solving activities, etc. This technique is useful in which it can help combine with the cultural content and communication-oriented activities.

1.3.2 Excavating the Cultural Information in the Reading Material

Firstly teachers should make good use of the text and help students grasp cultural information in English learning. Secondly, teachers should encourage students to read extensively. To most Myanmar learners, acquisition of knowledge of western culture, mainly depend on reading material, while literal works is the richest material through which we can know something about a people's psychology, cultural characters, customs and habits, social relations etc.

1.3.3 Using Authentic Materials

Using authentic sources from the native speech community helps to engage students in authentic cultural experiences. Sources can include films, news broadcasts, and television shows; Web sites; and photographs, magazines, newspapers, restaurant menus, travel brochures, and other materials. Teachers can adapt their usage of authentic materials to suit the age and language proficiency level of the students. For example, even at the beginning students can watch and listen to video clips taken from a television show in the target language and focus on such cultural conventions as greetings. The teacher might supply students with a detailed translation or give them a chart diagram of outline to complete while they listen to a dialogue or watch a video. Teacher can also pick up some materials pertaining to some aspects of culture revealed in newspapers or magazines and to the discussions of certain questions that might elucidate Western patterns of behavior. Moreover, it can ring in cultural input in a clear and realistic way as compared with traditional instruction.

Aim and Objectives

This research aims to address university students' perception of English language learning and language teachers' views on importance of cultural background knowledge in language teaching on a comparison between university students in Myanmar and Thailand. The objectives of this research are to explore the perceptions of Myanmar and Thai University students

on English language learning and to investigate the perceptions of Myanmar and Thai University teachers on importance of cultural background knowledge on language teaching.

2. Methodology

This research first defines what culture is in the EFL context. Then it focuses on why it's important to incorporate target culture in EFL classroom. The questionnaire was given to language classes at Myanmar and Thai universities with English specializations. A total of 384 Myanmar students and 113 Thai students enrolled in the academic year 2018-2019 in selected universities responded. Moreover, 67 Myanmar university teachers and 54 Thai university teachers' perceptions on importance of cultural background knowledge in language teaching have been also explored. Two sets of questionnaires for students and teachers were used as the research instrument. These questionnaires had to be adapted to make it suitable for use. Each question was measured using a Likert Scale ranging from 1 to 3, with 1 being 'yes', 2 'not sure' and 3 being 'no'. The data collected were analyzed by means of percentage. There is a discussion on why making a bridge between the learners' own culture and the target culture is so important. The paper will also discuss perceptions of English language learning and importance of cultural background knowledge in language teaching. Finally, the paper recommends different strategies to make learning culture meaningful for students, so that they develop intercultural communicative competence.

2.1 Participants

The questionnaire was given to language classes at Myanmar and Thai universities with English specializations. Out of 500 questionnaires sent out, 384 Myanmar students and 113 Thai students responded. Moreover, university teachers' perceptions on importance of cultural background knowledge in language teaching have been also explored (n=121: 67 Myanmar teachers and 54 Thai teachers). The survey was done using a convenience sampling method; hence the results are not necessarily a true reflection of the views of the entire student and teacher bodies of the Universities concerned.

2.2 The Instrument

The instrument used consisted of two sets of questionnaires. These questionnaires had to be adapted to make it suitable for use. Each question was measured using a Likert Scale ranging from 1 to 3, with 1 being 'yes', 2 'not sure' and 3 being 'no'. The student questionnaire covered two areas:

1) Perceptions of university students on English language learning

2) Perceptions of university teachers on importance of cultural background knowledge in language teaching

Also, the teacher questionnaire covered four areas:

1) Cultural background knowledge in aural comprehension

2) Cultural background knowledge in oral comprehension
3) Cultural background knowledge in reading
4) Cultural background knowledge in writing and translating

3. Findings

3.1 Perceptions of University Students on English Language Learning

As Myanmar moves towards further democratization, the country is rapidly emerging as an attractive travel destination. English proficiency is crucial for the young generation to gain employment in the emerging market. English is also seen as an important educational qualification. The aim of the study was to explore the students' perceptions on English language learning from Myanmar and Thai universities. The outcomes are highlighted below. Table 1 shows the comparison between Myanmar and Thai students' perceptions on English language learning in term of percentage distribution.

Table 1 The comparison of Myanmar and Thai students' perceptions on English language learning (n=497: 384 Myanmar university students and 113 Thai university students)

Sr No.	Statements	Responses					
		Myanmar Students			Thai Students		
		Yes	Not Sure	No	Yes	Not Sure	No
1	I like learning English.	85%	11%	4%	51%	26%	23%
2	I don't think that English is an important subject at university.	28%	21%	51%	44%	22%	34%
3	I think that English may be important in future.	82%	11%	7%	50%	16%	34%
4	English is not important in the world.	12%	7%	81%	30%	37%	33%
5	My parents think that English may be important in future.	68%	17%	15%	52%	35%	13%
6	My family does not think that English is an important subject on University.	17%	26%	57%	44%	38%	18%
7	It is easy for me to learn English.	19%	40%	41%	42%	22%	36%
8	Learning English is fun.	53%	19%	28%	40%	29%	31%
9	I always like to attend English classes.	63%	13%	24%	32%	35%	33%
10	I like to write emails in English.	49%	36%	15%	40%	34%	26%

Table 1 (Continue)

Sr No.	Statements	Responses					
		Myanmar Students			Thai Students		
		Yes	Not Sure	No	Yes	Not Sure	No
11	I think that games and related class activities are an important part of English teaching.	53%	29%	18%	67%	24%	9%
12	I think that many of the games and activities that are often used in class are silly and a waste of time.	33%	22%	45%	15%	13%	72%
13	I learn English just to pass exams.	33%	18%	49%	49%	17%	34%
14	I think that we should learn more grammar in class.	67%	18%	15%	42%	22%	36%
15	I think that we should have more reading in class.	55%	18%	27%	50%	19%	31%
16	I think that English teaching should focus on language that is close to our chosen subjects and professions.	57%	23%	20%	48%	31%	21%
17	I think that we need to be taught only by native speaking teachers at university.	34%	30%	36%	69%	22%	9%
18	I think that we need to be taught only by local teachers at university.	27%	38%	35%	26%	31%	43%
19	I think that we need to be taught by both native speaking teachers and local teachers at university.	79%	16%	5%	61%	16%	23%
	Average	**48%**	**22%**	**30%**	**45%**	**25%**	**29%**

According to table 1, 48% of Myanmar university students and Thai university students (45%) give the positive perceptions on the importance of English. No significant difference is found in the perceptions of both university students concerning with the importance of English language learning. Language is created and shaped by the needs of a culture as it changes. In order to prevent cultural misunderstandings with native speakers, the promotion of cultural understanding is vital to language. In Table 2, the comparison of Myanmar and Thai students' perceptions on culture can be seen in percentage distribution.

Table 2 The comparison of Myanmar and Thai students' perceptions on culture (n=497: 384 Myanmar university students and 113 Thai university students)

Sr No.	Statements	Responses					
		Myanmar Students			Thai Students		
		Yes	Not Sure	No	Yes	Not Sure	No
1	I think that learning English can help me understand Western culture.	75%	17%	8%	47%	18%	35%
2	I enjoy listening to English language songs.	52%	24%	24%	33%	20%	47%
3	I visit English language websites when I surf the internet.	48%	34%	18%	51%	36%	13%
4	I like to read English language readers.	54%	24%	22%	46%	22%	32%
5	I watch English language television shows.	49%	23%	28%	35%	31%	34%
6	I like to watch English language news shows	43%	38%	19%	55%	35%	10%
7	I enjoy singing English songs.	51%	31%	18%	39%	17%	44%
8	I like to read English newspapers.	40%	41%	19%	14%	25%	61%
9	I think that all western countries and cultures are similar.	17%	49%	34%	12%	36%	52%
10	I think that TV shows and films can give us an accurate idea of western culture.	61%	32%	7%	48%	28%	26%
11	I enjoy reading about western countries.	51%	19%	30%	62%	16%	22%
12	I enjoy watching documentaries of western countries.	48%	25%	27%	57%	19%	24%
13	As so many books, films and television shows are available in English, I think that it is important for me learn English.	74%	9%	17%	59%	31%	10%
14	I am interested in western myths and other stories.	35%	28%	37%	37%	24%	39%
15	I am interested in western music and artists.	54%	21%	25%	62%	26%	12%
	Average	**50%**	**28%**	**22%**	**44%**	**26%**	**31%**

Fifty percent of Myanmar students and 44% of Thai students give the positive response that culture is a vital role in learning English as it can help them understand other culture. There is no great difference with the perceptions of the importance of culture between Myanmar and Thai university students. Language not only reflects and expresses facts and observations, it also influences attitudes and behavior and is a vital component of the cultural prerequisite underlying societal development. The language that we speak influences our cultural identities and our social

realities. Table 3 indicates the results of the comparison of society based on the perceptions of Myanmar and Thai students.

Table 3 The comparison of Myanmar and Thai students' perceptions on society (n=497: 384 Myanmar university students and 113 Thai university students)

Sr No.	Statements	Responses					
		Myanmar Students			Thai Students		
		Yes	Not sure	No	Yes	Not sure	No
1	I like to talk with foreigners in English.	61%	12%	27%	67%	13%	20%
2	I can travel around the world if I can speak English well.	83%	14%	3%	47%	27%	29%
3	English will be useful if I can travel abroad.	85%	5%	10%	58%	21%	21%
4	I am happy to attend English activities if there are any.	56%	22%	22%	26%	25%	49%
5	I like to look at job opportunities in English speaking countries.	48%	25%	27%	27%	31%	42%
6	I would like to study in an English speaking country.	70%	16%	14%	67%	19%	14%
	Average	**67%**	**16%**	**17%**	**49%**	**23%**	**23%**

According to the collected data, the difference between the perceptions of Myanmar and Thai students concerning with society can be seen in table 3. The responses of Myanmar students are more positive than Thai students.

3.2 Perceptions of University Teachers on Importance of Cultural Background Knowledge in Language Teaching

It is necessary for teachers to pass on cultural background knowledge to students. Cultural plays are an important role in language. They are linked closely. It means learning the ways in which their language reflects the ideas, customs, and behavior of their society, learning to understand their "language of the mind". Table 4 shows Myanmar university teachers' perceptions on importance of cultural background knowledge in language teaching.

Table 4 Myanmar and Thai university teachers' perceptions on importance of cultural background knowledge in language teaching (n= 121)

Sr No	Statements	Responses					
		Myanmar			Thai		
		Important	Not Sure	Not Important	Important	Not Sure	Not Important
1	Cultural background knowledge in aural comprehension	75%	19%	6%	79%	16%	5%
2	Cultural background knowledge in oral comprehension	70%	22%	8%	67%	18%	15%
3	Cultural background knowledge in reading	76%	19%	5%	71%	11%	18%
4	Cultural background knowledge in writing and translating	84%	14%	2%	80%	7%	13%
	Average	**76%**	**19%**	**5%**	**74%**	**13%**	**13%**

The results suggested that the teacher participants responded language is a mirror which reflects the entire culture, and every nation has its own culture. According to the support of (76%) of Myanmar university teachers and (74%) of Thai university teachers, there is no difference between Myanmar and Thai university teachers in that language learning is inseparable from the understanding of cultural background knowledge and it will be convenient if there is cultural background knowledge in language teaching.

3.2.1 Improving English Teaching of Different Culture

In successful teaching and study of both language and cultural background knowledge, cultural introduction contributes to foster students' cultural consciousness of target language. By doing so, students can improve their English comprehensive capacity and cultural communication of the target language. Table 5 shows Myanmar and Thai university teachers' perceptions on improving English teaching of different culture.

Table 5 Myanmar and Thai university teachers' perceptions on improving English teaching of different culture (n=121: 67 Myanmar university teachers and 54 Thai university teachers)

Sr No	Statements	Responses					
		Myanmar			Thai		
		Important	Not Sure	Not Important	Important	Not Sure	Not Important
1	Exploring culture-based activities						
A	This technique is useful in which it can help combine with the cultural content and communication-oriented activities.	72%	19%	9%	78%	11%	11%
B	This will not only show how well the learners understand them, but also help give them a vivid impression.	74%	25%	1%	66%	13%	21%
Average		**73%**	**22%**	**5%**	**72%**	**12%**	**16%**
2	Excavating the cultural information in the reading material						
A	Firstly teachers should make good use of the text and help students grasp cultural information in English learning.	62%	24%	14%	59%	15%	26%
B	Secondly, teachers should encourage students to read extensively.	52%	38%	10%	73%	11%	16%
Average		**57%**	**31%**	**12%**	**66%**	**13%**	**21%**
3	Using authentic materials						
A	Using authentic sources from the native speech community helps to engage students in authentic cultural experiences. Sources can include films, news broadcasts, and television shows, Web sites, and photographs, magazines, newspaper, restaurant menus, travel brochures and other materials.	69%	20%	11%	60%	28%	12%
B	It can ring in cultural input in a clear and realistic way as compares with traditional instruction.	73%	18%	9%	76%	16%	8%
Average		**71%**	**19%**	**10%**	**68%**	**22%**	**10%**

The results suggested that (73%) of the teacher participants responded that the effective classroom activities can be characterized in many norms. From the above table, we can know that an effective method and practical technique of teaching culture is very important in language teaching, so every teacher should realize its importance and necessity, and find some practical techniques to carry out culture teaching in language teaching. Table 5 also shows Thai university teachers' perceptions on improving English teaching of different culture. The results suggested that the teacher participants responded that the majority of teachers (72%) think that activities with a cultural focus in the language classroom are very important. According to the respondents regarding activities, it is interesting to observe that discussions about cultural differences, current events, some form of cultural awareness or intercultural communication training and culture-related activity types may significantly influence in the English classroom.

The relationship between language, culture and society is central to the field of sociolinguistics. Ho (1998) says: 'Sociolinguists study the relationship between language and society. They are interested in explaining why we speak differently in different social contexts, and they are concerned with identifying the social functions of language and the ways it is used to convey social meaning.' People live in societies that have a strong influence on their lives, opinions and beliefs. Wardaugh (2002) defines a 'society' as 'any group of people who are drawn together for a certain purpose or purposes'. He stresses that, in this definition 'society' is necessarily brief in order to be comprehensive, as 'society' is a broad concept, given the many different societies that exist. Culture is also linked to society and language, and can have different meanings depending on how it is viewed, for example, aesthetically, sociologically, semantically, and pragmatically (Fasold, 1985). Figure 1 shows the responses of Myanmar and Thai students' perceptions on language, culture and society in English language learning.

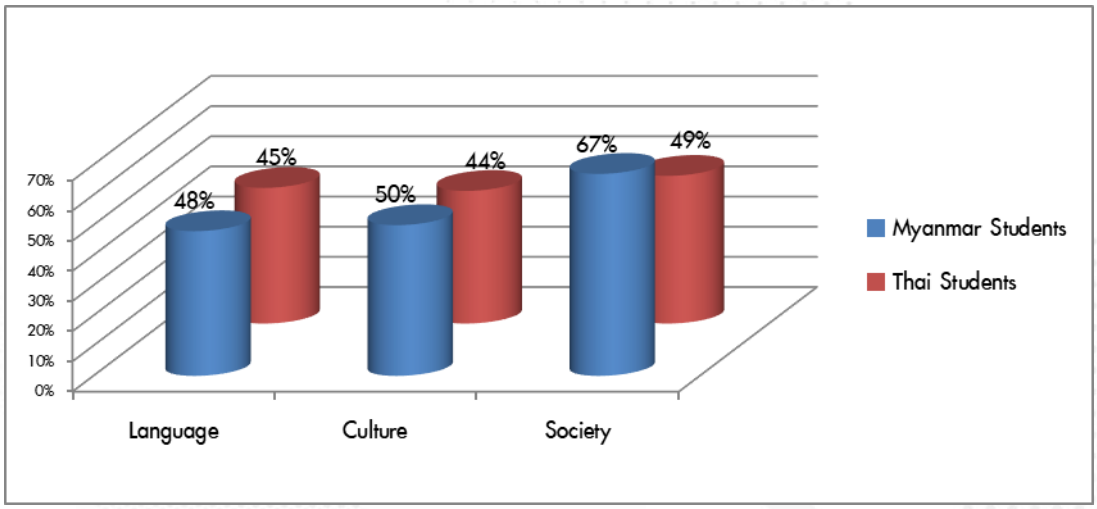

Figure 1 The comparison between Myanmar and Thai students' perceptions on language, culture and society (n= 497: 384 Myanmar university students / 113 Thai university students)

In summary, according to Table 1, the student participants have a strong interest in Western culture and see learning English as a key to getting to know Western culture better. The students from Myanmar universities appear to be more interested in engaging themselves in Western culture than their counterparts. The respondents suggest that teachers need to spend more time on teaching Grammar and Reading, and also try to incorporate games and activities into their lessons. Whilst Myanmar university students see the value in using games as a teaching tool (53% agree), they are not as passionate about it as Thai students (67% agree). The need for a mixture of both native and local teachers was highlighted by students from both universities. To reinforce their learning, student participants should be encouraged to write more, including emails, and also try to follow English language news (either written or spoken). Figure (2) shows the perceptions between Myanmar university teachers and Thai university teachers on importance of cultural background knowledge in language teaching.

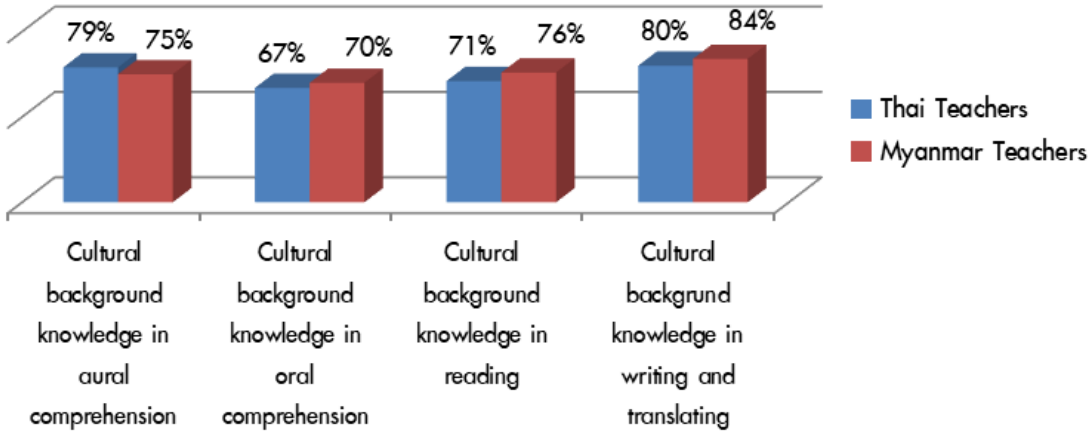

Figure 2 Myanmar and Thai university teachers' perceptions on importance of cultural background knowledge in language teaching (n = 121: 67 Myanmar university teachers / 54 Thai university teachers)

The result shows that the percentages of the cultural background knowledge in aural comprehension, in oral comprehension, in reading and in writing and translating are nearly the same so both Myanmar and Thai university teachers accept that the cultural background knowledge is very important in language teaching. Among them, Myanmar university teachers (84%) and Thai university teachers (80%) agree that the cultural background knowledge in writing and translating is one of the most important factors. Language is a part of culture, and plays a very important role in the development of the culture. Some sociologists consider it as the keystone of culture. They believe, without language, culture would not be available. At the same time, language is influenced and shaped by culture, it reflects culture. Therefore, Figure 3 shows that

culture plays a very important part in language teaching which is widely acknowledged by Myanmar and Thai teachers.

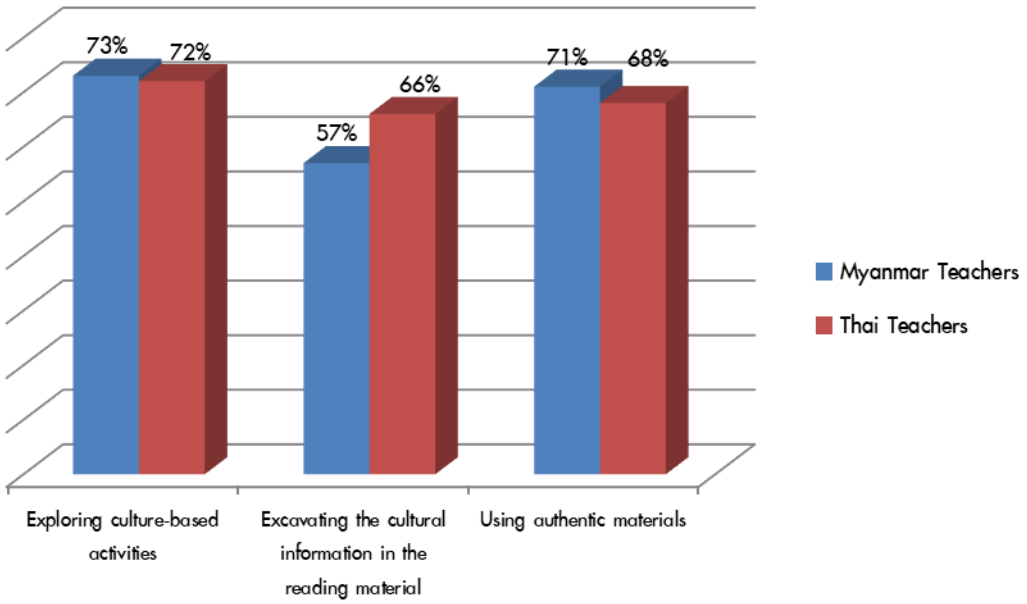

Figure 3 Myanmar and Thai teachers' perceptions on improving English teaching of different culture (n = 121: 67 Myanmar university teachers / 54 Thai university teachers)

This figure depicts on improving English teaching of different culture. As a result, exploring culture-based activities is one of the most important factors (over 70%) in English teaching and study, followed by using authentic materials and excavating the cultural information in the reading material. Among the students, lacking of cultural background knowledge can, to a great extent, hold up the improvement of English teaching and become a noticeable problem. After having analyzed the problems in English teaching caused by cultural differences, I put forward some proposals to introduce culture in a limited range. To sum up, teachers should let learners not only pay attention to cultural differences but also try to understand and study the differences to avoid misunderstanding in study and communication. It is necessary for students to be taught directly and develop their awareness of cultural background knowledge in order to overcome the obstacles produced by cultural differences. All in all, cultural factors play an important role in English teaching. The aim of English teaching is to foster students' comprehensive English capability by learning language and its culture. In successful teaching and study of both language and cultural background knowledge, cultural introduction contributes to foster students' cultural consciousness of target language. By doing so, students can improve their English comprehensive capacity and cultural communication of the target language. This accomplishes the target of foreign language teaching.

4. Discussion

In more traditional societies, EFL language teachers are hardly aware of the importance of cultural orientation. Studying culture is also useful for teaching students to understand their own culture. Students' world view is determined by the values of their own culture. This can lead to problems when they are confronted with different cultures. One of the problems resulting from the use of the target culture in ELT is the fear that the students will be influenced by the target culture and lose their own identity since this may be categorized as linguistic imperialism. This idea is, according to Ariffin (2006), excellent because students are encouraged to discover similarities between their culture and the target language culture, which could bring about common understanding and tolerance.

There is a great need for language learners to understand why people think and speak the way they do, and to understand possible agreements that may be in place between a culture, society and its language. Integrated studies of language and culture are essentially needed if language learners are to become competent language users. This will help learners of a second or other language, to note that there are many varieties of the target language. English language teaching professionals should always try to encourage their students to express matters that are important to their lives and how effectively to communicate their concerns, cultural viewpoints and personal interests by using English as a meaningful interchange with people of other countries, and to relate what it means to be a member of their specific societies and cultures in a positive way to others globally.

5. Conclusion

As language and culture are intertwined, learning and teaching a language not only means learning grammar and sentence structure but also culture of it. Without understanding or knowing its culture, it is impossible for both students and teachers to teach or learn a language. Therefore, the role and value of culture is always the challenging task for both students and teachers. When we speak and write in a foreign language, we all construct our sentences by the thoughts of our mother tongue. As our mother tongue and English have a very different culture, the constructed sentences can be meaningless and misunderstood for the native English people. For communication is the main reason of learning a language, understanding the English culture well can make our purpose of learning a language accomplish.

6. Recommendation

Thus, more emphasis should be placed on learning a language through culture in classrooms. English activities such as role-plays, playing learning games, pair work, group discussion should be introduced to students occasionally to create active and practical learning

atmosphere in the classroom. Since language learning cannot only be learnt from textbooks or in classrooms, teachers should select and introduce authentic materials for students such as English songs, English movies (with or without subtitles), newspapers, television programs etc. and design cultural-related learning strategies for students such as using colourful visuals, using actual objects, and so on. So that students will be more and more familiar with different culture and they may be proficient in language and can use it in the real society. As learning and teaching is the two sides of a single coin, language teachers should learn about culture specifically to lecture students clearly. And they should be theoretically and practically trained to formulate concrete teaching goals, make a perfect lesson plan, develop cultural related activities (according to their objectives and lesson plan) and arouse students' interest and motivation before and during teaching. To sum up, understanding the culture behind the language can give both teachers and students a complete understanding of the language use and its collocations in society, especially when the mother tongue is totally different from English. To be good language users, both teachers and students need to understand well and emphasize on the deep relationship between language, culture and society.

7. References

Ariffin, S. (2006), Culture in EFL teaching: Issues and solutions. *TESL Working Paper Series , 4* (1).

Brace, I. (2008), *Questionnaire design: How to plan, structure, and write survey material for effective market research.* Kogan Page Publishers

Byram, M. & Grundy, P. (Ed.). (2003). *Context and culture in language teaching and learning.* Short Run Press Ltd.

Byram, M. and Morgan, C. (1994). *Teaching and learning language and culture*, Multilingual Matters.

Darasawang, P., English in Southeast Asia: Varieties, Literacies and Literatures Newcastle, *English Language Teaching and Education in Thailand: A decade of Change*. Retrieved October 2007 pp. 187-204 D from Prescott (ed.) Cambridge Scholars Publishing.

Fasold, R. (1985). *The sociolinguistics of society.* Wiley-Blackwell.

Hinkel, E. (1999). *Culture and second langauge teaching and learning*. Cambridge University Press.

Kachru, B. B., Kachru, Y. & Nelson, C. (2009). *The handbook of world Englishes.* Wiley-Blackwell.

Kramsch, C. (1998). *Language and culture* (Oxford: Oxford University Press,

Thanasoulas, D. (2001). *Radical Pedagogy: The importance of teaching culture in the foreign language classroom*. Retrieved October 3, 2005 from the International Consortium for the Advancement of Academic Publication Web site: http://radicalpedagogy.icaap.org/content/issue3_3/7-thanasoulas.html

Wardhaugh, R. (2002). *An introduction to sociolinguistics* (Fourth Ed.). Oxford: Blackwell Publishers.

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Myanmar Context : Challenges of Implementing Critical Thinking in the EFL Classroom

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Abstract

The purpose of the current study was to investigate English language teachers' practice of critical thinking skills and the challenges they face while teaching skills in EFL classrooms. Four research questions were investigated to achieve this purpose. The sample was drawn from 12 selected universities: 6 universities from upper Myanmar and another 6 universities from lower Myanmar. The total number of Myanmar EFL university teachers who participated in the questionnaire survey was 124: 25 males and 99 females working in different universities across the country and 55 senior EFL university teachers were involved in open-ended questionnaire through answering four open-ended questions sent to them via Facebook messenger. To accomplish the objectives and fulfill the purpose of the study, the study employed a set of questionnaires and four open-ended questionnaires sent via FB messenger with senior teachers we needed to discuss the research questions during the 2018- 2019 academic year. English language teachers are trained to teach language skills, but they do not always learn how to teach the critical thinking skills that help guide learning. Critical thinking involves reflection and the analysis of ideas. Good critical thinkers are able to break a broad idea into many parts. This task was difficult for anyone and required practice. Thinking critically is even more challenging when done in a second language. This quantitative research explores the conceptions, implementation and challenges of critical thinking in the EFL classroom. The content analysis applied to the participants' answers revealed different conceptions of critical thinking. It also revealed that the majority of the participants implemented critical thinking in different aspects of their teaching. The study results reported some challenges that EFL teachers face when teaching critical thinking; these are related to lack of sufficient time, difficulty of measurement and lack of effective communication. Nevertheless, the development of this kind of thinking for 21st century EFL learners is a necessity, not an option.

Keywords : Myanmar Context, Challenges, Critical Thinking, EFL Classroom

1. Introduction

In recent years, English language teaching and research in Myanmar has witnessed a significant increase in the emphasis upon critical thinking skills development alongside language proficiency. Fostering a perspective of commitment to teaching critical thinking skills in line with the English language courses, this research reports on a study conducted at selected Myanmar Universities. Critical thinking skills are part of many curriculum guidelines, but some teachers may be unsure how to teach these skills. According to Davidson (1998), critical thinking means making reasoned judgments that are logical and well-thought out. It is a way of thinking in which we do not simply accept all arguments and conclusions we are exposed to but rather have an attitude involving questioning such arguments and conclusions. It requires wanting to see what evidence is involved to support a particular argument or conclusion. The 21st century has witnessed significant changes in all aspects of life, including education. Students should develop different skills from those developed by students in the last century. 21st century universities as well should prepare students for a different social life, a different economic world and a more demanding and skills-oriented workplace. It is the century of digital literacies, technological advances, multicultural societies, human mobility, global communication, social networking, innovations and creativity and inclusiveness. In other words, 21st century students need to develop the necessary 21st century skills. Like other countries, Myanmar aims to develop its education in all aspects of methods of teaching, learning materials and assessment strategies for all subjects in order to prepare its citizens for living effectively in the changing globe. This study therefore aims to investigate some Myanmar EFL university teachers' conceptions and implementation of 'Critical Thinking' as a 21st century skill and to explore their views about the challenges they encounter in this process. This investigation was conducted through answering these questions:

a. What are the Myanmar EFL university teachers' conceptions of critical thinking?

b. What are the challenges these teachers encounter in integrating critical thinking in their teaching?

1.1 Critical Thinking

The concept of critical thinking applies to all sorts of knowledge and implies the true engagement of learners in the process of knowledge construction through reflecting and thinking deeply (Brown & Keeley, 2007). Curiosity and questioning are necessary characteristics of those who think critically as they always try to find answers for the questions they raise. The term appeared in the literature in the mid-twentieth century through critical philosophy (Lipman, 1991) with the notion of looking for evidence to support claims or beliefs (Suhor, 1984). Brown and Keeley (2007) defined critical thinking in terms of a set of qualities and abilities including: (1) awareness of a set of interrelated critical questions; (2) ability to ask and answer critical questions at appropriate times; and (3) the desire to actively use the critical questions. Throughout this

research, the concept of critical thinking will be defined according to these characteristics. These ideas implied: questions raising, questioning views, ideas and research results, evaluating information, analyzing and selecting materials, reflective reasoning, formulating and defending opinions, encouraging learner autonomy and independent learning, making sound decisions, problem solving and identifying subjective views (of their own and of others) and weaknesses and strengths.

1.2 Critical Thinking in the EFL Classroom

The literature provides strong evidence for the successful integration of critical thinking in EFL classroom instructions and for realizing language learners' criticality and language competence. In this regard, Brown and Keeley (2007) recommended training students to ask the right questions in order to develop their ability to react critically to written essays, websites, claims and arguments. This will also promote their abilities for judging the quality of lectures and lessons, forming their own arguments, writing critical essays and participating in class. Some active-participative methods and techniques for working in small groups can develop critical thinking. Davidson (1998) believed in the value of debates, media analyses, problem solving tasks and self and peer assessment for promoting students' critical thinking and highlighted the benefits of encouraging students to raise questions for the same purpose. Teachers should act as facilitators to create a critical thinking atmosphere. Similarly, Bassham, Irwin, Nardone, & Wallace (2011) outlined some interesting activities for promoting critical thinking in the language classroom including: (1) developing a critical mind set; (2) opinion and reason generator; (3) critical questioning; (4) recognizing context; (5) making connections between topics; (6) evaluating the reliability of sources; (7) stance; (8) identifying main arguments and supporting evidence; (9) fact or opinion; (10) vague or accurate; (11) where is it from?; (12) reading between the lines; (13) false conclusions; (14) writing headlines; (15) find the expression; (16) predicting the content of the text; (17) practicing the language for expressing critical thinking; (18) a for-and-against essay; (19) preparing a group discussion; (20) assessing presentation. In performing all these activities in classrooms, the teachers have to modeling critical thinking as this gives students not only a model, but also scaffolding and helps in building trust between teachers and students (Suhor, 1984).

1.3 Challenges of Implementing Critical Thinking in the EFL Classroom

Introducing innovations into educational contexts is often faced by resistance and challenges. Zainuddin, & Moore (2003) referred to the misunderstanding of the conception and the difficulty of promoting in actual teaching. Some teachers' conservative educational ideology with traditional attitudes and beliefs about teaching and learning is another serious challenge. This ideology shapes these teachers' teacher-centered approaches of teaching which do not promote critical thinking. The principal of critical thinking philosophy is not to limit, influence or interfere with learners' freedom to question and criticize. Any correction or intervention of the teacher with

students' choices or decisions will be considered as imposition of his / her views on them and as a violation of critical thinking principles. Therefore, creating an inquiry-based learning environment in classrooms and offering learners' sufficient opportunities for practicing this thinking represents a main task for language teachers. Zainuddin & Moore (2003) investigated the challenges that faced promoting critical thinking among Chinese college students and suggested some strategies for overcoming these challenges. Most of the challenges were related to the different roles of teachers and students. By the same token, Aliakbaria and Sadeghdaghighib (2013) explored the views of 100 EFL educators about the barriers to critical thinking implementation and found students' attitudes and expectations, self-efficacy constraint and teachers' lack of critical thinking as major obstacles. They highlighted the importance of surrounding the learner with those who practice critical thinking as this can lead him to develop similar attitudes and practices.

Aim and Objectives

The current study aims to investigate English language teachers' practice of critical thinking skills and the challenges they face while teaching skills in EFL classrooms. Therefore the objectives of the study are to investigate some Myanmar EFL university teachers' conceptions and implementation of 'Critical Thinking' as a 21st century skill and to explore their views about the challenges they encounter in this process.

2. Methodology

This study adopts a mixed method approach of investigation. One hundred and twenty-four Myanmar EFL university teachers working in different universities across the country participated in questionnaire survey and 55 senior EFL university teachers were involved in open-ended questionnaire through answering four open-ended questions sent to them via Facebook messenger. They were selected as colleagues of the researchers and this encouraged them to willingly participate and to write full answers. The data were collected by distributing questionnaires to teacher participants through Facebook messenger during 2018- 2019 academic year and they were analyzed by means of thematic method. The questions in data collection were:

1) What does 'critical thinking mean to you?

2) Have you integrated critical thinking in any aspect of your teaching (method, materials, assessment)? If yes, please write some examples of this integration.

3) What are the challenges of implementing critical thinking in your classroom?

4) What are the effective strategies for promoting critical thinking in language classrooms?

The thematic method was applied for analyzing the participants' responses to open-ended questions as this method has been found useful, comprehensive and flexible for analyzing

qualitative data. Thematic analysis is a method of analyzing qualitative data. It is usually applied to a set of texts, such as open-ended questions. The researchers closely examine the data to identify common themes – topics, ideas and patterns of meaning that come up repeatedly. The questionnaire consists of five Likert-scale items. The scales were coded including 1 = strongly disagree, 2= disagree, 3= fairly agree, 4= agree, and 5= strongly agree.

3. Results

The results of the study's survey suggest that the ultimate majority of those teachers recognize the central role played by critical thinking in effective language pedagogy. The results also indicate teachers' preference for aligning their teaching methods with the functional-communicative approach, related to Ennis' (2011) critical thinking categories. Participants also suggest practical aspects of critical thinking teaching methodologies in the English language classroom to more holistically prepare students for further academic studies and their future careers in the workplace.

3.1 Questionnaire Responses

The respondents reported their highest positive attitude towards item (8) that examined their perception of "the need of Myanmar teachers for more training about how to teach critical thinking skills". On the contrary, the lowest % was announced for item (4) that examined the teachers' reflections of Myanmar students' general critical thinking skills. This indicated that teachers were heterogeneous in terms of their attitudes towards "inevitability to increase the role of critical thinking into the curriculum". Despite that, the responses were found to be uniform and homogeneous with respect to item (8) that inspected teachers' viewpoints towards "the need for more training about how to teach critical thinking skills". The following figure depicts the participants' responses for each item.

Table 1 Responses of the Myanmar participants on attitude questionnaire items (n=124)

Sr No	Items	Responses				
		1 = Strongly disagree	2 = Disagree	3 = Fairly agree	4 = Agree	5 = Strongly agree
1	I have a clear idea of what the term 'critical thinking' means.	21	37	26	21	19
2	Teaching critical thinking skills is an important part of my job as a teacher.	2	13	33	47	29

Table 1 (Continue)

Sr No	Items	Responses				
		1 = Strongly disagree	2 = Disagree	3 = Fairly agree	4 = Agree	5 = Strongly agree
3	I build critical thinking explanations and exercises into most of my lessons.	17	19	36	28	24
4	Myanmar students in general are good at critical thinking.	43	19	26	11	25
5	It is necessary to increase the role of critical thinking into the curriculum.	9	16	42	31	26
6	It is the job of the teachers to teach critical thinking in the classroom.	16	25	37	31	15
7	Critical thinking is especially important in language teaching.	20	21	22	41	20
8	Myanmar teachers need more training about how to teach critical thinking skills.	0	0	1	23	100

Critical thinking is the foundation of strategic thinking, creative thinking, good judgment and good decision making. Good critical thinking results in the ability to draw the right conclusions more often. The good news is that there is substantial evidence showing that critical thinking can be improved with training. According to the data, teaching critical thinking skills is an important part of my job as a teacher (item 2). Even the most capable and creative teachers depend on well-written curriculum. The participants agree that it is necessary to increase the role of critical thinking into the curriculum (item 5). To improve student performance on critical thinking tests, universities must improve teacher training. They must learn cognitive skills to teach in the classroom (item 8).

3.2 Responses to Open-ended Questions

In order to investigate what EFL teachers in Myanmar think about “critical thinking”, we recently conducted a survey with statements about the topic to which teachers were asked to agree or disagree using an open-ended questionnaire of 3 Likert-scale items.

Table 2 Responses of the senior university teachers on open-ended question 1: What does 'critical thinking' mean to you? (n = 55)

Sr No	What does 'critical thinking' mean to you?	Responses		
		Agree	Not Sure	Disagree
1	It means thinking twice, thinking out of the box and reflecting on what to do and knowing how to do it.	20	21	14
2	It means asking, analyzing, participating and giving feedback.	12	16	27
3	Critical thinking is to let the learner/student know about their mistakes and weaknesses. Instead of only marking the mistakes, the instructor can make that in the form of questions that may help the learner/student find an alternative for their wring answer.	29	13	13
4	It is helpful to teach them think of the dimensions of making correct answers. Knowledge is about HOW and WHY things are so and so, not about HOW MUCH the student/learner has in his/her memory.	19	11	25
5	Students have to be makers of knowledge, not only users. No need for making more copies of old products.	37	11	7
6	Critical thinking is a way of changing and solving learning problems. It is a strategy of thinking about thinking that improves student work in order to be of good quality by making judgments, applying assessment forms and dealing with knowledge constructions.	40	5	10
7	To think clearly and rationally. The thinker (the student) analyzes the knowledge or data and makes his own idea about the knowledge. Thus students will acquire new knowledge that enables them to analyze, criticize independently.	41	7	7
8	It means developing students' ability to think deeply while processing new information.	36	9	10
9	Critical thinking is a new concept for me.	27	22	6
10	It is not related to language teaching and learning. It is about psychology.	3	18	34

In the above table, participants reported that critical thinking refers to the individuals' ability to think and make correct decisions independently (item 7). Therefore, through managing

the ways of assessing language learners' ability, language teachers can help them develop critical thinking skills. Critical thinking skills, according to the participants, include good quality by making judgments, applying assessment forms and dealing with knowledge constructions (item 6). The last one, as defined in item 5, means students have to be makers of knowledge, not only users. As a result, three major myths about critical thinking were found to be most common among Myanmar EFL teachers.

Thinking critically is more than just thinking clearly or rationally; it is about thinking independently. It means formulating your own opinions and drawing your conclusions regardless of outside influence. It is about the discipline of analysis and seeing the connections between ideas and being wide open to other viewpoints and opinions. Teachers can use these techniques for teaching critical thinking skills in every lesson and subject. Table 3 shows the responses of the participants on open-ended question 2: Have you integrated critical thinking in any aspect of your teaching?

Table 3 Responses of the senior university teachers on open-ended question 2: Have you integrated critical thinking in any aspect of your teaching (method, materials, assessment)? If yes, please write some examples of this integration. (n=55)

Sr No	Have you integrated critical thinking in any aspect of your teaching (method, materials, assessment)? If yes, please write some examples of this integration.	Responses		
		Agree	Not Sure	Disagree
1	I develop critical thinking through using two main wh-words namely, why and how. Such questions always urge my students to think twice between the lines.	18	12	25
2	Concerning materials, I usually consider my students' background knowledge and use it as a starting point for my lectures.	31	10	14
3	I use critical thinking when I teach courses such as teaching methodology, language testing, instructional strategies and speaking and listening	19	15	21
4	I raise some controversial questions to create discussions.	20	9	26
5	I sometimes use assessment to motivate my students to encourage to participate.	22	22	11
6	I use wh-question words and I insist on applying what is being learned rather than just restating what is represented.	33	10	12
7	In teaching Translation courses, the students have to know why their translations could be wrong and what if some words are replaced with others.	24	19	12

Table 3 (Continue)

Sr No	Have you integrated critical thinking in any aspect of your teaching (method, materials, assessment)? If yes, please write some examples of this integration.	Responses		
		Agree	Not Sure	Disagree
8	In writing courses, the compositions produced by students can be raised and checked with critical feedback.	30	19	6
9	I encourage students to give opinions and make careful judgments about the good and bad written assignments.	41	8	6
10	In reading, I always ask the students to read and think critically to reflect on what they read. The other teachers did not integrate critical thinking in their teaching. Some of them believed that this concept is not relevant to language teaching and learning.	4	11	40

According to the data, some of the teachers did not integrate critical thinking in their teaching. A few teachers added that they themselves do not have the ability to think critically and therefore it is not easy for them to integrate it in their teaching. They think neither the teachers nor the students are ready for this kind of teaching and learning. Table 4 shows the challenges reported by the participants were mostly context-based and related to students, teachers, university and home.

Table 4 Responses of the senior university teachers on open-ended question 3: What are the challenges of teaching critical thinking in your classroom? (n=55)

Sr No	What are the challenges of teaching critical thinking in your classroom?	Responses		
		Agree	Not Sure	Disagree
1	Student's inability to cope with this kind of thinking	22	10	23
2	Students' inefficiency or awareness about critical thinking of different issues	21	12	22
3	Lack of sufficient time	38	4	13
4	Difficulty of measurement	31	9	15
5	Lack of effective communication	30	10	15
6	Lack of problem-solving skills	28	11	16
7	Home environment is not helpful for creating good thinkers.	25	12	18
8	Lack of facilities that help in implementing learning activities for promoting critical thinking in language classrooms	21	10	24

Based on the responses of the participants, teaching critical thinking skills is a necessity with students because they are crucial for living life. As such, every teacher is looking for exciting ways to integrate it into classrooms. Research data shows that the main cultural challenges are lack of sufficient time, difficulty of measurement and lack of effective communication. Table 5 shows the responses of the participants on open-ended question 4.

Table 5 Responses of the senior university teachers on open-ended question 4: What are the effective strategies for promoting critical thinking in language classrooms? (n=55)

Sr No	What are the effective strategies for promoting critical thinking in language classrooms?	Responses		
		Agree	Not Sure	Disagree
1	Urging students to look for reasons, implied messages, and possible application for what is being learned	40	5	10
2	Promoting team work	41	6	8
3	Less direct questions. More critical, indirect and deep questions	33	10	12
4	Brainstorming for solving problems or to create good ideas	34	6	15
5	Giving enough time for implementing critical thinking	42	5	8
6	Using comparison and contrast tasks to develop critical thinking	40	7	8

Critical thinking has been an important issue in education, and has become quite the buzzword around universities. Critical thinking is a skill that young minds will undeniably need and exercise well beyond their university years. Fortunately, teachers can use a number of techniques that can help students learn critical thinking. According to the participants, there are some effective strategies that may prove immediately effective: Giving enough time for implementing critical thinking, promoting team work and using comparison and contrast tasks to develop critical thinking.

4. Discussion

According to the result of table (1), critical thinking skills like all skills take time, patience, and practice to develop. As senior university teachers, it's important to start trying to engage critically with the students, lecturers and tutors, and learning material, even if they feel that this does not come easily or naturally to them. The respondents reported their highest positive attitude towards item (8) that examined their perception of "the need of Myanmar teachers for more

training about how to teach critical thinking skills". On the contrary, the lowest frequency was announced for item (4) that examined the teachers' reflections of Myanmar students' general critical thinking skills. This indicated that teachers were heterogeneous in terms of their attitudes towards "inevitability to increase the role of critical thinking into the curriculum". Despite that, the responses were found to be uniform and homogeneous with respect to item (8) that inspected teachers' viewpoints towards "the need for more training about how to teach critical thinking skills". The following figure depicts the participants' responses for each item.

Concerning with the attitude responses of 124 senior teachers on attitudinal questionnaire items, teachers can teach critical thinking with certain limitations. Even within a single domain critical thinking is a complex, higher-order skill that is hard to learn and even harder to transfer across domains. Thus, Myanmar teachers wanted to improve their critical thinking overall. There are some trainings and tactics they need to practice thinking strategies across domains. Critical thinking might be described as the ability to engage in reflective and independent thinking. In essence, critical thinking requires you to use your ability to reason. It is about being an active learner rather than a passive recipient of information.

In regard to the different ideas of 55 senior university teachers on open-ended question 1, most of the participants consider that the best definition of critical thinking skills is making reasoned judgments that are logical and well-thought out. Teaching critical thinking skills is a necessity with our students because they are crucial in any aspect of our teaching (method, materials, and assessment). As such, every teacher is looking for exciting ways to integrate it into classrooms. Critical thinking is one of the important skills that will benefit the students throughout their lives.

Concerning with this fact, the responses of 55 senior university teachers on open-ended question 2 were that starting with a question is the most straightforward way into the subject. When you pose your question to students, encourage brainstorming. Having open discussion with students is a big part of solving the problems. In today's connected world, it's more important than ever that students know how to think for themselves, spot a flawed argument or recognize a biased view. Teaching students how to question what they see and read can help them become better problem solvers and decision makers.

The responses of 55 EFL teachers on attitude with whether the method, materials and assessment are integrated in critical thinking in any aspect of their teaching are clearly shown. For the responses of the senior university teachers on interview 3, students are probably used to thinking creatively, but not critically. Although willing to be more critical, many students do not recognize which step to take next in order to develop their critical skills. Without the capability to think critically, every circumstance that a student comes across would be in isolation from all other circumstances.

Based the responses of 55 EFL teachers on attitude with the challenges of teaching critical thinking in their classroom, the capability to develop a well thinking within a reasonable time framework is a competence that learners evaluate greatly. Like any other competences, learning to think reasonable or being problem-solver needs time and practice. We also found out that today's teachers had to realize that they are facilitators of learning, who must promote communication, collaboration, critical thinking and creativity into the classrooms.

In relation to the responses of the senior university teachers on open-ended question 4: What are the effective strategies for promoting critical thinking in language classrooms? , critical thinking skills lie at the heart of education. One of the easiest and most effective ways to get the students to think critically is to brainstorm. Give students every opportunity you can to be critical thinkers. Group settings are the perfect way to get the students thinking. Encouraging students to make connections to a real life situation and identify patterns is a great way to practice their critical thinking skills. When students are around their classmates working together, they get exposed to the thought processes of their peers. They learn how to understand how other people think and their way is not the only route to explore.

Integrating critical thinking in teaching English in Myanmar universities represents a challenging task for teachers and its development seems to be a far-reaching goal for students. There are different factors intertwined to complicate the integration of this 21st century skill. Although most of the participant teachers reported different experiences about their implementation of this skill in their teaching, they all agree about the existence of serious challenges that hinder this implementation. Some of the participants' definitions of critical thinking reflect their different understandings of this concept. This variation was reflected in their reference to the aspects of teaching in which they integrated critical thinking. These participants shared the belief about the possibility of integrating this kind of thinking in teaching all language skills. Regarding the fundamental principles of critical thinking, most of the participants implied these principles in their definitions. Relevant notions such as reflection, problem-solving, raising questions, constructive learning, thinking about thinking, decision-making, self-assessment, rationality and ideas generation were either clearly stated or implied in the participants' definitions. A few teachers admitted their lack of understanding of this concept and they questioned its relevance and usefulness for language teaching and learning. They believed that EFL teachers should focus more on developing students' communication skills which represents the main goal of language learning. However, teachers still need to implement more tasks and activities that challenge students' cognitive abilities in order to engage them in deep thinking. Therefore, the universities should offer their teachers training courses and workshops about the appropriate integration of critical thinking in language education. It is also important to focus on promoting the teachers' positive attitudes towards this notion. The training framework should cover the most important areas for developing this kind of thinking

among the teachers. Contextually and culturally speaking, assessing critical thinking seems to be a very challenging task for the teachers in Myanmar universities. They suggested encouraging students to look for reasons, to raise questions and to analyze information as effective strategies for enhancing critical thinking. Involving students' in reflecting on their own works and on the works of their peers is another technique reported by the participants.

5. Conclusion

Developing student's critical skills is one of the major concerns of foreign language teachers. Professional teachers and novice ones try to find ways to motivate their students. Developing communicative competence requires students to develop learning strategies and focus on language function and context. In every course assignments, learners understand and realize better that communication is not an easy thing. Developing accuracy and fluency in foreign language classes enhance students critical thinking too. However, What is critical thinking? What is the perception of learners about it? What communicative activities can foreign language teachers use in the classroom to enhance student's critical thinking? These are some research questions that this paper brings in focus, from theory to practice. It was found that developing critical thinking skills help learners to learn how to use language for different purposes in a variety of contexts. Foreign language teachers can help learners develop critical thinking skills. In this paper, some suggestions for foreign language teachers to use practical activities to foster critical thinking will be presented. Thus, in English language learning and teaching contexts, critical thinking becomes more dynamic. English language classrooms represent an appropriate context for implementing critical thinking. EFL teachers can integrate it in different aspects of teaching and learning including methods of instructions, strategies of assessment and learning materials. The ideal method for fostering this kind of thinking among students is through providing them with a model of critical thinker instructor and engaging them in tasks and activities that involve analysis, synthesis, reflection and solving problems. Providing an appropriate atmosphere for developing this skill is a multidisciplinary process and requires cooperation and mutual understanding among all those who are involved in the teaching/learning process.

6. Recommendation

The findings of this study have useful implications for promoting EFL learners' critical thinking. Reading this paper can enhance EFL teachers' awareness about the importance of developing this kind of thinking among their students and they can also learn about the strategies and activities they can implement to achieve this goal. Policy makers and course designers can understand their role in this process and identify the kind of support they should offer for universities and teachers.

7. References

Aliakbaria, M.; Sadeghdaghighib, A. 2013. Teachers' perception of the barriers to critical thinking. *Procedia - Social and Behavioral Sciences, vol. 70*. doi: 10.1016/ j.sbspro.2013.01.031. www.sciencedirect.com.

Bassham, G., Irwin, W., Nardone, H., & Wallace, J. M. (2011). *Critical Thinking: A student's Introduction*. New York: McGraw-Hill.

Brown, M.N. and S.M. Keeley, 2007. *Asking the right questions: A guide to critical thinking*. Pearson Prentice Hall: New Jersey. Coffey, H. 2016. Bloom's Taxonomy.

Davidson, B. (1998). A case for critical thinking in the English language classroom. *TESOL Quarterly*, 32.

Lipman, M. (1991). *Thinking in education*. Cambridge: Cambridge University Press

Suhor, C. (1984). *Thinking skills in English — And across the curriculum*. (ERIC Document ReproductionService No. ED 250693)

Zainuddin, H., & Moore, R. A. (2003). Enhancing critical thinking with structured controversial dialogues. *The Internet TESL Journal, 9 (6)*.

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Self-reported Foreign Language Anxiety and Test Anxiety of University Students: Myanmar Context

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Abstract

Anxiety in the context of the foreign language classroom is a form of anxiety that is usually aroused by a certain type of situation. In a broader research context, MacIntyre (1998) observed that language anxiety is a form of situational anxiety, and emphasized that research on the topic should employ measures of anxiety experienced in specific second language (L2) contexts. Test anxiety is 'a set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences or failure on an exam or similar evaluative situation' (Pintrich and Schunk, 1992). In testing situations, it is argued that test anxiety may represent a bias that conceals students' true potential (Meijer, 2001). This study aimed at investigating the foreign language anxiety and test anxiety of university students in Myanmar. Another purpose of this study was to see whether there is any relationship between foreign language anxiety and test anxiety. A questionnaire was distributed to 200 Myanmar university students to understand the nature and degree of the examined relationships. However, only 103 students of English as a foreign language at tertiary level participated in this study. Means, standard deviations, the internal consistency for each factor, and zero-order correlations among the three factors were calculated. Correlation and multiple regression of the anxiety factors were then conducted. Results confirmed that test anxiety factor was a significant positive predictor of language anxiety. Most students did not perceive themselves to be very anxious in their university settings, either in classrooms or in testing situations. The differential perspectives of anxiety revealed from both analyses indicate that a better understanding of language classroom anxiety and test anxiety can help students and teachers optimize their foreign language learning and teaching practices. In the present study, the Foreign Language Classroom Anxiety Scale (FLCAS) and Test Anxiety Scale (TAS) were used to measure foreign language anxiety and test anxiety, respectively. Analyses indicated a strong positive relationship between foreign language anxiety and test anxiety. Therefore, English teachers are recommended to try to reduce both language anxiety and test anxiety by creating a friendly and supportive atmosphere in class, encouraging students' involvement in class activities, and teaching some anxiety-reducing strategies to the students.

Keywords : Foreign Language Anxiety, Test Anxiety, University Context

1. Introduction

In current research of EFL, a great deal of effort has been devoted to establishing the role of psychological factors in the success or failure of the learners. Among these psychological factors are affective factors with "anxiety" as one of their sub-categories. Foreign language anxiety is the feeling of unease, worry, nervousness and apprehension experienced in learning or using a second or foreign language. Test anxiety is defined as a fear of failing that one feels before or while taking an important examination that prevents him / her from performing as well as he / she otherwise could on the exam. Some individuals are more predisposed to anxiety than others and may feel anxious in a wide variety of situations. Horwitz (2010) considered language anxiety as distinct from general anxiety and identified three components of foreign language anxiety:

(i) communication apprehension, arising from learners' inability to adequately express mature thoughts and ideas;

(ii) fear of negative social evaluation, arising from a learner's need to make a positive social impression on others; and

(iii) test anxiety, or apprehension over academic evaluation.

They developed their Foreign Language Classroom Anxiety Scale (FLCAS) based on these three components. However, for test anxiety, they just considered foreign language test anxiety. According to the data, language anxiety has the first two above-mentioned components. However, test anxiety is the third component of foreign language anxiety. The results showed that test anxiety is an anxiety problem in general and is not specifically related to the foreign language learning context. Administering both types of questionnaires in one study enjoys two advantages: first, we can compare their effects on foreign language test performance to see the effects of which one is more prominent. Second, we can see whether there exists any relationship between these two types of anxiety or not. Therefore, the purpose of the study is to investigate the foreign language anxiety and test anxiety. We also want to see whether there is any relationship between these two types of anxiety themselves. Horwitz (2010) describes three components of foreign language anxiety: communication apprehension, fear of negative social evaluation, and test anxiety.

Test Anxiety Scale

Since anxiety and foreign language learning are correlational in nature, it is difficult to distinguish the causality of this relationship. Some scholars believe that it is poor performance which leads to higher anxiety. Others believe that anxiety is a cause of poor performance rather than its consequence. Moreover, it is worth studying the foreign language anxiety and test anxiety because it helps foreign language teachers know which type of anxiety they should try to reduce more than the other one. This study was conducted to fill this gap. To be more specific, the research questions of this study are stated as follows.

Research Questions

The main research question is addressed in this study:

(i) Is there any relationship between language anxiety and test anxiety?

(ii) How are both language anxiety and test anxiety related to foreign language test performance?

2.Method

Participants

The participants of this study were 103 students of English as a foreign language at selected universities in Myanmar. To make sure that differing levels of language proficiency would not affect the results of the test, the students at the same level were chosen. The participants of this study were all at the level of intermediate. Since only a few male students (31 students) cooperated with the researchers, the majority of participants were female (72 students). The age of the participants ranged from 18 to 21.

Instrumentation

Two questionnaires were used in this study. One of them measured foreign language anxiety and the other one measured test anxiety.

(i) Foreign Language Classroom Anxiety Scale

The first questionnaire is called Foreign Language Classroom Anxiety Scale (FLCAS) developed by Horwitz (2010). It is a 33-item, five-point Likert scale questionnaire. The answers to each item can be one of these: strongly agree; agree; neither agree nor disagree; disagree; and strongly disagree. For each item a score was given ranging from 5 for strongly agree to 1 for strongly disagree. For negatively worded items, namely items number 2, 5, 8, 11, 14, 18, 22, 28 & 32 (see Table 1), the order of scoring was reversed, so that a higher score would be an indicator of higher anxiety (Aida, 1994). The FLCAS has been used in different studies.

(ii) Test Anxiety Scale

The second questionnaire is called Test Anxiety Scale (TAS) developed by Sarason (1975). The TAS, which is based on the theory and evidence that test anxiety is composed of test-relevant and test-irrelevant thinking, consists of 37 items. The original answers to the questionnaire were dichotomous, but they were changed to a five-point scale (1= completely disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = completely agree) by In'nami (2006). For the negatively worded statements, namely items number 3, 15, 26, 27, 29 & 33 (see Table 2), the order of scoring was reversed, and the students with greater anxiety received a higher score (In'nami, 2006).

Both of the above-mentioned questionnaires were translated into Myanmar. The reason for using the Myanmar translation of the questionnaires was that the students were chosen

from the same level of language proficiency and they might not have understood all the items in the questionnaires clearly. Even if they were chosen from advanced levels, their lack of understanding of one or some of the items of the questionnaires would affect the results. So the questionnaires were translated. Moreover, some studies (In'nami, 2006) which used these questionnaires for non-English students also used a translated version. Before administering the questionnaires, it was explained to participants that they should answer the items of the first questionnaire (FLCAS) about their feelings and attitudes in their English class and answer the items of the second questionnaire (TAS) about their feelings about an exam which can be any exam, not just their English class final exam. The participants were also asked about their profile information to enable the researcher to obtain their final exam grades later.

Procedures and Data Collection

The questionnaires used in this study were given to the students. It was explained to the participants that they were participating in a research study, and that filling out the questionnaires. The questionnaires were administered to classes of students. The average number of the students in each class was 50. At the end, 207 completed questionnaires were collected. They were kept aside. From these 207 students, 200 participants remained in the study. Finally, the data in each questionnaire were calculated once by one researcher and another time only 103 students gave the complete answers according to the method. Then, the data gathered in this way were analyzed as described below.

Data Analysis

In the present study, there were two sets of data: the FLCAS scores and the TAS scores. For the FLCAS and the TAS, some descriptive statistics were also offered for each of their items. In fact, for each item, the number of students who had opted for each choice was counted. These statistics help the readers understand which areas of language learning create more anxiety in learners. The next step was to answer the research questions.

2. Results

Before trying to answer the research questions, the descriptive statistics of the results are provided in Table 1. Table 1 shows the number of the students who chose each choice of each item in FLCAS.

2.1 Foreign language anxiety experienced by undergraduate students

Table 1 revealed that significant foreign language anxiety was experienced by many students in foreign language learning.

Table 1 Information about the FLCAS areas which are more anxiety-provoking for the students (n=103)

Sr No	Items	Responses				
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1	I never feel quite sure of myself when I am speaking in English.	41 (40%)	32 (31%)	4 (4%)	10 (10%)	16 (15%)
2	I don't worry about making mistakes in English class.	12 (12%)	13 (13%)	20 (19%)	35 (34%)	23 (22%)
3	I tremble when I know that I'm going to be called on in English class.	17 (16%)	39 (38%)	13 (13%)	19 (18%)	15 (15%)
4	It frightens me when I don't understand what the teacher is saying in English.	22 (21%)	31 (30%)	19 (19%)	21 (20%)	10 (10%)
5	It wouldn't bother me at all to take more English classes.	26 (25%)	31 (30%)	18 (18%)	23 (22%)	5 (5%)
6	During English class, I find myself thinking about things that have nothing to do with the course.	19 (19%)	33 (32%)	21 (20%)	24 (23%)	6 (6%)
7	I keep thinking that the other students are better at English than I am.	41 (40%)	20 (19%)	11 (11%)	23 (22%)	8 (8%)
8	I am usually at ease during tests in my English class.	17 (17%)	25 (24%)	20 (19%)	31 (30%)	10 (10%)
9	I start to panic when I have to speak without preparation in English class.	36 (35%)	23 (22%)	20 (19%)	18 (18%)	6 (6%)
10	I worry about consequences of failing my English class.	19 (18%)	26 (25%)	18 (18%)	22 (21%)	18 (18%)
11	I don't understand why some people get so upset over English classes.	21 (20%)	20 (19%)	16 (16%)	31 (30%)	15 (15%)
12	In English class, I can get so nervous I forget things I know.	22 (21%)	23 (22%)	20 (20%)	32 (31%)	6 (6%)
13	It embarrasses me to volunteer answers in English class.	33 (32%)	20 (19%)	15 (15%)	21 (20%)	14 (14%)
14	I would not be nervous speaking English with native speakers.	10 (10%)	16 (16%)	27 (26%)	32 (31%)	18 (17%)
15	I get upset when I don't understand what the teacher is correcting.	36 (35%)	23 (22%)	20 (19%)	16 (16%)	8 (8%)
16	Even if I am well prepared for English class, I feel anxious about it.	38 (37%)	16 (15%)	15 (15%)	21 (20%)	13 (13%)
17	I often feel like not going to my English class.	17 (16%)	28 (27%)	11 (11%)	34 (33%)	13 (13%)
18	I feel confident when I speak in my English class.	11 (10%)	14 (14%)	26 (25%)	38 (37%)	14 (14%)
19	I am afraid that my English teacher is ready to correct every mistake I make.	22 (21%)	24 (23%)	20 (20%)	21 (20%)	16 (16%)

Table 1 (Continue)

Sr No	Items	Responses				
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
20	I can feel my heart pounding when I am going to be called on in my English class.	19 (19%)	25 (24%)	20 (19%)	30 (29%)	9 (9%)
21	The more I study for an English test, the more confused I get.	11 (11%)	20 (19%)	22 (21%)	34 (33%)	16 (16%)
22	I don't feel pressure to prepare very well for English class.	16 (16%)	18 (17%)	15 (15%)	37 (36%)	17 (16%)
23	I always feel that the other students speak English better than I do.	27 (26%)	28 (27%)	16 (16%)	30 (29%)	2 (2%)
24	I feel very self-conscious about speaking English in front of other students.	9 (9%)	13 (13%)	21 (20%)	43 (42%)	17 (16%)
25	English class moves so quickly that I worry about getting left behind.	28 (27%)	25 (24%)	17 (17%)	25 (24%)	8 (8%)
26	I feel more tense and nervous in my English class than in my other classes.	28 (27%)	29 (28%)	21 (21%)	24 (23%)	1 (1%)
27	I get nervous and confused when I am speaking in my English class.	26 (25%)	22 (22%)	26 (25%)	27 (26%)	2 (2%)
28	When I am on my way to English class, I feel very sure and relaxed.	16 (16%)	23 (22%)	18 (18%)	26 (25%)	20 (19%)
29	I get nervous when I don't understand every word the English teacher says.	21 (20%)	26 (25%)	17 (17%)	26 (25%)	13 (13%)
30	I feel overwhelmed by the number of rules we have to learn to speak English.	22 (21%)	23 (22%)	20 (20%)	25 (24%)	13 (13%)
31	I am afraid that the other students will laugh at me when I speak English.	23 (22%)	31 (30%)	19 (19%)	21 (20%)	9 (9%)
32	I would probably feel comfortable around the native speakers of English.	16 (15%)	14 (14%)	12 (12%)	38 (37%)	23 (22%)
33	I get nervous when the English teacher ask questions which I haven't prepared in advance.	31 (30%)	26 (25%)	20 (20%)	21 (20%)	5 (5%)

We investigated the students' lack of confidence and anxiety of Myanmar learners of English as a foreign language. Their results in Table 1 revealed that most of their participants were willing to participate in interpersonal conversations, but they did not like risk using / speaking English in class (item 1). In addition, more than one third of them felt anxious in their English language classrooms (item 16). The participants' unwillingness to communicate and their foreign language anxiety correlated with each other and with their own rating of their English proficiency. This research has examined language learners who are studying at universities and who use language inside and outside the classroom.

Table 2 shows the number of the students who chose each choice of each item in the TAS.

2.2 Test anxiety experienced by undergraduate students

This table is included to provide the reader with more information about the areas which are more anxiety-provoking for the students.

Table 2 Information about the TAS areas which are more anxiety-provoking for the students (n=103)

Sr No	Items	Responses				
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1	I find myself thinking of how much brighter the other students are than I am.	22 (21%)	25 (24%)	19 (19%)	20 (19%)	17 (17%)
2	If I were to take an intelligence test, I would worry a great deal before taking it.	24 (23%)	27 (26%)	18 (18%)	20 (19%)	14 (14%)
3	If I knew I was going to take an intelligence test, I would feel confident and relaxed, beforehand.	24 (23%)	26 (25%)	17 (17%)	22 (21%)	14 (14%)
4	While taking an important examination I perspire a great deal.	23 (23%)	27 (26%)	11 (11%)	21 (20%)	21 (20%)
5	During course examination I find myself thinking of things unrelated to the actual course material.	3 (3%)	5 (5%)	22 (21%)	26 (25%)	47 (46%)
6	I get to feel very panicky when I have to take a surprise exam.	23 (22%)	24 (23%)	19 (19%)	22 (21%)	15 (15%)
7	During tests I find myself thinking of the consequences of failing.	6 (6%)	11 (11%)	13 (12%)	27 (26%)	46 (45%)
8	After important tests I am frequently so tense that my stomach gets upset.	14 (14%)	19 (19%)	20 (19%)	23 (22%)	27 (26%)
9	I freeze up on things like intelligence tests and final exams.	19 (19%)	23 (22%)	21 (20%)	18 (18%)	22 (21%)
10	Getting a good grade on one test does not seem to increase my confidence.	14 (14%)	16 (15%)	11 (11%)	23 (22%)	39 (38%)
11	I sometimes feel my heart beating very fast during important tests.	21 (20%)	23 (22%)	19 (19%)	21 (20%)	19 (19%)
12	After taking a test I always feel I could have done better than I actually did.	10 (10%)	15 (15%)	16 (15%)	23 (22%)	39 (38%)
13	I usually get depressed after taking a test.	9 (9%)	13 (13%)	11 (11%)	20 (19%)	50 (48%)
14	I have an uneasy, upset feeling before taking a final examination.	20 (19%)	19 (19%)	12 (12%)	21 (20%)	31 (30%)

Table 2 (Continue)

Sr No	Items	Responses				
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
15	When taking a test my emotional feelings do not interfere with my performance.	17 (17%)	12 (12%)	20 (19%)	23 (22%)	31 (30%)
16	During a course examination I frequently get so nervous that I forget facts I really know.	12 (12%)	14 (14%)	16 (15%)	26 (25%)	35 (34%)
17	I seem to defeat myself while working on important tests.	25 (24%)	21 (20%)	15 (15%)	19 (19%)	23 (22%)
18	The harder I work at taking a test or studying for one, the more confused I get.	9 (9%)	11 (11%)	14 (14%)	25 (24%)	44 (42%)
19	As soon as an exam is over I try to stop worrying about it, but I just cannot.	4 (4%)	6 (6%)	10 (10%)	31 (30%)	52 (50%)
20	During exams I sometimes wonder if I'll ever get through college.	14 (14%)	15 (15%)	22 (21%)	23 (22%)	29 (28%)
21	I would rather write a paper than take an examination for my grade in a course.	20 (19%)	22 (21%)	16 (16%)	19 (19%)	26 (25%)
22	I wish examinations did not bother me so much.	22 (21%)	26 (25%)	18 (18%)	20 (19%)	17 (17%)
23	I think I could do much better on tests if I could take them alone and not feel pressured by a time limit.	31 (30%)	27 (26%)	11 (11%)	20 (19%)	14 (14%)
24	In a course, I may get interferes with my studying and my performance on tests.	20 (19%)	18 (18%)	16 (16%)	21 (20%)	28 (27%)
25	If examinations could be done away, I think I would actually learn more.	21 (20%)	30 (29%)	20 (19%)	15 (15%)	17 (17%)
26	On exams I take the attitude "If I do not know it now there's no point worrying about it."	18 (18%)	22 (21%)	19 (18%)	26 (25%)	18 (18%)
27	I really do not see why some people get so upset about tests.	10 (10%)	11 (11%)	20 (19%)	22 (21%)	40 (39%)
28	Thoughts of doing poorly interfere with my performance on tests.	15 (14%)	18 (18%)	18 (18%)	23 (22%)	29 (28%)
29	I do not study any harder for final exams than for the rest of my course work.	11 (11%)	15 (14%)	12 (12%)	22 (21%)	43 (42%)
30	Even when I'm well prepared for a test, I feel very anxious about it.	12 (12%)	14 (14%)	20 (19%)	28 (27%)	29 (28%)
31	I do not enjoy eating before an important test.	26 (25%)	27 (26%)	19 (18%)	15 (15%)	16 (16%)
32	Before an important examination I find my hands or arms trembling.	11 (11%)	13 (13%)	23 (22%)	26 (25%)	30 (29%)
33	I seldom feel the need for "cramming" before an exam.	17 (17%)	22 (21%)	19 (19%)	21 (20%)	24 (23%)

Table 2 (Continue)

Sr No	Items	Responses				
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
34	The university ought to recognize that some students are more nervous than others about tests and that this affects their performance.	33 (32%)	35 (34%)	10 (10%)	18 (17%)	7 (7%)
35	It seems to me that examination periods ought not to be made the tense situations which they are.	20 (19%)	21 (20%)	18 (18%)	19 (19%)	25 (24%)
36	I start feeling very uneasy just before getting a test paper back.	34 (33%)	37 (36%)	8 (7%)	12 (12%)	12 (12%)
37	I dread courses where the professors have the habit of giving "pop" quizzes.	29 (28%)	30 (29%)	10 (9%)	14 (13%)	20 (21%)

It is normal to feel a little nervous before an important test. But if students chronically have uncomfortable symptoms before a test, then they might have test anxiety. Test anxiety affects many people of all ages and intelligence, and its symptoms are rooted in biological "fight or flight" response. For whatever reason, students' mind likely perceives an upcoming exam as a threat, and then initiates a cascade of hormones that prepare the body for quick action in the face of this threat. According to the responses towards the items, students likely have test anxiety that exceeds the normal nervousness associated with test taking. But they don't have to suffer from test anxiety forever. The three ideas which show information about the TAS areas which are more anxiety-provoking for the students are: item 23) I think I could do much better on tests if I could take them alone and not feel pressured by a time limit; item 34) The university ought to recognize that some students are more nervous than others about tests and that this affects their performance; and item 36) I start feeling very uneasy just before getting a test paper back.

3. Discussion

In the research question, we asked whether there was a relationship between foreign language anxiety and test anxiety. In other words, we wanted to see whether a highly anxious person in language classroom is anxious in test situations as well or vice versa. To address this question, cognitive test anxiety factor was a significant negative predictor of language achievement. Eysenck argued that anxious learners were more often engaged in task- irrelevant cognitive processing than their non-anxious counterparts. In other words, anxious learners may be anxious about their being anxious, thus hampering the capacity of their working memory. To be more specific, anxious learners are usually more easily distracted, and the defense mechanism triggered by anxiety will interfere with the cognition threshold in learning. That is, although the students were told orally to answer TAS based on tests of any subjects in general, which was

also written on the top of the questionnaire, they may have responded based on an English class test. The researchers tried to remove this problem by reminding the students of this point, but we could by no means make sure of what was going on in the mind of the students as they responded to the questionnaire.

4. Conclusion

The following conclusions are offered while admitting their shortcomings. The findings of this study reveal that both language anxiety and test anxiety have a debilitative role in language learning, at least in settings similar to those in this study. This study also shows that language anxiety and test anxiety are related to each other. It means that the students with high language anxiety tend to have high test anxiety too and vice versa. It implies that trying to reduce one type of anxiety will automatically reduce the other type to some extent. Considering the debilitative role of language anxiety and test anxiety in language classes, we should take measures to reduce both types of anxiety. Therefore, teachers can be very influential in reducing learners' anxiety. Teachers need to reduce anxiety and enhance self-confidence by encouraging students' involvement in classroom activities and creating a comfortable atmosphere (Matsuda & Gobel, 2004). Matsuda and Gobel (2004) say that using various activities such as pair work, small group work, games, and role plays may enhance class atmosphere because students feel more comfortable about speaking with a small number of people than confronting the whole class. Teachers should start with pair work and giving the students enough practice and training and then gradually change to a more challenging pattern such as group work and class work. The participants of Hurd's (2007b) study mentioned some strategies to reduce their anxiety. Language teachers can remind students to use these strategies including: actively encouraging themselves to take risks in language learning, such as guessing meanings or trying to speak, even though they might make some mistakes; using positive self-talk; imagining that when they are speaking in front of others, it is just a friendly informal chat; using relaxation techniques; sharing their worries with other students; letting their tutor know they are anxious; give themselves a reward or treat when they do well; being aware of physical signs of stress that might affect their language learning; telling themselves when they speak that it will not take too long; and writing down their feelings in a diary or notebook. Explicit training in affective strategies can also help students manage anxiety related to language learning and testing. Research suggests that when students are informed about the use, monitoring, and evaluation of specific strategies, performance improves (Oxford & Crookall, 1989). Furthermore, trained students use a wider variety of strategies and are less likely to become bogged down with ineffective study habits that produce poor results and, hence, anxiety related to tests. Finally, certain types of tests encourage students' participation without creating undue stress for learners. Cooperative efforts reduce the competitiveness that can

raise anxiety and hinder progress (Bailey, 1983). The students usually like evaluations that involve partner and small group-work, interviews, problem-solving, and role plays (Young, 1991). These types of evaluations may reduce apprehension. Since evidence indicate that familiar tasks tend to create less anxiety, adequate opportunity to practice the types of tasks to be tested will also create confidence in language learners and reduce the anxiety as a result. Moreover, frequent testing will both familiarize the students with the evaluation procedure and reduce the anxiety in them.

Considering test anxiety, Phillips (1992) offers the following suggestions: First, the teachers should discuss directly the issue of language anxiety with the students because it reassures them that these feelings are normal and anticipated by the teacher. Realizing that the teacher or evaluator understands their feelings reduces at least a part of the tension associated with assessment. Second, the teachers should discuss the nature of language learning because it relieves the students of some of the anxiety-provoking misconceptions. It is important that the students have realistic expectations related particularly to accuracy. Realistic expectations include the understanding that language learning is a lengthy procedure and that errors are a natural part of that process. To sum up, this study showed that both language anxiety and test anxiety were negatively related to foreign language test performance. Therefore, both teachers and students themselves should take measures to reduce both types of anxiety to achieve better test scores in foreign language classes.

5. References

Awan, R. N., Azher, M., Anwar, M. N., & Naz, A. (2010). An investigation of foreign language classroom anxiety and its relationship with students' achievement. *Journal of College Teaching and Learning*.

Bailey, K. M. (1983). *Competitiveness and anxiety in adult second language learning: Looking at and through the diary studies*. In H. W. Seliger, & M. H

Horwitz, E. K. (2010). Foreign and second language anxiety. *Language Teaching*.

Hurd S. (2007b) *Anxiety and non-anxiety in a distance language learning environment: the distance factor as a modifying influence*. System 35(4)

In'nami, Y. (2006). *The effects of test anxiety on listening test performance*. System. 34, 3.

MacIntyre, P. D., & Gardner, R. C. (1989). Anxiety and second language learning: Toward a theoretical clarification. *Language Learning*.

Matsuda, S. & P. Gobel (2004). *Anxiety and predictors of performance in the foreign language classroom*. System 32.1

Meijer, J. (1993) *Learning potential, personality characteristics and test performance*. In Hamers, J. H., Sijtsma, K., Ruijssenaars, A. J. J. M. (Eds.), Learning potential assessment: theoretical, methodological and practical issues. Amsterdam: Swets & Zeitlinger.

Oxford, R.L., & Crookall, D. (1989). Research on language learning strategies: methods, findings, and instructional issues. *Modern Language Journal, 73*.

Phillips, E. M. (1992). The effects of language anxiety on student oral test performance and attitudes. the Modern Language Journal, *76*(1), 14-26

Pintrich, P. R., & Schrauben, B. (1992). Students' motivational beliefs and their cognitive engagement in classroom tasks. In D. Schunk & J. Meece (Eds.), Student perceptions in the classroom: Causes and consequences (pp. 149–183). Hillsdale, NJ: Erlbaum.

Saito, Y., Garza, T., & Horwitz, E. (1999). Foreign language reading anxiety. *The Modern Language Journal*.

Young, D. J. (1991). Creating a low-anxiety classroom environment: What does language anxiety research suggest? *The Modern Language Journal 75*

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English Listening Comprehension Problems as Perceived by Undergraduate Students of Pakokku University in Myanmar

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Abstract

Listening has an important role in the process of getting main topic or information. Therefore, listening to foreign language is not as easy as we think especially in English which has inconsistent pronunciation.Without comprehending the listening skill, learners never learn to communicate or speak effectively. The aim of this research is to explore the listening comprehension problems encountered by the undergraduate students of Pakokku University. The objectives of the research are to find out kinds of listening comprehension problems encountered by the English, History, and Myanmar specialization students and to observe the types of listening factors that cause the students' listening difficulties while listening in English. The data is analyzed using the four factors of listening adopted from Yagang's (1994): text factors, listener factors, speaker factors and environmental factors. To collect the data for the research, the questionnaire was adopted from Kazouz (2014-2015). The participants were 80 third year English specialization students, 30 History, and 30 Myanmar language specialization students of Pakokku University. The audios were taken from Straight Forward (Level 4A) by Philip Kerr and Ceri Jones. The major types of listening problem that the students face are text factor, listener factor, speaker factor and physical setting. It is found that environment factor is the main cause of listening comprehension problem. Other factors such as speaker factor, text factor and listener factor can also cause the students difficulties in performing their listening tasks.

Keywords : Listening Comprehension Problems, Undergraduate Students, Myanmar

1. Introduction

English plays a crucial role in communicating all over the world. Therefore, English is a vehicle of language. As English is an international language, students need to have a good communicative ability. There are four types of language skills: reading, writing, speaking and listening. Among them, listening skill is a very important skill as it is mostly used in everyday life

conversation. People can respond and reject the speaker only if they understand what a speaker has told. In second language learning, listening skills are considered very important because they are fundamental to acquire a language. Learners obtain language input through listening. Acquisition takes place only when learners obtain sufficient comprehensible input. Listening plays an important role in language classrooms as it provides input for hearers (Rost, 2002). Hasan (2000) asserted that "listening comprehension delivers the right conditions for language achievement and development of other language skills". Listening and speaking skills are not significant parts of many books and teachers do not consider these skills in their classes.

Listening problem is barrier to everyone who learns languages because listening is the basis of language study. According to Kazouz Ismail (2014-15), learners have crucial problems in listening comprehension because attention to grammar, reading and vocabulary are emphasized at universities. According to Goh (2000) as cited in Hamouda (2013), "listening difficulties are defined as the internal and external characteristic that might interrupt text understanding and real life processing problem directly related to cognitive procedures that take place at various stages of listening comprehension. Yagang (1993) proposes that the sources of listening difficulties came mainly from the four aspects: the message, the speaker, the listener, and the physical setting.

Hence, in order to help students improve their listening ability, teachers have to understand students' listening difficulties in comprehending spoken texts, and find remedies for them. This research is to explore listening comprehension problems encountered by the undergraduate students of Pakokku Universtiy. Different types of listening comprehension problems are also studied using Yagang's (1994) four factors: text factors, speaker factors, listener factors and environmental factors.

1.1 Literature Review

Listening is one of the four language skills that vehicles messages in language communication. According to Field (2008), listening tends to be the most challenging skill for many second language learners to achieve and it is perhaps the most difficult skill to teach successfully. English listening comprehension is crucial in the development of English competence of EFL learners. Listening comprehension is defined as the ability to understand the spoken language of native speakers. Rost (2002) and Hamouda (2013) defined listening comprehension as an interactive process in which listeners are involved in constructing meaning. Listeners comprehend the oral input through sound discrimination, previous knowledge, grammatical structures, stress and intonation and the other linguistics or non-linguistics clues. To support and enhance learners' listening comprehension, it is important to investigate the problem related to listening comprehension of the learners.Listening plays an important role in language acquisition process. Despite the recognition of the critical role, it plays both in communication and in language

acquisition (1991 as cited in Dozer, 1997). This can imply that listeners may face with difficulties that affect the listening process and listening comprehension.

This research is designed to explore the listening comprehension problems faced by the undergraduate students of Pakokku University. In this research, four factors of listening comprehension problems identified by Yagang's (1994) are employed. Yagang (1994) showed the difficulty of listening comprehension which comes mainly from four factors: text factors, listener factors, speaker factors and environmental factors.

1.1.1 Text Factor

Text factor is one of the main factors that can cause listening comprehension problems. If a text is explicit or uninteresting or difficult, it can surely affect listening comprehension. Hasan (2000) mentioned that the message itself may be the main source of listening comprehension problems. In particular, unfamiliar words, slang or idiom expressions, difficult grammatical structures, unfamiliar situations, a long spoken text, and unorganized texts may present learners with listening problems. Unfamiliar words interfere with their listening comprehension. Difficult grammatical structures have almost the same effect. In familiar situations, learners also find it difficult to interpret the meaning of a long spoken text. As a long spoken text contains longer utterances with subordinate clauses, learners usually find it hard to understand such utterances owing to limitations in short-term memory load. Besides, a long text requires much time for listening. Underwood (1989) put the contribution of "interest" to attentive listening in terms of "Concentration". If students find the topic interesting, they will find concentration easier. On the other hand, if the listening topic is uninteresting, the listening activity can be boring. In addition, difficult concept of a listening passage can affect learners' comprehension. Before doing listening activity, the learners' levels should be taken into account. The learners need to have rich former experience as well as the linguistic abilities to understand a difficult concept. According to Bingal et al (2014), when listening texts contain known words, it would be very easy for students. If students know the meaning of words, this can arouse their interest and motivation and can have a positive impact on the students' listening comprehension ability. Listening task should be one which requires quick simple responses and which does not demand the skills of reading, speaking and writing at the expense of listening.

1.1.2 Listener Factor

The listener factor can influence learners' listening comprehension in positive and negative ways. Learners' problems may arise from their language knowledge, physical problems and their background knowledge. Guo and Wills (2005) showed that language knowledge is the foundation of learning English, so if learners' knowledge of pronunciation, grammar and vocabulary is insufficient, it is probable that their English listening comprehension will be negatively affected by lack of language knowledge. They also indicated the most basic outward shell of

language in pronunciation and intonation. If listeners' pronunciation knowledge is inadequate, their capacity to discriminate will be weak and this will affect listening comprehension. Bingal et al (2014) stated that learners' motivation is one of the major factors that interfere with listening comprehension because it can be difficult for learners in maintaining the concentration in a foreign language learning classroom. If a topic of a listening text is interesting for learners, comprehending will be easier. However, learners may find listening very boring even if the topic is interesting because it needs a large amount of effort not to miss the meaning.

Hedge (2002) stated that lack of topic knowledge can lead listeners to mishear words, lack of vocabulary, for example, the child who heard "do dishes" for "judicious". It is therefore very important for learners to be familiar with a topic. They are going to listen to and to have vocabulary knowledge of the topic. Underwood (1989) stated that in English, there are different words which seem similar in sounds, but different in meaning, such as see/sea, meat/meet, etc. These words make learners confused and interfere with their comprehension when they hear in a stream of speech. For this reason, learners should be exposed for such words and have to learn their differences in meaning.

1.1.3 Speaker Factor

Speaker factor is a factor which influences the learners' listening comprehension. Problems of listening comprehension related to speaking can be seen in relation to natural speech, which is full of the situation and pauses, pitch and intonation, pronunciation, varied accents, speech rate, wrong grammatical structure, reduced form.

The study of Hasan (2000) showed that the learners find it difficult to understand natural speech which is full of hesitation pauses. Hesitations and pauses in spontaneous speech cause perceptual problems and comprehension errors for non-native speakers. Hasan (2000) also indicated that the learners encounter listening problems when speakers speak too fast or with varied accents, and produce words which are not clearly pronounced. Some learners cannot remember words they have just heard; they are slow to recall the meaning of words and phrases spoken too quickly. Buck (2001) said that an unfamiliar accent makes comprehension impossible for the listeners. Therefore, it is a good idea to give learners experience in a range of accents that they are likely to come into contact with in real life.

Brown (2001) mentioned that spoken language has many reduced forms. Reduction can be phonological ("Dje do it?" "Did you do it?"), morphological contraction like I'll), syntactic (elliptical forms like "When will you visit?" "Next week"), or pragmatic (phone rings and a child yells, "Mom! Phone!") For the learners who have not been exposed to such kinds of reductions used by the speaker, reduced forms can affect their comprehension. A speaker's pronunciation can also harm a listener's comprehension. Buck (2001) said that a lot of the communicative effects of utterances are expressed by the stress and intonation, and listeners need to be able to

understand the construction in reasonable interpretation. Brown (2001) revealed that stress, rhythm and intonation in the L_2 can cause listening problems. Therefore, L_2learners who are not familiar with these prosodic features can encounter listening comprehension problems. Another problem is that learners can lose comprehension when they listen to spoken text without watching the speakers' speaking. The speaker's body language gives them some contextual clues which make the message easily understand.

1.1.4 Environmental Factor (Physical Setting)

According to Yagang (1994), the presence of noise, visual clues and poor quality equipment are factors in developing the listening comprehension problems. Noise, including both background noises on the recording and environmental noises, can take the listener's mind. Bingol et al (2014) mentioned that sometimes inconvenience of classrooms affects students in listening comprehension. The environment distractions such as phone ringing and other external voices can affect the learners' listening comprehension. Hasan (2000) stated that visual clues whether they are in the form of pictures, a video or writing, help learners understand the spoken text.

During listening, lack of visual could make learners difficult to understand what are spoken by speakers because they could not guess what the speakers mean without seeing their body language and facial expression. Brown and Yule (1983) said that most people find it very much easier to understand the foreign language when they see a dramatic context on a film than it is simply played on tape. Additionally, Duzer (1997) claimed that visual support can increase comprehension if the learner is able to interpret it correctly. Unclear sounds resulting from poor quality equipment can interfere with the listener's comprehension.

2. Research Objectives

Listening is one of the most important skills in English language learning. When students listen to English language, they face a lot of listening difficulties. The aim of this research is

2.1 To explore the listening comprehension problems faced by the undergraduate students of Pakokku University. The objectives of this research are:

2.1.1 To find out types of listening comprehension problems encountered by the English specialization students, the Myanmar and History specialization students of Pakokku University

2.1.2 To investigate the types of listening factors that mostly cause the students' listening difficulties

3. Research Methodology

3.1 Data Collection and Interpretation

This research is to investigate listening comprehension problems encountered by the English specialization students and the History, and Myanmar specialization students of Pakokku University. To achieve this goal, the data were collected using a questionnaire adopted from Kazouz (2014).The questionnaire used for this study consists of 26 items which are grouped into 4 categories: listening text (9 items), listener (7 items), speaker (7 items), and physical setting (3 items). The questionnaire was administered to 80 third year students from English specialization, 30 third year students from History, and 30 third year students from Myanmar specialization. The answers were recorded on 4 points Likert Scale (never, sometimes, often, and always). In this section, the listening comprehensive problems encountered by the students are interpreted by means of the use of questionnaire adopted from Kazouz (2014).

The students were given some input (e.g. learning some vocabularies and doing pre-listening tasks) and instructed to listen the audios carefully. The audios were taken from Straight Forward Student's Book plus Workbook (Level 4A). Each audio is 16 minutes long.The listening section was done once a week as a listening test based on the students normal schedule. Each class is one hour long and in order to ensure students' listening comprehension, each audio was played three times. At the first week of the data collection, "The Unicorn in the Garden"was played with the tape script. "Batman" and "Making Slough Happy" were played without tape scripts in the second and the third week. After the third listening section, the question was given. At the third week, after the listening, the students were asked to answer the questionnaires.

4. Research Results

This research attempts to investigate listening problems encountered by a group of university students in Myanmar. It also finds out types of listening factors that mostly cause the students' listening difficulties. The findings of the study are reported according to the research objectives as follow.

4.1 Learners' Problems in Listening Comprehension

There are four types of listening problem that learners face in their listening tasks. They are text factor, listener factor, speaker factor and environment factor.

Table 1 Students' listening problems related to the listening text (Hasan, 2000)

Item No.	Statements	Responses			
		Never	Sometimes	Often	Always
1.	I find it difficult to understand listening texts in which there are too many unfamiliar words including jargon and idioms.	4%	49%	30%	17%
2.	Complex grammatical structure interfered with my listening comprehension.	3%	41%	34%	22%
3.	Long spoken text interfered with my listening comprehension.	20%	44%	14%	22%
4.	I find it difficult to interpret the meaning of a long spoken text.	9%	23%	35%	33%
5.	I feel fatigue and distracted when I listen to a long spoken text.	7%	53%	16%	24%
6.	I find it difficult to understand listening texts when the title is unfamiliar.	5%	34%	38%	23%
7.	I use my experience and background knowledge of the topic to understand the spoken text.	4%	29%	27%	40%
8.	I find it difficult to understand every single word of incoming speech.	9%	42%	27%	22%
9.	I find the listening passage difficult to understand.	2%	45%	26%	27%

In Table (1), 49% of the students **sometimes** find that the listening texts are difficult to understand because there are a lot of unfamiliar words including jargon and idioms. And, 41% of them **sometimes** cannot comprehend what they are listening because of complex grammatical structure. Long spoken texts **sometimes** make 44% of the students unable to understand their listening texts. Interpreting the meaning of a long spoken text is **often** difficult for 35% of the students and is always for 33% of them. Whenever they have to listen a long spoken text, 53% of the students **sometimes** feel fatigue and distracted. Moreover, 38% of them **often** find some problems with their understanding the listening texts if the topic is unfamiliar with them. 40% of the students **always** use their experience and background knowledge of the topic to understand the spoken text. Then, 42% of the students **sometimes** have some difficulties in understanding every single word of incoming speech. And **sometimes**, 45% of them cannot understand the listening texts. According to the data, some of students are unable to comprehend listening text. There are problems in

students' self-learning that were found in analyzing students' difficulties which are experience and background knowledge of the topic to understand the spoken text and to interpret the meaning of a long spoken text. Hence, the students have to study hard and have more practice to improve their listening comprehension.

Table 2 Students' listening problems related to the listener

Item No.	Statements	Never	Sometimes	Often	Always
10.	I find it difficult to get a general understanding of the spoken text from the first listening.	14%	32%	23%	31%
11.	At the time of listening I found it difficult to predict what would come next.	7%	42%	28%	23%
12.	I find it difficult to quickly remember words or phrases I have just heard.	20%	36%	21%	23%
13.	I found it difficult to recognize the words I know because of the way they are pronounced.	11%	33%	41%	15%
14.	They were words that I would normally understand in writing, but when I heard them in a stream of speech, I found it difficult to tell where one word finishes and another begins.	3%	35%	36%	26%
15.	I find it difficult when listening to English without transcripts.	6%	34%	26%	34%
16.	I find it difficult to answer questions which require other than a short answer (e.g. why or how questions	11%	51%	31%	7%

In Table (2), 32% of the students sometimes cannot understand the spoken text generally if they listen it for the first time. Sometimes, 42% of them cannot make predictions about what would come next. Furthermore, the percentage of the students who sometimes find some difficulties in remembering and recognizing words or phrases that they just heard is 36%. Often, even though they know the words well, 41% of them do not recognize them because they do not know how they are pronounced correctly. Besides, 35% of the students sometimes and 36% of them often cannot catch the words although they can use those words well in making sentences. Listening is easier as 34% of them report that they sometimes have to take a look at transcripts and the same

amount of students also report that they always also do the same when they listen to English one percent of them Sometimes cannot give answers to the how and why questions after they have listened to the audios. The results of the study showed that accent, pronunciation, speed of speech, insufficient knowledge of vocabulary, different accents of speakers, lack of concentration, anxiety, and bad quality of recording were the major listening comprehension problems encountered by the English, History and Myanmar students of Pakokku University.

Table 3 Students' listening problems related to the Speaker

Item No.	Statements	Never	Sometimes	Often	Always
17.	I find it difficult to understand the natural speech which is full of hesitation and pauses.	13%	46%	19%	22%
18.	I find it difficult to understand the meaning of words which are not pronounced clearly.	4%	22%	39%	35%
19.	I find it difficult to understand the meaning of the spoken text without seeing the speaker's body language.	8%	44%	29%	19%
20.	I find it difficult to understand well when speakers speak with a variety of accents.	1%	24%	32%	43%
21.	I find it difficult to understand well when speakers speak too fast.	1%	27%	40%	32%
22.	I find it difficult to understand the listening text when the speaker does not pause long enough.	11%	30%	27%	32%
23.	I find it difficult to understand the recorded material if I am unable to get things repeated.	5%	43%	33%	19%

The natural speech which is full of hesitation and pauses sometimes makes 46% of the students difficult in understand the texts. If there is some unclear word pronouncing, 39% of students often find it hard to understand for them and 35% of them always find it the problem for their listening comprehension. In addition, 44% of them sometimes cannot know the meaning of words because they cannot see the speaker's body language. And sometimes, various accents of the speakers make 44% of the students unable to understandable with the texts. Fast speakers often make 40% of them difficult in understanding the listening. Additionally, if the speaker does not

pause long enough, 32% of the students (always) and 30% of them (sometimes) cannot understand it. Forty three percent of them sometimes find it difficult to understand it if the recordings are played only one time.

Table 4 Students' listening problems related to the physical setting

Item No.	Statements	Never	Sometimes	Often	Always
24.	It is difficult for me to concentrate with noises around.	3%	18%	35%	44%
25.	Unclear sounds resulting from a poor-quality CD-player interfere with my listening comprehension.	2%	14%	37%	47%
26.	Unclear sounds resulting from poor equipment interfere with my listening comprehension.	1%	23%	37%	39%

In Table (4), noises can always cause some difficulties to concentrate in listening for 44% of the students. Besides, 47% of them cannot always comprehend the listening because of the interference of unclear sounds resulting from a poor-quality CD-player. Unclear sounds resulting from poor equipment interfere with the listening comprehension of 39% (always) and 37% (often) of the students. Problems result from physical settings that come from the environment surrounding the students. Table 4 shows that there are 44% of students have to face the problem of noises. If the listening task is carried out with noises around, it is for sure they will not have a good result in listening. First, they are distracted by the noise no matter how hard they try to focus on the task. Otherwise, the noise makes a complex of sounds instead of the solo recording being played. This interrupts the students from hearing and focusing on the task. According to the data, the problem also comes from the poor quality of the tapes or discs. For example, the cassette may be recorded while there are noises around or the cassette is used for such a long time so the quality is worn out. The poor equipment is somehow an obstacle to students in listening. For an example, in listening comprehension, it is the best place for students to do the listening in the laboratory room. This somehow will bring out the better result for the noises outside cannot get through the lab room. A good cassette recorder or a CD player may give them the better rather than that of the old one. The results of the study showed that bad quality of recording was the major listening comprehension problem encountered by EFL learners.

4.2 Types of Listening Factors that Cause Students' Listening Difficulties

Table 5 Analysis of the types of listening factors that cause students' listening difficulties

No.	Types of Listening Factor	Average Percentage			
		Never	Sometimes	Often	Always
1	Text Factor	7%	40%	27%	26%
2	Listener Factor	10%	38%	30%	22%
3	Speaker Factor	6%	34%	31%	29%
4	Environment Factor	2%	18%	36%	44%

To compare which listening factor is most difficult for the students ,the average percentages of four factors are shown in table (5). In terms of environment factor, majority of students (44%) report that they always find environment factor the source of listening difficulties. Twenty nine percent of students always find difficulties in listening tasks because of speaker factor. In term of text factor, 26% of students report that they always find difficulties in listening because of text factor. Finally, 22% of students find difficulties in listener factor.

5. Discussion

According to the data, the environment factor is the one which makes the students most difficult in their listening among all these factors with the highest percentage. Majority of students have to face the problem of noises. If the listening task is carried out with noises around, it is for sure they will not have a good result in listening. Most of the students cannot always comprehend the listening because of the interference of unclear sounds resulting from a poor-quality CD-player. Regarding text factor, the findings indicated that unfamiliar factor, too many unfamiliar words including jargon and idioms, and unfamiliar topic often affect the majority of the students' listening comprehension. However, most of the students often use their experience and background knowledge of the topic to comprehend the text. Moreover concerning this factor, long spoken text, listening passage and complex grammatical structures can along make comprehension problems for most of the students. For this reason, when the listening texts are chosen, it would be better, if they only take no more than five minutes. As a result, they will interpret their meaning easily. And the learners will be doing listening activities enjoyably. This will lead to effective learning.

In regard to listener factor, majority of the students cannot often recognize the words in listening even though they know them because of the way they are pronounced. Furthermore, they do not often know where one word ends and another begins in a stream of speech in spite of knowing them normally in writing. The English, History and Myanmar specialization students find it difficult to get a general understanding at the first listening. For this problem, one solution is to

let them get listening repeatedly so that they can understand the audios better than the first time they do. In addition, they often find it more difficult to answer questions which require them to explain something than answer short answers. They also report that listening is difficult for them if they do not see the transcripts. To encourage their listing skill, the teacher should have them listen without the transcripts at their first listening. Then, the teachers should let the students listen to the spoken texts again with the transcripts.

Concerning speaker factor, the result shows that rates of speech, pauses, pronunciation, a variety of accents, unclear pronounced words, linked words, idioms, stress and intonation are the major sources of students' difficulties to comprehend the intonation the speakers offer. From this fact, it can be assumed that the participants have not had enough exposure to English speakers' voices. Thus, they need enough exposure to them and listening activities should be given to students sufficiently.

With regard to environment factor, the majority of students always lose their listening comprehension because of not only noises from surroundings but also unclear voice from poor equipment. Sometimes, visual support should also be provided because it can aid students to increase comprehension. Furthermore, among these factors, the overwhelming majority of the students from both of specializations feel that the environment factor plays a major role in affecting their listening comprehension. Therefore, a language laboratory with good quality equipment is truly needed for the students to do the listening tasks.

Thus, in practicing listening, the audio or cassette has to be carefully checked to make sure that they don't contain any unclear sound or mechanic interruption. To reduce the noises from the surrounding, the listening tasks should be taken place in a very comfortable and quiet place such as language laboratory. Secondly, the different accents of the speaker, fast speaking, pronunciation, choice of words, no pauses and not being face-to-face interaction make the students unable to catch up what they are listening to. To minimize these problems, the listening tasks should be chosen and selected according to the students' level and interest. In addition, using too many unfamiliar words including jargon and idioms, complex grammar, long spoken text, unseen title are some reasons that make difficulties in listening for the students. Giving transcript to the students, repetition and pauses are the possible solutions in this situation. Finally, lack of concentration, not knowing correct pronunciation, inability to generalize the spoken text and not recognizing words in the stream of words are the difficulties faced by the listeners. Giving input, doing pre-listening tasks and making them practice a lot can be the possible solutions for this factor.

This research has found the common problems which the students have to experience in listening comprehension. Based on the facts and figures, firstly to the students, they should spend much more time on practicing. They should listen to a variety of topics in order to get familiar

with them. Hence, the background knowledge will be enriched as well as the skill. In addition, the students should know to apply suitable strategies to each kind of listening text in order to get the best result. However, the skill of students will not be improved the best without teachers. Teachers play such a significant in building up their skill. By each lesson, the teachers show his students the ways in each stage of listening comprehension. Furthermore, he or she will advise their students with the syllabus they can self-study at home. Moreover, the students did not receive sufficient listening activities while they were at high school. As consequence, they are weak in listening. Besides, in their current education, there is not much time for listening activities to improve listening skill since they still have to focus more on studying other lectures such as literature, writing, and reading.

6. Conclusion

To conclude, the students seem to have problems with listening. Here are the most common problems collected from the learners: the time they spend on studying themselves is too little to improve the skill and the inappropriate strategies of learner would be a hindrance for their listening comprehension. The problems are also caused from the listening material and physical settings. To acquire an acceptable listening skill, students themselves should have much more chances to expose to variety of listening. Simultaneously, they should learn the tips or strategies through each of their learning themselves. Teachers play an important role in teaching learners strategies and how to apply them into the listening task. According to the data, undergraduate students face the listening comprehension problems related to text factor, listener factor, speaker factor, and environment factor. Based on these results, instructors and learners can be aware of the factors which could affect listening comprehension.

7. Recommendations

If instructors know problematic areas in learners' listening comprehension, they can find remedies for them and modify their teaching practices to enhance their learners' comprehension skill. And if learners know what factors cause listing problems, they may have an idea how to handle them and how to practise listening by themselves to progress their comprehension. Thus, the problem is how the students can have more chances to expose to listening English. Here are some remedies. Firstly, the topic must be chosen carefully to meet students' interests and listening ability. The topic of study must also be familiar one to the students. Before the listening section is started, the students should get some input such as learning some vocabularies, building background knowledge, giving comprehension questions and so on as a pre-listening task. Then, in playing audio CDs, there should be pauses for thought. And the rate of speaking needs to be slow enough for the students to catch its meaning. Giving transcript is good for the students but

sometimes, they only prefer to have a look at it than to focus on their listening. In teaching listening, the teachers need to play the audio again and again, and give enough listening practice is also suggested. The audio must be audible for all the students in the class and it must be in a very good condition with clear voice. The environment must be comfortable and noiseless for the students to catch each and every word. Finally, the teachers must have ability to motivate the students to be involved in the listening tasks. By using these remedies, students can learn better to improve their listening exposure.

8. References

Bingol, M.A, Celik, B., Yildiz, N. and Mart, C.T (2014), Listening Comprehension Difficulties encountered by students in second language learning class. *Journal of Educational and Instructional Studies in the World*, 4(4).

Brown, D. (2001). *Teaching by Principles: An Interactive Approach to Language Pedagogy*: New York: Addison Wesley Longman

Buck, G. (2001), *Assessing Listening*: Cambridge University Press.

Hamouda, A. (2013). An investigation of listening comprehension problems encountered by Saudi students in the EL listening classroom. *International Journal of Academic Research in Progressive Education and Development*, 2(2), 113-155.

Hasan, A. S. (2000). Learners' perceptions of listening comprehension problems. *Language Culture and Curriculum*, 13(2), 137-153.

Hedge, T. (2001). *Teaching and learning in the language classroom* (Vol. 106). Oxford, England: Oxford university press.

Ismail, K. A. Z. O. U. Z. (2015). *An Investigation of listening problems encountered by EFL learners a case study of second year license of English at UKMO* (Doctoral dissertation, Thesis, Kasdi Merbah University-Ouargla), Retrieved from: https://bu. univuargla. dz/master/pdf/KAZOUZ_Ismail. pdf).

Kerr.P. & Jones.C. (2014*). Straight forward level 4A: Student's Book plus Workbook.* London: Macmillan Education (2nd Edition).

Rost, M. (2002). *Teaching and research listening*. Harlow, UK: Longman.

Sriprom, C. (2011). *A study of the English listening comprehension Problems for EFL learners at the Faculty of ICT, Silpakorn University*. Language Institute, Thammasat University.

Underwood, M. (1989). *Teaching listening*. Addison-Wesley Longman Ltd.

Yagang, F. (1994). *Listening: Problems and Solutions: Teacher Development. Making the Right Moves*. US Information Agency: Washington DC, 189-196.

University Teachers' Views on Engaging Students with Poetry through Dramatic Play

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Abstract

Poetry is a broad area of literature offering teachers and students the opportunity to both dip their toe and completely dive into creative writing (Benton, 1984). When the concept of poetry is introduced to students their first thoughts are usually around beautiful rhyming language that is catchy, emotional, friendly to the ear and easy to remember. Poetry is a key element of many literature curricula but poetry teaching is something with which many teachers struggle. Research indicates that teachers lack experience of poetry as well as subject knowledge and that current high-stakes testing poses challenges. While previous research has investigated teachers' experiences through large quantitative studies, this study focuses on university teachers' key strategies for engaging students with poetry. The material comprises student questionnaire responses and interviews with university teachers of Myanmar. The study highlights the centrality of the aesthetic experience and suggests that attention should be paid within research regarding how aesthetic content should be taught and that teacher educators should scaffold teachers' individual exploration of poetry to help them become confident teachers of poetry. The objectives of teaching poetry have important role and they should be clear and appropriate to the level of students. This research explores teachers' and students' views about the importance of teaching poetry through dramatic play at universities in Myanmar. Dramatic play can be defined as a type of play where students accept and assign roles, and then act them out. It is a time when they break through the walls of reality, pretend to be someone or something different from themselves, and dramatize situations and actions to go along with the roles they have chosen to play. A qualitative research study was conducted in language classrooms of selected universities in Myanmar. The research included questionnaire data obtained over a one year period (2018-2019) from 105 university teachers and 210 undergraduate students. Statistical analysis of data

revealed that: (1) only some of teachers asserted their role to the development of aesthetic appreciation among their students. (2) Some of the students asserted themselves with greater confidence about their understanding of poetry. Thus, more attention should be paid to appreciate poetry as an artistic and aesthetic medium. Some of the benefits of dramatic play mentioned by the students are having relief from emotional tension, encouraging language development and empowering to the students.

Keywords : University Teachers, Key Strategies, Engaging Students with Poetry

1. Introduction

Poetry is communication. Eliot (1965) says that genuine poetry can communicate before it is understood. Poetry is language in action; it is in essence a discourse. Thus, poems help us make sense of the world and express ideas and feelings in ways that everyday language cannot. The playful rhythms, silly rhymes, nonsensical words, and short form of poetry also grab student's attention and give them a chance to succeed with language. In the words of poet Allen Ginsberg, poetry is ordinary magic. By introducing students to poetic forms and inviting them to create their own poems, we can unlock the magic. Poetry allows us to invent language, and anyone, even young student, can write poems. The seeds of poems are everywhere if we train our eyes to look. They appear in the clouds, the wind, a feeling, a cool stream, a friend's crazy hat, a cat cuddled up on our lap, a dog chasing a ball, or even in a silly dream. Poetry allows them to write about what really interests them: what they care about, what they know, what they see, and most importantly, what they feel. It offers choices — not just of topic but of words, sentence structure, form, and pattern. Best of all, poetry is a place for their personality to shine through.

Poetry is the form of writing that can help to bridge a body-mind dualism and undoubtedly mould student's life soul and the character. It tends to beget a love of beauty and of truth in alliance; it indirectly suggests high and noble principles of action, and it encourages people to regard emotion as a functional whole so helpful in making principles operative (Benton, 1984). Over the past decades, there has been an increasing interest by educators in understanding the positive impact of dramatic play on student's overall development. Poetry has been around a long time. It may even predate written language. Originally poems were part of the oral tradition, and they were used to pass along stories, cultural beliefs, and ideas. Poems were created to be heard, and unfortunately students are often asked to read poems in silence, a task that deprives them of one crucial aspect of poetry - what it sounds like. There are two solid reasons why it is important to read poems aloud. Poetry is not easy to teach, but a few basic techniques could help. Poetry is an oral art form, so the first step is to read it aloud to the students. After the first reading the teacher asks students if they notice any repeating sounds, such as alliteration, any

rhymes, rhythms etc. Surely, teachers who prevent poetry from being read aloud are preventing full engagement with the poem as the author intended. Moreover, many scholars also regard dramatic play as a playful activity and as a means of inspiring student to develop symbolic, artistic and innovative behaviours (Jennings & Gerhardt, 2011; Moyles, 2010). The importance of incorporating both the subjective and objective, the cognitive and affective and the emotional and intellectual simultaneously within the framework of teaching poetry through dramatic play becomes evident (Horsman, 2000).

The term dramatic play is generally used to describe all kinds of pretend play, that is, symbolic play, role-play, imaginative play, fantasy play, make-believe play, and socio-dramatic play (Miller, 2010). This kind of play appears in the form of artistic behaviour between symbolic play and dramatic art. Dramatic play is a student-oriented activity and includes the following elements: imitative role play, make-believe with regard to objects, make-believe in regard to actions and situations, interpersonal interaction, verbal and non-verbal communication and narratives (McCullough, 2000). Student's participation in dramatic play signifies symbolic transformation and personal imagination in real or imaginary situations (Crouch, 2009). The students use their internal symbolic abilities giving shape to their shared experience through the transformation process serving the general function of maintaining social contact (Minks, 2013). Participants in dramatic play maintain two types of shape in their improvisations. On the one hand, they represent their vision in the form of symbols and images which are directly related to their personal experiences of cultural identities, roles, social events, language varieties and different ways of representing an action. On the other hand, students uncover what they have internalized in relation to dramatic play. Dramatic play provides excellent opportunities for fine-tuning the roles which student play. It helps them to acknowledge and demonstrate their competence and provides a safe setting for exploring and practicing new and more satisfying ways for them to play their current roles. Aside from being lots of fun, taking on fantasy roles helps student to spark their spontaneity and creativity (Newman & Newman, 2011). Dramatic play gives them a time out from their daily concerns and a chance to deal with them in a figurative way. It also provides a culture medium for student to learn how to be group members and to learn how to express their individuality (Grainger, 2003). Some of the studies deal with the significance of the participants' personality in the form of acting out behaviours in dramatic play and some focus on the importance of dramatic play in supporting student's cognitive, social and affective development. The limited research evidence suggests that educators should resist policies that reduce time for dramatic play experiences in university and try to increase funding for research on relationships between dramatic play and holistic student development (Wilson, 2012). The goal of this research is to investigate university teachers' views of teaching poetry through dramatic play and to evaluate students' responses in such an approach to teaching poetry. This research uses the combined theoretical

framework of positivist and interpretative educational research paradigms (Onwuegbuzie & Leech, 2005).

1.1 Structuring of Drama Activities

As drama is a fictional form which involves characters facing problems and getting into conflicts, it resembles real-life situations in which students might appear themselves. Acting in these situations provides them with the chance to get emotionally involved in the problems of other people and to try out what it is like to be somebody else. Acting as other characters is like putting on masks, which makes it easier for the "actors" to speak and act. As Neelands (l999: 3) states, "the experience of theatre is distinguished from real-life experience by the conscious application of form to meaning in order to engage both the intellect and the emotions in a representation of meaning. In the theatre, meanings, social codes and interactions are presented, shaped and crafted through the conventions of dramatic activity." Theatre is a learning medium where people experience the kind of behaviour in which they imagine that they are somebody else in a different place at a different time, which stimulates their creative imaginative behaviour. They can find in theatre a mirror that reflects their own behaviour and their reactions to others. This can be exploited in the seminars when students are expected to interpret human behaviour and be involved both intellectually and emotionally.

1.2 Description of Structured Drama

Before the research article describes how the abovementioned conventions were exploited in practice in the classroom, the explanation will be provided beforehand.

Portraits: pictures or photographs of characters provide students with a visual representation of the characters and with an opportunity to speculate about their human characteristics and their behaviour. Students are usually guided by the teacher's questions, which lead to a deeper understanding of the complexity of the characters.

Diary Writing-in-Role: students in the role of a character write a diary in which they reflect on the character's experience.

Still Image: this is a convention in which participants co-operate in order to express the main concept in the form of an image using their bodies like a sculpture. This crystallizes a moment, an idea or a theme and represents the most important elements of the poem at a particular moment. It has the same function as an illustration in a book, which usually focuses on the key moments of the poem. While the students are preparing the still image, they must negotiate, which encourages a lot of speaking in the target language. As Neelands (1999: 19) states, it is "a very economical and controlled form of expression as well as a sign to be interpreted or read by observers, it simplifies complex content into easily managed and understandable form, requires reflection and analysis in the making and observing images."

Meetings: students meet within the drama to make collective decisions and suggest strategies to solve problems, which moves the action forward. Neelands (1999) describes this convention as an interview in which a group of students question a role-player who remains "in character". It provides insights into the personality, motivation and behaviour of the character. It draws attention to the influences and the forces driving the characters to a conflict or their decisions. It clarifies the inner conflicts that are responsible for the events in the narrative.

Teacher-in-Role: this convention provides the teacher with an opportunity to act as a facilitator and to control the whole action. S/he is responsible for the interaction of the whole group within the context of the play, and s/he takes on the role of one of the characters while the students in the group also negotiate in the role of another character (Students-in-Role). The teacher does not act spontaneously, but challenges students to interact with him/her by provoking their responses. As they are expected to react and express the opinions as if they were one of the characters of the play, it deepens their understanding of both the inner and outer conflicts presented in the story.

1.3 The Benefits of Dramatic Play

Experts agree that dramatic play is an integral part of a well rounded program as it is healthy for student development. Here are just a few of the many incredible benefits of dramatic play.

Dramatic play teaches self-regulation. Students are known for acting with impulse, so dramatic play is a great stepping stone for learning to self-regulate their emotions and actions. Interestingly, when students assign and accept roles in dramatic play they are motivated to stick to them, thinking of them as rules to follow. This helps them develop the ability to coordinate and plan with others as well as control their impulses.

(i) Dramatic play encourages language development.

Dramatic play teaches and encourages expressive language. Students are motivated to communicate their wishes to their peers and therefore must learn to speak from the perspective of their pretend roles. Dramatic play is often a very comfortable place for students who are shy or withdrawn to participate in a group.

(ii) Dramatic play teaches conflict resolution.

Both unstructured and structured dramatic play offer teachable moments about conflict resolution. Inevitably, disagreements will naturally arise during dramatic play, which offers students a chance to work through their differences and arrange a compromise. It also encourages students to consider alternate perspectives as they recognize various roles of people in their lives and communities.

(iii) Dramatic play supports Math and Literacy.

Dramatic play provides the perfect play setting for students to interact with functional math and print. Consider the students who is playing server at a restaurant. He will interact with both print and numbers as he takes orders, fills them and then rings up the total owed for the meal. Dramatic play is also known for increasing comprehension as students love to act out their favorite storybooks.

(iv) Dramatic play relieves emotional tension.

Dramatic play offers a safe place for students to act out real life situations. Adults tend to cope with dramatic events by retelling it again and again. Students cope with dramatic events by acting them out.

(v) Dramatic play is empowering to students.

This is not only because students can assign and accept their own roles in the play setting, but also because dramatic play offers a safe play for students to act out traumatic experiences. Typically when students act out dramatic or frightening experiences they place themselves in a powerful role. They choose to play a superhero with great powers. A student who has lived through real trauma, like a car accident, for example, might choose to be a paramedic or doctor.

1.4 Research Objectives

2. Methodology

The study comprised two main phases. Phase one was consisted of the completion of a self-administered questionnaire for teachers and phase two for students. The questions focused on the teachers' and students' perceptions towards teaching poetry through dramatic play. Participants in this study included 150 University teachers, 41 females and 119 males between the ages of 38 and 53, and 250 students, 37 females and 213 males, between the ages of 18 and 22. All participants in this study were volunteers. However, only responses from 210 students and 105 teachers were useful for some reasons in data collection. Table 1 illustrates the gender distribution of the research cohort.

Table 1 Gender distribution of the research cohort (n=210 students & 105 teachers)

SN	Gender	Sample Size and Composition Gender			
		Teachers		Students	
		no	%	no	%
1	Male	31	29.52%	52	24.76%
2	Female	74	70.47%	158	75.24%
Total		105	100%	210	100%

The questionnaire was disseminated in the university classrooms of first year, second year, third year and fourth year English Specialization students by the researchers. Since any research needs to adhere to the relevant ethical principles, students and teachers were asked to provide pseudonyms so as to protect their identities and maintain privacy. Statistical analysis was performed by the use of a concrete methodology and organizing data into categories based on emerging themes. Each category was codified and simple descriptive analysis was used to analyse the data and to provide an account of the practices and embraced views of the teachers and students involved. Information of a more qualitative nature, included detailed interviews that were of a semi-structured nature in order to enable data gathering related to specific beliefs and issues of particular significance to teachers. The purpose of this phase was to conduct an in-depth inquiry into the issues emergent from phase one. Interviews data were transcribed, analyzed and interpreted, via thematic content analysis, for emergent themes reflective of participants' visions of poetry teaching in higher education.

Phase 1

The main purpose at this stage of the research process was to present preliminary findings on research question item (i). This data served to highlight the principal areas of interest and relevance for phase two.

Table 2 Interview responses of the teachers to survey question item (i) (n=105)

Sr No	Question item	Responses of the teacher participants on the general aims				
(i)	What is your purpose in the teaching of poetry at undergraduate level?	To enable students to appreciate the beauty, rhyme and style of poem	To help students appreciate poetry as an artistic and aesthetic medium to which they can relate perfectly	To sensitize students to the pleasure of appreciating a high literary genre, by helping them better understand themes, structure and imagery	To foster a passionate form of engagement with poetry and to cultivate a lifelong love of poetry	To explain poems to their class and to help prepare students by supplying various notes and questions on selected poems
		15%	27%	17%	21%	20%

According to the data, 27% of the teacher participants asserted their role to the development of aesthetic appreciation among their students, by stressing that their purpose was to help students appreciate poetry as an artistic and aesthetic medium to which they can relate

perfectly to the admiration of beauty, such as valuing the fine arts of music, literature, dance, and visual art. Only 15% of the participants mention that their purpose in the teaching of poetry at undergraduate level is to enable students to appreciate the beauty, rhyme and style of poem. Creativity comes in a variety of forms. Many people think of writing and artwork as the main ways to show creativity, but there are many others. Creating something is a powerful form of self-expression, and it can impact other people. The inspiration to create can be found anywhere. It can be found in the beauty of nature, the relationships that surround us, or the hurt that is within us. Table 2 shows the interview responses of the teachers to survey items (ii) & (iii)

Table 3 Interview responses of the teachers to survey items (ii) & (iii) (n=105)

Sr No	Questionnaire statements	Responses		
		Always	Sometimes	Never
(ii)	I could ask students to illustrate poems through an alternative way of creative art expression.	16%	23%	61%
(iii)	I could encourage students to write their own poems by using dramatic techniques.	15%	21%	64%

According to the data, 61% of the participant teachers were not likely to ask students to illustrate poems through an alternative way of creative art with a high percentage of answering 'never', and a much lower 'sometimes' (23%) or always (16%) using these instructional strategies. Fifteen percent of the teachers interviewed answered that they 'always' encourage students to write their own poems by using dramatic techniques for the teaching of poetry, 21% 'sometimes' and 64% 'never'. One of the participants mentioned that each year, when he tells his students that they are going to write poetry, a few are excited, but the majority let out an audible sigh. They often have the misconception that poetry is about following a lot of rules and using words that they don't understand. They are more open and excited when the focus shifts toward sharing their ideas and feelings with others in a creative format. The poetry-writing process can become more inclusive and engaging when if the teacher offers a variety of poetry-writing exercises.

Phase 2

Exploring poetry gives students the chance to develop higher levels of self-awareness on their own responses, emotional, imaginative, and intellectual to aesthetic texts on the ultimate goal of fostering an aesthetic pedagogy in the classroom (Cockett & Fox, 1999). In order to realize this ambition of teaching poetry teachers need to focus on the student's personal response to a poem. To this end, students were asked to list the most frequently occurring pedagogical activities in their class. Table 3 displays students' responses to survey questions regarding various issues for the teaching of poetry.

Table 4 Students' responses to survey questions (iv) & (v) (n=210 undergraduate students)

Sr No	Question Items	Responses		
		Yes	Not Sure	No
(iv)	Could you list the most frequently occurring pedagogical activities in the teaching of poetry in your class?	34%	31%	35%
(v)	Do you feel confident about your understanding of poetry?	22%	37%	41%

In the table, only 34% of them could list the most frequently occurring pedagogical activities in the teaching of poetry in their class. They also felt that the activities enabled them to move around in the classroom, which, after sitting for the whole morning, was very pleasant. For the confidence about their understanding of poetry, 41% is found negative to create the right atmosphere. They cannot have in such an atmosphere, and in such large classes.

Table 5 Students' responses to the most effective class resources for enhancing their understanding of poetry (n=210 undergraduate students)

Sr No	Survey question	Percentage of respondents		
		Dramatic play	Teacher's notes	Poetry textbook
(vi)	Which are the most effective class resources for enhancing your understanding of poetry?	39%	31%	30%

Table 4 displays students' responses to survey question (vi) regarding various issues for teaching of poetry. Some of them (39%) wrote about poetry positive experiences with drama activities, such as Portraits, Diary Writing-in-Role, Still Image, Meetings and Teacher-in-Role. Some of the students (30%), however, mentioned negative experiences in memorizing and reciting poetry in the textbook in front of the class, as well as 31% trying to figure out the teacher's interpretation in their notes.

Another important aspect of using drama activities was that they had to cooperate and appearing in roles taught them empathy, which, as they admitted, they will need as teachers. Most of the students, through questionnaire responses, made positive comments about the value of dramatic play as a means of teaching poetry in tertiary education. Benefits of dramatic play mentioned by the students are having relief from emotional tension, feeling powerful, using social interaction skills, having language development, using symbols and sorting out fantasy and reality.

Table 5 shows the students' responses to the benefits of dramatic play for enhancing their understanding of poetry.

Table 6 Students' responses to the benefits of dramatic play approach to teaching poetry (n=210 undergraduate students)

SN	Benefits of dramatic play	Percentage of respondents		
		Agree	Not Sure	Disagree
(i)	Dramatic play encourages language development.	59%	12%	29%
(ii)	Dramatic play teaches conflict resolution.	51%	32%	17%
(iii)	Dramatic play supports Math and Literacy.	44%	15%	41%
(iv)	Dramatic play relieves emotional tension.	67%	12%	21%
(v)	Dramatic play is empowering to students.	57%	30%	13%
Avg		55.60%	20.20%	24.20%

According to the data, dramatic play relieves emotional tension (67%) and undergraduate students agree that it teaches and encourages expressive language (59%). Students are motivated to communicate their wishes to their peers and therefore must learn to speak from the perspective of their pretend roles.

3. Research Findings

Dramatic play is a type of play in which students accept and designate roles and then act them out. It is an activity where they break through their norms, pretend to be someone or something different from themselves and dramatize situations and feelings for the characters they have chosen. Sometimes students take on real-world roles, other times they take on fantasy roles. Either way, it is a play that involves breaking down the barriers of reality and results in serious and natural learning. The involved educators in the reflective development through this research were not limited to a singular point of view or role. Figure 1 displays teachers' responses to survey question item (i) regarding general aims for the teaching of poetry at undergraduate level.

According to the data, 27% of teachers asserted their role to the development of aesthetic appreciation among their students (Table 1), by stressing that their purpose was to help students appreciate poetry as an artistic and aesthetic medium to which they can relate perfectly. Aesthetic means the pleasant, positive or artful appearance of a person or a thing. Aesthetics is a branch of philosophy that examines the nature of art and our experience of it. An aesthetic experience could include a mixture of feeling, such as pleasure, rage, grief, suffering, and joy. In addition, 20% of teachers felt their purpose was to explain poems to their class and

to help prepare students by supplying various notes and questions on selected poems. However, these teachers reported that this technical focus had a subversive effect on the fulfillment of their primary target in the aesthetic appreciation of poetry. They (17%) also affirmed that their prime aim was to sensitize students to the pleasure of appreciating a high literary genre, by helping them better understand themes, structure and imagery. 21% of the teachers said that what they wanted for themselves was to foster a passionate form of engagement with poetry and to cultivate a lifelong love of poetry to their students.

In order to increase confidence and fluency, students start by reading some poems together as a class. Then have students choose a poem that they enjoy and then practice reading their poems aloud in pairs, experimenting with expression, volume, and speed. After students have had time to practice, listen in and offer some feedback on expression and pronunciation. Once students have one more round of practice, ask students to share their poems aloud with the class. Table 6 shows students' responses to pedagogical activities in teaching poetry.

Table 7 Students' responses to pedagogical activities in teaching poetry (n=210)

Sr No	Teaching poetry	Pedagogical Activities	Responses			
			Feeling		Approach	
			Frustration	Confidence	Teacher-centered	student-centered
1	Artistic appreciation of poetry	**Portraits:** Pictures or photographs of characters which provide students with a visual representation of the characters in the poem	22%	78%	28%	72%
		Diary Writing-in-Role: Students in the role of a character write a diary in which they reflect on the character's experience in the poem	18%	82%	21%	79%
		Still Image: Students co-operating in order to express the main concept in the form of an image using their bodies like a sculpture which encourages a lot of speaking in the target language	24%	76%	22%	78%

Table 7 (Continue)

Sr No	Teaching poetry	Pedagogical Activities	Responses			
			Feeling		Approach	
			Frustration	Confidence	Teacher-centered	student-centered
		Meetings: Students meeting within the activity to make collective decisions and suggest strategies to solve problems, which moves the action forward	27%	73%	30%	70%
		Hot-Seating: An interview in which a group of students question a role-player who remains "in character" which provides insights into the personality, motivation and behaviour of the character	29%	71%	31%	69%
		Average	24.00%	76.00%	26.40%	73.60%
2	Interpretation of poetry	**Memorization:** While we agree that creative, analytical lessons are a great way to learn, it's worth pointing out that memorization can still play an important role in learning a poem, no matter your age.	52%	48%	89%	11%
		Recitation: For individuals, a poem learned by heart could be a lifeline.	47%	53%	57%	43%
		Interpretation: To interpret a poem, you have to have a level of empathy and deep understanding of feelings and expressions, because that is what poems are.	33%	67%	69%	31%
		Average	44.00%	56.00%	71.67%	28.33%

Average 76% of the students asserted themselves with greater confidence about their understanding of poetry by learning through artistic appreciation of poetry as the primordial cause for this sense of self-confidence. Support for the use of dramatic play was also evident in the responses, with students citing this student-centered teaching strategy (73.60%) as the most effective class resources for enhancing their understanding. It should be encouraged, and students need lots of opportunities to engage. One of the advantages of dramatizing a poem is that the entire class can take part in the activity, a fact which offers students an effective way to imagine the world through personal insight, to organize and interpret their life experience, and to establish meaningful connections to other areas of knowledge. Yet poetry memorization has become deeply unfashionable, an outmoded practice that many teachers and students consider too boring, mindless and just plain difficult for the modern classroom. Robson (2016) explains that poetry recitation was an inexpensive exercise that helped even inexperienced teachers at underfunded schools impart rhetorical skills and nurture moral character. A 1902 handbook called "The Teaching of English" noted that reciting poetry stocked "the mind with the priceless treasure of the noblest thoughts and feelings that have been uttered by the race." The truth is that memorizing and reciting poetry can be a highly expressive act. Reciting a poem will help students express what they are trying to say. Memorizing a poem is just as valuable as an exercise in close reading, a chance to observe the exertions of our own brains. When students memorize, they start to notice the things that they notice, their own habits of attention, their habits of reading.

4. Discussion

Despite being impossible to produce generalizable results, this qualitative study achieved to obtain in-depth knowledge about teachers' experience of teaching poetry through dramatic play. The aim of the research was to investigate the teachers' views and students' perceptions of their role in developing an aesthetic appreciation of poetry by encouraging engagement, interest, enjoyment and inspiring a love of poetry into their students with the use of dramatic play. There were some teachers who appeared more concerned about the standardized approach to poetry analysis in which the lowest level of aesthetic development appears to be well situated rather than a sincere reflection on the poem's overall aesthetic unity. However, there were a lot of teachers who attempted to develop students' emotional and subjective sensibilities. Thus, they have succeeded, through dramatic play, in providing space for a more aesthetic approach to the teaching of poetry. The use of dramatic play, as reported above by student participants, evidences its significance as a teaching strategy in expedient access to the meaning of the poem. Moreover, some students reported a need for teacher's notes and poetry textbook in which meaning is transparent and clearly defined. It is widely recognised that enthusiastic teaching based on a wide range of teaching and learning strategies is the key to keeping students

engaged in poetry lessons (Paulsen & Feldman, 1999). If students only read poetry, their approach to it is often superficial and they might not adequately notice important aspects that are hidden between the lines (Vodickova, 2009). Students need to experiment with non-verbal communicative aspects of language (body language, gestures, and facial expressions), as well as verbal aspects (intonation, rhythm, stress, slang, and idiomatic expressions), when analyzing and interpreting poetry. Dramatic play holds the potential to enhance students' subjective understanding and leads to an active exploration of the emotional and imaginative aspects of the poem (Neelands, 1999; Taylor, 1994). Dramatic play is essentially improvised in nature. Drawing on the elements of drama, it enables students to create and inhabit a fictional world for the experiences, insights, emotions and understandings (Machado, 2010; Wilson, 2012). Besides, it encourages students to bring their interests and personalities, their 'cultural capital', to the learning process so that they can become actively involved and personalise their knowledge (Luongo-Orlando, 2010; Nwokah, 2010).

5. Conclusion

In conclusion, dramatic play helps student explore different roles and situations as they play with items and tools adults use in everyday life. The present research stresses the need to support teachers in their attempts to foster enhanced potential for the affective development of students through dramatic play. This study also acknowledges the notable challenges and obstacles that language teachers encounter in the teaching of poetry. Moreover, it underlines the existence of an aesthetic consciousness for poetry pedagogy amongst teachers which encourages dignified levels of students' intellectual and emotional engagement. It is a common belief that when a teacher values poetry, students sense that and may be motivated to develop a life-long interest in reading poetry and possibly in writing their own poems. A teacher who does not fully enjoy poetic imagery will not be able to convey this pleasure to his or her students. Poetry's figurative language can help students experience ideas, images and feelings in a concentrated form, encouraging abstract thought and heightened powers of observation. What is essential, in this regard, is that teachers need to get out of the traditional word-by-word focus on meaning, verbal inflection and figure of speech. Their role is not to impose authoritative interpretations but to develop individual responses, to be non-prescriptive, non-didactic. They should alternatively view the continuity of the poem as a whole, as though it were an oil painting. Teachers themselves, in general, need to help students enjoy poetry's metaphors, sounds and images through dramatic play. Teachers need to put forth the necessary effort required to promote students' affective and aesthetic sensitivity while they try to find ways to streamline their work in a context of standardization and uniformity. It is also the responsibility of education faculties preparing future teachers to provide them with methods that will enrich and enliven their teaching. Teachers often

steer clear of poetry fearing negative reactions because they are not confident about their ability to stimulate and encourage students on the pleasures of dramatizing, reading and writing poetry. The process of introducing poetry into the classroom can be fun, if this is done through movement, dramatic play and art. Enactment, enthusiasm and engagement with students, so as to enhance their self-concepts, allow teachers and students to overcome seemingly insuperable difficulties. Part of what poetry gives student is human connection and fresh ways of interpreting and translating images and signs. But even if poems do not have the strength to change the world, what they do is that they change students' understanding of what's going on in their world and can inspire them to be better human beings.

6. References

Benton, P. (1984). Teaching poetry: The rhetoric and the reality. *Oxford Review of Education, 10(3).*

Boe, E.E., & Gilford, D.M. (1992). *Teacher supply, demand, and quality: Policy issues, models, and data bases: Proceedings of a conference*. Washington, D.C.: National Academy Press.

Byrne, E., & Brodie, M. (2012). *Cross curricular teaching and learning in the secondary school*. New York: Routledge.

Chapman, T.K. (2011). A critical race theory analysis of past and present institutional processes and policies in teacher education. In A.F. Ball & C.A. Tyson (Eds.), *Studying diversity in teacher educatio*n. Lanham, MD: Rowman &Littlefield.

Ciussi, M., & Gebers Freitas, E. (2012). *Leading issues in e-learning research: For researchers, teachers and students*. Reading, UK.: Academic Publishing International.

Goodwyn, A. (1992). English teachers and the Cox models. *English in Education, 26(3).*

Grainger, R. (2003). *Group spirituality: A workshop approach*. New York: Brunner-Routledge.

Hennessy, J., Hinchion, C., & McNamara, P.M. (2010). Poetry and pedagogy: Exploring the opportunity for epistemological and affective development within the classroom. *Literacy Information and Computer Education Journal (LICEJ), 1(3).*

Higgins, C. (2009). Instrumentalism and the clichés of aesthetic education: A Deweyan corrective. *Education and Culture, 24(1).*

Hopkins, E. (2007). Sharing multicultural poetry with elementary education students: A teacher inquiry into developing critical consciousness. *Unpublished doctoral thesis, The Pennsylvania State University.*

Horsman, J. (2000). *Too scared to learn: Women, violence and education*. Mahwah, NJ: Lawrence Erlbaum Assoc.

Kvale, S. (2009). InterViews: *An introduction to qualitative research interviewing. Thousand Oaks, CA: Sage.*

Machado, J.M. (2010). *Early studenthood experiences in language arts: Early literacy. Belmont, CA: Wadsworth.*

Merriam, S. (2002). *Qualitative research in practice: Examples for discussion and analysis*. San Francisco, CA: Jossey-Bass.

Miller, T., & Yúdice, G. (2002). *Cultural policy*. London: Sage Publications Ltd.

Minks, A. (2013). *Voices of play: Miskitu student's speech and song on the Atlantic coast of Nicaragua*. Tucson: University of Arizona Press.

Neelands, J. (1999). *Structuring drama work*. Cambridge: Cambridge University Press.

Newman, B.M., & Newman, P.R. (2011). *Development through life: A psychosocial approach*. Belmont, CA Wadsworth: Cengage Learning.

Pike, M.A. (2004). Aesthetic teaching. *Journal of Aesthetic Teaching, 38(2).*

Powell, R. (1999). *Literacy as a moral imperative: Facing the challenges of a pluralistic society*. Lanham, MD: Rowman & Littlefield.

Rummel, M.K. (1995). *Territories of the voice: Social context in poetry for and by student*. The New Advocate, 8(2).

Schwandt, T.A. (2001). *Dictionary of qualitative inquiry*. Thousand Oaks, CA: Sage.

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Students' Low Participation in English Language Classroom

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Abstract

The fact that students' low participation in the English language classroom can have more or less impact on an inactive classroom. This paper investigated the causes of EFL Myanmar students' low participation in English language classroom in Monywa University. It also identifies the strategies used by the participants to cope with the problem when they have to participate in classroom activities. The data were collected using a questionnaire, and the participants were 150 second year and third year non-English specialization students who have low participation in English classes. The finding has shown that the students' participation in English classes is affected by three factors; psychological factor, linguistic factor and socio-cultural factor. The strategies used by the participants in the classroom were also obtained. This study suggests that teachers play in pivotal role to create an active and interactive classroom and to encourage students to participate actively in the classroom activities. And the teachers should use teaching strategies which can also reduce the factors influencing on students in English language classroom.

Keywords : Low Participation, Active, Motivate, Tense, Nervous

1. Introduction

Participation is the act of taking part in an activity or event (Oxford Learners Dictionary, 2016). If students do not actively participate in classroom activities and teaching process may not be successful. In the classroom, there are many activities such as presentation, information-gap, debate, describing pictures, picture differences, things in common, solving a problem and discussion. All the activities require interaction between teacher and students. Active classroom participation plays an important role in the success of language learning (Taher, 2005). Liu (2005) states that students who participate in actively tend to have better academic achievement compared to students who do not participate in the activity. Students' oral participation can help students fill the gap between what they want to say and their ability to say it. Furthermore, it is a

common belief that participation in verbal interaction offers language learners the opportunity to follow up on new words and structures to which they have been exposed to during language lessons and to practice them in context. If students do not raise any questions or give any comments about the lessons, teachers should realize that they have the problems about the class or there must be some problems with the students because there is a link between students' academic achievement and participation in the classroom. For a successful teaching process, student's participation is important to be alive the classroom. For student-centered approach, teachers and students' interaction is important. Classroom interaction is very essential in education system because classroom interaction is related to how the teachers and the students communicate to each other. The teacher and the students communicate as they are talking about the material during teaching and learning process. If the students are passive, teachers have to try to encourage students' participation by calling on volunteer students to participate in the classroom activities. Some volunteer students may actively participate in the classroom activities while the other may hesitate to because they do not know what they have to do. In the activities, teachers should know how to approach the silent classroom and what strategies are needed to use for a particular group.

Harumi. S (2010) revealed that a number of interrelated factors explain learner silence; the roots lie in linguistic, psychological, and sociocultural factors, including communicative style. Although each factor can independently account for classroom silence, they appear to be linked, and cultural norms, especially groupism, often underlie learners' silence. Hamouda. A (2013) proposed that roots of silence inside the classroom were psychological factor (shyness, boredom, lack of confidence, and so on), linguistic factor (limited vocabulary, expressions, grammar, and so on), and socio-cultural factor (Confucian ethics, classroom culture, and so forth). Some Myanmar students are silent. They rarely interact with the teachers, especially in English language classroom. Some students are reluctant to participate in the classroom activities because they feel nervous while they are speaking in front of the class and they worry about their poor English proficiency. They do not respond to teachers and they avoid being a volunteer student. Whenever teachers ask questions, they feel nervous and cannot choose correct words to respond the questions. As they use to make grammatical mistakes, they are not confident enough to express their ideas. As the classroom participation is important for both the teacher and students to achieve the classroom's goal. It is a need that the students study more actively in class. In order to encourage students to be more active learners, knowing the difficulties or factors that cause their low classroom participation will be able for people concerning with the language instruction to cope with the problem properly. Therefore, this study aims to investigate causes of students' low participation in English language classrooms. It also explores the strategies used by the students when they have to participate in classroom activities.

(i) Psychological Factors ((Farmer and Sweeney, 1997)

Psychological factors, a key constraining factor which make students' reluctancy to speak English and anxiety of losing face in front of classmates and teachers. Students are concerned about their lack of proficiency and are fearful of making mistakes. This leads to a lack of confidence in their ability and discourages them from interacting orally; students who feel inadequate in their language abilities tend to protect their self- image by not participating in class communication. It has been mentioned that there are some psychological factors that hinder students from practicing their speaking in EFL class which are lack of motivation, shyness, anxiety, fear of mistake, lack of confidence.

(ii) Linguistic Factors (Caletcova in Nunan, 1999)

Learners' difficulties with the transfer of information from the mother tongue to the target language, with the native-speaker teachers' pronunciation, and a lack of knowledge of grammatical patterns in English as well as cultural and social knowledge. The linguistic factors affecting the students' reluctance to speak English are lack of vocabulary, lack of understanding of grammatical patterns, incorrect pronunciation.

(iii) Socio-cultural Factors (Nunan, 1999)

Cultural factors that might cause learners' reluctance to communicate in a language classroom related to learners' prior learning experiences and expectations. Environment have important role to motivate the students to speak English. In environment, the people may think that the students just want to show off when they speak English for daily conversation. Thus, environment and previous learning that could influence the students' speaking ability. Attitudes towards the teacher and classroom condition are

2. Aim and Objectives

This study is aimed at studying the causes of students' low participation in English classroom and exploring strategies used by the students when they actively participate in the classroom. The objectives are to examine the causes of students' low participation in English language classroom and to explore strategies used by the students when they actively participate in the classroom.

3. Research Methodology

The questionnaire was written based on the three factors that affect students' low participation in English language classroom of Harumi (2010) which include a) Psychological factor such as fear of making mistake, lack of confidence, and lack of motivation; b) Linguistic factor such as lack of vocabulary, lack of knowledge of grammatical pattern, and incorrect pronunciation; and c) Socio-cultural factor such as attitudes toward English teacher and classroom

condition. The questionnaire consisted of 50 items extracted from the previous studies proposed by Taher (2005), Liu (2005), and Sayadi (2007). It was divided into two sections; 42 items in section A asking about the causes of students' low participation and 8 items in section B asking about the strategies used by the students when they participate in the classroom actively. Among 42 items in section A, 24 items were to obtain information about psychological factor, 7 items were related to linguistic factor and 11items were for in socio-cultural factor. Among the population of 300 students, 50 second year and 100 third year EFL Myanmar students from Monywa University have been used for data analysis. Only students who reported that they were not an active learner were included as the population of the study, and 150 students were randomly selected as the participants of the study.

4. Results

(i) Causes of students' low participation in English language classroom

The questionnaire results reveal that there are many reasons why students are reluctant to participate in the classroom activities. Some causes concern with psychological factors such as the anxiety, shyness or lack of knowledge of the students. Some are in the linguistic factor as the students' language difficulties and some causes are because of socio-cultural factor such as classroom environment and class size. The details are shown in table 1:

Table1 Causes of Students' Low Participation in English Language Classroom (Psychological factor)

No.	Items	Agree	Disagree
1	I get tense and nervous when I am speaking English in front of the whole class.	93%	7%
2	I feel my heart pounding when I am called upon to answer a question in English class.	95%	5%
3	I talk less because I am shy.	55%	45%
4	I feel too nervous to ask the instruction a question during English class.	67%	33%
5	I am too afraid to volunteer answers to the teacher's question because my classmates would laugh at me if my answer was wrong.	71%	29%
6	It is unpleasant speaking English in class because my mistakes make me feel incompetent.	73%	27%
7	I am afraid of being seen as foolish if I make too many mistakes when I speak in class.	62%	38%
8	I am afraid of making mistakes in front of my classmates.	62%	38%

Table1 (Continue)

No.	Items	Agree	Disagree
9	I feel anxiety if I am corrected while speaking English in front of the whole class.	25%	75%
10	I get nervous when the teacher asks questions which I have not prepared in advance.	93%	7%
11	I start to panic when I have to speak without preparation in the English class.	93%	7%
12	I get upset when I don't understand what the teacher is correcting	82%	18%
13	I get upset when I don't understand what I am saying	82%	18%
14	I feel anxious when I make English oral presentations in front of the class.	82%	18%
15	My English is not good.	65%	35%
16	I always feel that the other students speak English better than I do.	76%	24%
17	I am afraid that other students laugh at me when I speak up English in the class.	71%	29%
18	I am reluctant to participate in class because I am afraid of my teacher's harsh comments and negative gestures.	64%	36%
19	I feel apprehensive to participate in the class discussion if the lesson does not interest me	84%	26%
20	I am reluctant to participate in the class discussion because I am not interested in English.	24%	76%
21	I feel anxiety because my teacher doesn't give me the needed time to process the questions that he asked.	84%	16%
22	I always feel nervous speaking English because my teacher is very strict.	42%	58%
23	I feel relax when my English teacher responds in a friendly way	89%	11%
24	I get bored because of the teaching method that the teacher used in English class.	25%	75%
	Average	**69%**	**31%**

As shown in table 1, among these 24 items, item number 2 is the most distinct cause of the psychological factor as 95% of the students agree that most of the students have anxiety

and lack confidence to give response to the teacher's questions. The second largest psychological factor is in item number 1, number 10 and number 11. Ninety-three percent of the participants report that they are afraid of speaking English in front of the class. They are also nervous to participate without preparation in the class, and they start to panic when they have to speak without preparation in English class. The participants also report that their low participation is not caused by their low interest in English language, as seen in item 20. Seventy five percent of students disagree that they feel anxious when their mistakes are corrected in front of the whole class, as seen in item 9.

Table2 Causes of Students' Low Participation in English Language Classroom (Linguistic Factor)

No.	Items	Agree	Disagree
25	I can't participate because I have difficulty in constructing sentence	78%	22%
26	I think what keeps me reticent is my poor English proficiency	76%	24%
27	I get anxious to participate because I can't speak in complete sentences (i.e. uttering words or broken English)	71%	29%
28	When I want to discuss "I am not sure which tense to use".	84%	16%
29	I don't want to participate because I am scared that I would make noticeable grammatical errors.	64%	36%
30	I don't have exact words to express my ideas.	73%	27%
31	I always feel nervous speaking English because I do not have enough vocabulary to express my ideas.	89%	11%
	Average	**76%**	**24%**

In terms of linguistic factor, the most noticeable cause is on item 31 where 89% of the participants agree that they feel nervous when they speak English as they do not have adequate vocabularies to express their ideas. The next distinct cause is on item 28. Eighty-four percent of the respondents are not sure which tense to use when they want to discuss in the class. In item 25, 78% of the students agree that they cannot participate in classroom activities because they have difficulty making sentences. In this linguistic factor, the least agreement item is 29 and 64% of the participants worry about the noticeable grammatical errors.

Table3 Causes of Students' Low Participation in English Language Classroom (Socio-cultural Factor)

No.	Items	Agree	Disagree
32	I feel more anxiety in the class because my teacher always corrects me in a very bad way.	65%	35%
33	To avoid any embarrassing situation, I prefer to remain silent rather that to orally participate in the classroom.	44%	56%
34	I feel a bit nervous if I sit at the front of the class	38%	62%
35	In order not to participate in the English class, I like to sit at the back rows.	27%	73%
36	I sit in front if I prepare my homework	67%	33%
37	I do not practice English due to big class size	33%	67%
38	I like to participate in a small and comfortable class	73%	27%
39	I worried about the consequence of failing English courses	64%	36%
40	I don't have the opportunity to speak English outside the classroom.	31%	69%
41	I don't like to participate because my teacher is impatient	36%	64%
42	I feel more relaxed in pair work or group work.	87%	13%
	Average	**51%**	**49%**

In terms of socio-cultural factor, the most distinct cause is on item 42 as 87% of the participants agree that they feel more relaxed in pair work and group work when they are assigned to work in class. However 73% of the students respond that their low participation is not because of the class size. Sixty nine percent of the students disagree that they do not have the opportunity to speak English outside the classroom.

(ii) Strategies Used by the Students When They Actively Participate in the Classroom.

Another objective of this study is to identify the strategies used by the students when they actively participate in the classroom activities. The result is shown in table 4.

Table4 Strategies used by the students when they actively participate in the classroom

No.	Statement (B)	Agree	Disagree
43	I think carefully about what to say and then say it out loud.	85%	15%
44	I focus on what to say rather than on the language.	80%	20%
45	I do not mind if my grammar is wrong.	51%	49%
46	I listen to my friends' responses before I participate.	89%	11%
47	I write and say what I have written.	78%	22%

Table4 (Continue)

No.	Statement (B)	Agree	Disagree
48	I ask friends sitting next to me what to say before I participate.	89%	11%
49	I prepare some notes so that I know what to ask.	87%	13%
50	Before the class begins, I prepare some questions to be asked during the class.	47%	53%
	Average	76%	24%

According to table 4, the most used strategies are on item 46 and 48 as 89% of them report that they need discussion time with the classmates to be able to organize the idea when they respond. The second strategy mostly used by the students is on item number 49. Eighty-seven percent of students reported that preparing some notes can make them more confident to ask what they want to know. In item 43, 85% of them agree that if they get enough time to think carefully, they can participate in activities well. As mentioned above, the students suppose that they focus on what to say rather than on the language itself. Eighty percent of the respondents report that they emphasize on content rather than on the language in order to be able to participate in the activities. The findings also reveal that most of the students do not have the habits of preparing notes before the class. Only 13% of the students prepare some questions before the class begins while 87% did not do that and not more than 47% of the students prepare some questions to be asked during the class.

5. Discussion

The findings of the study reveal that some Myanmar students are often passive and reluctant to participate in the English language classroom activities because they are fear of speaking in English in front of the whole class, they do not have adequate English proficiency and they are afraid of individual work and so on. When the data were analyzed, the most dominant factor which effects on EFL Myanmar students is linguistic factor. According to the results, 76% of students are reluctant to express their ideas and to participate in the classroom activities when they do not have adequate vocabularies and they do not know how to construct grammatical sentences. The secondly significant one in this study is psychological factor. Sixty-nine percent of students are silent in the classroom because of their anxiety, shyness and fear of making mistakes. The findings support much of the literature about Asian students, who are often considered to be shy and passive in EFL (Kim, 2004).

In this study, the findings show that socio-cultural features influence on some Myanmar students as the least significant factor. Some Myanmar students keep silent because they are afraid of big class size and they worry about their homework and the negative comments of the teacher.

When the students participate in the classroom activities, they use some strategies to be suitable with the English language classroom. If they do not need to focus on some grammatical mistakes or poor pronunciation and if they have discussion time with their classmates, they are able to participate in the activities and respond the questions. The finding confirms the result of the study conducted by Liu (2005) who reported that for some students, the strategy has enabled them to get some ideas on what to say and to check if what they want to say is correct by asking the questions to their friends first. Getting enough time to make peer checking or listening to other students' discussions and contributions can help some students to organize some ideas and respond the teacher's questions at least. According to Liu (2005), this strategy is usually used by students who do not have the adequate background knowledge about the content.

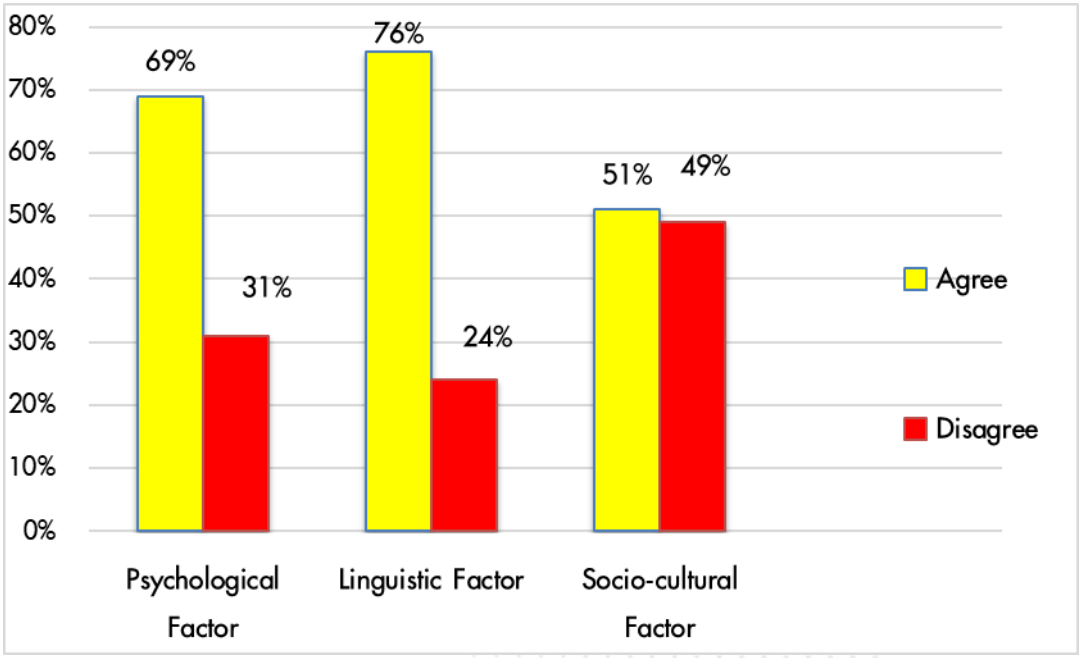

Figure1 Causes of Students' Low participation in English Language Classroom

6. Conclusions

In a teacher's mind, motivated students are usually those who participate actively in class, express their interest in the subject matter, and study a great deal. Teachers also have more influence on these behaviors and the motivation they represent than on students' reasons for studying the second language or their attitudes towards the language and its speakers. Teacher can make a positive contribution to students' motivation to learn if classrooms are places that students enjoy coming to because the content is interesting and relevant to their age and level of ability. The learning goals are challenging yet manageable and dear, and the atmosphere is supportive (Dornyei, 2001b). The finding of the study revealed that most of the students are low participation for the influence of linguistic factor. Although they are university students, they need

to learn more in vocabularies, grammatical structures and practices. It can be drawn that having insufficient language proficiency can also cause some psychological factors such as anxiety about calling on students' voluntarily and getting nervous in speaking in front of the whole class. According to the strategies used by the students, most of the students are weak in preparation of notes and questions before the class starts. However, they respond that they can do well if they have discussion time or preparation time. The teacher should create a good learning atmosphere to reduce their fears and give feedback in a friendly way. Creating group work or pair work will be the suitable way for the students who are reluctant to participate. Sometimes, teachers should give clear instructions or ask what the students want because most of the students are reluctant to participate in classroom activities as they do not understand what to say or what the teacher want them to do. Teachers should manage time so that the students can have chances to respond. For the students with low knowledge of vocabularies and poor English proficiency, teachers should provide activities and grammatical exercises to improve their vocabulary usage and their language proficiency. Most of the students in this study want to participate in when they get a discussion time with their friends and when they do not care about their grammatical mistakes. Moreover, they need to practice to improve their proficiency in English language and a good environment is necessary for them to be able to improve their proficiency outside of their classroom. If the students in the classroom are too silent to respond to, teachers should change their teaching strategies or employ flexible activities according to the students' level of language proficiency and create a good environment to encourage them to practice more outside of the classroom.

7. Recommendations

The findings of this study recommend a number of different studies for further research. The present study was limited in participants and it was not possible to generalize its findings to EFL students so further research should be incorporated with a similar design and a large sample size. And further research could examine the relationships between the factors identified in the present study and gender in order to find out more details factors influencing on EFL students.

8. References

Hamouda, A. (2013). An exploration of causes of Saudi students' reluctance to participate in the English language classroom. *International Journal of English Language Education*, 1(1), 17-34.

Harumi, S. (2011). Classroom silence: Voices from Japanese EFL learners. *ELT journal*, 65(3), 260-269.

Kim, S. J. (2004). Exploring willingness to communicate (WTC) in English among Korean EFL (English as a foreign language) students in Korea: WTC as a predictor of success in second language acquisition (Doctoral dissertation, The Ohio State University).

Lightbown, P. M., & Spada, N. (2013). *How languages are learned 4th edition-Oxford Handbooks for Language Teachers*. Oxford university press.

Liu, M. (2005). Reticence in oral English language classrooms: A case study in China. *TESL Reporter*, 38(1), 1-16.

Nunan, D. (1999). *Second Language Teaching and Learning*. USA: Heinle & Heinle Publisher.

Ruiz de Erenchun Lizarraga, M. (2014). *Causes for the low participation of students in the English lessons: a research study in Jaso Ikastola*. Oxford Advanced Learners' Dictionary 9th Edition. Oxford University Press,2016.

Thaher, M. (2005). Communication Apprehension Among An- Najah National University Students. An-Najah Univ. *J. Res. (H. Sc.)*, 19(2).

Tatar, S. (2005). Why keep silent? The classroom participation experiences of non-native-English-speaking students. *Language and Intercultural Communication*, 5(3-4), 284-293.

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Teaching Professionals' Opinions and Views on Attending Academic Conferences : Myanmar Context

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Abstract

Conferences are an essential part of academic life, but with all of the focus on getting research papers accepted and the stress of presenting or giving talks, they can sometimes feel like an overwhelming or even scary experience. Attending an academic conference is an opportunity to build networks with other academics and experts in the same or similar field of studies all around the world and to share thoughts on recent advances and technological breakthroughs. On the other hand, Borg (2014) sums up the potential benefits of conferences by saying 'there is perhaps no single experience with more potential for educating and refreshing a professional than an international conference'. Although professional conferences might have long-lasting constructive effect on someone's professional career the literature lacks empirical studies regarding conference attendance. In the recent study, a total of 266 teaching professionals' opinions about the impact of conferences on their professional development were investigated. Overall, the evidence presented in this research is positive, highlighting a range of benefits that delegates report as a result of conferences. Although there are countless great reasons to attend a conference, Myanmar university teachers view that teachers can establish professional networks in local and international arena through attending conferences and they can also learn new techniques and methods utilized in the field. Moreover, the data collected through questionnaire revealed that the majority of the participating professionals (84.25%) developed positive feelings after attending conferences. Thousands of teaching professionals attend conferences around the world each year and such activity is assumed to make a positive contribution to these individuals' professional development and work. Opportunities conferences provide to the teachers who attend conferences can be even further enhanced are also identified and discussed in this research. The data assert that through attending conferences, teachers can have opportunities to showcase their innovative work taking place at their institution to peers internationally, increasing the global reach of staff publishing as well as presenting their work and to hear about the latest developments in policy and practice from global leaders. As for the post-conference feelings and the activities the participants are involved, more than half of the participants feel 'confident' as they return home

relatively more knowledgeable after conferences. The data also suggest the participants' opinion on the effectiveness of attending the academic conferences. Through attending conferences, teachers can improve their presentation and communication skills and have the chance to add to their CV for the professional development. According to interview responses of the teaching professionals on the perceived benefits for professionals who attend conferences, they consider that conference attendees had an enhanced sense of self-worth, because they had the opportunity to compare their professional experience with that of other professionals working elsewhere and they also became more aware of their own potential. The majority of the respondents stated that they feel motivated to go to conferences and feel more confident.

Keywords : Teaching Professionals, Opinions and Views, Attending Academic Conferences, Myanmar Context

1. Introduction

Thousands of professionals attend conferences around the world each year and such activity is assumed to make a positive contribution to these individuals' professional development and work. Evidence of what exactly those benefits is, though, scarce, and this research reports a study seeking to identify, from delegates' own perspectives, the impact that attending conferences has. Overall, the evidence presented in this research is positive, highlighting a range of benefits that delegates report as a result of conferences. Ways in which the impact of attending conferences can be even further enhanced are also identified and discussed in this article. Numerous profession based events are held every year at both national and international levels, offering teachers and other professionals opportunities to learn, share and network – providing of course there is the appropriate institutional support for teachers to attend these. A recent study by Borg (2015) shows several perceived benefits for professionals who attend international conferences, principally. These include in particular the potential for conference attendees to meet other professionals, and thus be exposed to and exchange new ideas. The importance of conferences and participating in them in the visibility, consolidation and expectations is undeniable both at the professional, institutional and personal levels. He stated that conferences provide an opportunity for networking with peers who can answer questions. Borg (2014) suggested that conferences can show different techniques, teach problem-solving, and provide an opportunity to exchange ideas. Feelings of isolation can also be reduced by going to conferences. Conferences serve as a platform for researchers and presenters to share their findings and experiences from their areas of interest. There has been some research on the significance of participating in conferences in different forms and the functioning (Biggin, 2007). The followings are advantages for the teachers who attend the conferences to share knowledge and improve their understanding of recent trends in their

teaching on the selection and implication of conference themes (Biggin, 2007). It will also make the teaching more effective because any issues in the classroom will no longer become distractions to students. Thus, conferences are very helpful to all teachers. They help every teacher learn more about their profession so that they can be more effective.

1.1 Reasons to Attend Educational Conferences (Source: Borg, 2014)

Educational conferences are always available for those willing to attend them. They are a venue for teachers to learn and practice their profession as they are living it. They are an opportunity for teachers to be more to their students and to become more capable instructors.

(i) Learning about New Advancements

New advancements in teaching are usually discussed in educational conferences. This means that the newest gadgets, apps, and techniques will be taught to help every teacher stay up-to-date. These things will help participants create proper communication between them and their students. It will also help students learn better if they teach them through methods, such as the Internet, that they are already comfortable with.

(ii) New Ideas

Conferences are great places to receive new ideas that participants can use in the classroom. These can span from learning more ways to teach the subject to creating more effective evaluation tools. It can help them create different ways that will help students remember the subject matter or will keep them more attentive in class.

(iii) Learning Other Ways of Teaching

Teachers sometimes forget that there is a multitude of ways to teach students because there are so many different types of students. Encountering a group of students that seem to be hard to teach doesn't necessarily mean that the teacher is incompetent; it might just mean that the teacher's specific teaching style does not match them. In conferences, one can meet other teachers who may have already experienced the same thing, and one can learn ways to effectively teach the students.

(iv) Mastering the Profession

Although mastery of the profession occurs slowly as teachers gain experience through the years, it also increases when they share experiences and stories with people who have more experience than teachers. These conferences are a great way to learn from people who have been educators for years.

1.2 The Opportunities Conferences Provide to Teachers who Attend Conferences (Source: Borg, 2014)

Attending academic conferences gives the opportunity to hear about the latest developments in policy and practice from global leaders. Each offers an opportunity to gain insights from the work of others, as well as solutions and actions for own institution. Posters,

workshops, presentations and Ignite sessions allow the participants to showcase the innovative work taking place at their institution to peers internationally, increasing the global reach of staff publishing and presenting their work.

1.3 Effectiveness of Attending the International Conferences (Source: Borg, 2014)

(i) Getting feedback on an early version of one's latest work

Presenting at a conference can be nerve-wracking, and participants might be tempted to fall back on the same presentation that they always give because they know that it is safe. But if they do this, they will be missing out on one great benefit of conferences: the chance to get feedback from experts on early versions of their work. Participating professionals can use their presentation time to talk about preliminary results from their most recent experiment, and the feedback they get from their audience can help them to anticipate reviewers' comments when they try to get it published. Alternatively, they could present their well-established work, and then at the end, they could throw out some ideas they have for future experiments and get feedback on these. A conference presents the chance to see a whole room full of world experts in their particular field, so there is no better chance to get their work in front of these people and have them candidly discuss its strengths and weaknesses.

(ii)Getting to Know Other People in the Field

One of the biggest benefits of attending a conference is getting to know other people in their field. They have talked before about how conferences are a key opportunity for networking. Networking is very important for job hunting, obviously, but having a big network benefits them in other ways too. Maybe participating professionals will need advice from an expert in another field, or they will want to ask someone to come and give a talk at their institution, and this is easier when they have a network to reach out to. It is also helpful to have support from people who are at a similar stage in their careers to them and can empathize with the problems and struggles which they go through at work.

(iii) Hearing about the Latest Research

If participants want to know about the very latest findings in their field before they are even published in journals, then a conference is the place to be. Many researchers will present preliminary findings or work which has not yet been published at a conference. Of course, they should not take every claim they hear at a conference to be accurate until they are able to look through the methodology and findings for themselves, but this is a great chance to get a peek of what other people are working on. These ideas can be great inspiration for their own research.

(iv) Improving One's Presentation and Communication Skills

Soft skills are important for every career and in academia or research then the skills in presentation and communication are particularly important. Fortunately, conferences give us the chance to practice these skills. Rehearsing for giving a talk or poster presentation will make us

more comfortable in front of an audience, and participants will learn things like the speed at which they should talk and the amount of detail which they need to give in their explanations. Answering questions after the presentation and chatting with other attendees will help to hone communications skills.

(v) Visiting a New Place and Have Fun

Finally, it should not be overlooked that attending a conference is good fun. Although a conference is unequivocally a work event more than a leisure one, it can still be enjoyable. Travelling to a new place is a big part of the appeal of a conference, meaning that participants get to see a different city, eat new food, and see some local landmarks or tourist attractions. They might even try out learning a little bit of a new language. They will also have the chance to attend social functions as part of a conference, such as dinners, trips, or parties. Sometimes these events can be formal or dull, but very often they are relaxed, friendly affairs. With the opportunity to meet other academics with similar interests to them, they can enjoy the company of others and they might even make some good friends.

(vi) Meeting the Academic Heroes

If there is a participating professional whose work we admire, it can be both inspiring and educational to meet them and to talk to them directly. If one of our academic heroes is speaking at a conference, this could be the perfect chance for us to meet them.

(vii) Engaging in High-level Debates and Refine One's Ideas

There are few things better for developing ideas of participating professionals that a good spirited debate. Listening to and participating in lively discussions at conferences can give them new ideas, help refine our existing concepts, and maybe even change their mind about some key issues in the field. In a conference setting, one should always retain a certain level of humility and be receptive to.

(viii) Adding to CV

Attending a conference is definitely something that should go on CV, especially if participating professionals have given a talk or poster presentation. It shows potential employers or grant-awarding bodies that they are engaged with their field and are taking an active part in communicating with other academics.

1.3 Benefits for Professionals (Source: Borg, 2014)

In addition to the perhaps obvious advantages such as networking, becoming better acquainted with teaching techniques and broadening one's theoretical knowledge, the participants in Borg's study reported that their professional confidence increased in five ways:

(i) They felt a sense of achievement, especially if they had delivered a successful presentation.

(ii) They had an enhanced sense of self-worth, because they had the opportunity to compare their professional experience with that of other professionals working elsewhere.

(iii) Teachers became more aware of their own potential.

(iv) New knowledge and skills helped to bolster their credibility in the eyes of their colleagues back at their workplace.

(v) Conference participation helped to combat feelings of professional isolation.

These empirical findings appear to confirm considerable anecdotal evidence regarding the value of professional conferences for teachers. They also hint at the need for increased support by employers to make conference participation easier.

2. Methodology

Attending a conference is a professionally rewarding experience. In addition to socializing with colleagues from other institutions and a trip to a possibly exotic locale, the two main reasons to attend a conference are to hear presentations and to converse with other researchers. Participants will learn that even though listening to the talks is extremely valuable, hallway conversations can be even more fruitful. Some people are naturally gregarious; some people have trained themselves to be that way; and others can be shy about approaching people they do not know at a conference.

Academic conferences are an integral part of the scientific community. Such conferences are a platform for researchers to share their most recent findings with their peers and to encourage a healthy discussion between researches from a variety of backgrounds and fields of study. There are many obvious reasons for attending conferences.

Table 1 Questionnaire Responses of the teaching professionals on the main reasons teachers attend conferences (Source: Ur, 2012) (n=266)

Sr No	Main reasons	Responses			Feeling	
		Agree	Not Sure	Disagree	Positive	Negative
1	Through attending conferences teachers can update their knowledge on the latest research.	63%	33%	4%	88%	12%
2	Through attending conferences teachers can learn new techniques and methods utilized in the field.	66%	29%	5%	83%	17%
3	Through attending conferences teachers can familiarize themselves with the most recently released teaching materials.	51%	31%	18%	79%	21%

Table 1 (Continue)

Sr No	Main reasons	Responses			Feeling	
		Agree	Not Sure	Disagree	Positive	Negative
4	Through attending conferences teachers can establish professional networks in local and international arena.	72%	18%	10%	87%	13%
Avg		63.00%	27.75%	9.25%	84.25%	15.75%

Participants agree that they will hear a lot about things in their field that will be new to them (66%). These could be new techniques, new types of equipment, unpublished data, or learn from thought-leaders that they may not have previously heard of. Moreover, people always say the meeting is "good for networking." Participants try to build relationships, make friends, build collaborations, get to know people, and try to help students. At a conference, 72% of the participants agree that, participants will be able to get together with people from a wide range of backgrounds, of whom they may not encounter at their home workplace or institution. As they build their professional network, conferences can become a good place for meeting with people in their field that they have not connected in a while.

Presenting a paper is one of the main objectives of an academic conference participant. The presenter will have the chance to present a paper in front of colleagues of the same or similar fields of study and will be able to receive positive feedback and constructive criticism about their research. The exchange of ideas on fields of interests seeds the links for future collaborations across the world.

Table 2 Responses of the teaching professionals on the opportunities conferences provide to teachers who attend conferences (Source: Borg, 2014) (n=266)

Sr No	Opportunities of conferences	Responses			Feeling	
		Agree	Not Sure	Disagree	Feeling confident	Feeling isolation
1	Attending academic conferences gives the opportunity to hear about the latest developments in policy and practice from global leaders.	70.00%	21.00%	9.00%	69.00%	31.00%
2	Each offers an opportunity to gain insights from the work of others, as well as solutions and actions for own institution.	68.00%	30.00%	2.00%	62.00%	38.00%

Table 2 (Continue)

Sr No	Opportunities of conferences	Responses			Feeling	
		Agree	Not Sure	Disagree	Feeling confident	Feeling isolation
3	Posters, workshops, presentations and ignite sessions allow the participants to showcase the innovative work taking place at their institution to peers internationally, increasing the global reach of staff publishing and presenting their work.	81.00%	12.00%	7.00%	65.25%	34.74%
Avg		73.00%	21.00%	6.00%	65.42%	34.58%

According to the data, the common opportunity for attending a conference is no doubt publication. Conference proceedings are always a good way to have our research published and indexed. They also have the opportunity to publish their research in one of the journals. Listening to presentations inform of what others are doing (sometimes more clearly than the paper, and in any event with a slightly different spin and the ability to ask questions), will inspire research ideas of one's own, and will expose to different styles of presentation (81.00%). This is a benefit of attending conferences, since not only may conference attendance learn things outside their field about other areas of research in their discipline, but they also have many sessions for professional development and career advice.

Attending international conferences allows participants the opportunity to listen to different points of view and to learn new ideas and trends in the field. They also provide with new techniques, new types of equipment, data to publish, and certain facts that participants may not have heard of.

Table 3 Questionnaire responses of the participants' opinion on the effectiveness of attending the international conferences (n=61)

Sr No	Effectiveness of attending the international conferences	Responses		
		Agree	Not Sure	Disagree
1	Get feedback on an early version of one's latest work	40.00%	42.00%	18.00%
2	Get to know other people in the field	54.00%	36.00%	10.00%
3	Hear about the latest research	63.00%	24.00%	13.00%
4	Improve one's presentation and communication skills	80.00%	16.00%	4.00%

Table 3 (Continue)

5	Visit a new place and have fun	73.00%	7.00%	20.00%
6	Meet the academic heroes	75.00%	19.00%	6.00%
7	Engage in high-level debates and refine one's ideas	58.00%	25.00%	17.00%
8	Adding to CV	79.00%	13.00%	8.00%
Avg		%	%	%

Only 40% of the participants agree that at a conference, participants have the opportunity to get feedback on their work from people who have never seen it before and may provide new insight. Conferences are also a good way for people to meet them. They may meet someone at a meal, in the exhibit hall or wherever and within a few minutes, they can make a connection with someone that could dramatically impact their professional career. Among the participants, 54% of them think that this is especially important, when they are looking for collaborators, jobs ideas, or in some fields they may even be looking for committee members. Conferences are another way to get their name and work out there as they begin to establish themselves in their field of study, especially if fortunate to be invited as a speaker. And of course, there are other benefits to attending conferences such as getting out of the office for a few days and use the time to visit a new city, gain continuing education credits via attendance etc. However, 75% of the participants agree that they will get to keep onto of the research of some of the biggest names in their field, in addition to some of the newest faces in it. Conferences give them the opportunity to talk to these people one-on-one about what they are working on, and 58% think that they may even give them advice on how to enhance their own work. They have the opportunity to ask presenters questions about their work and the rationale behind it, which they cannot do when reading journal articles.

The greatest benefits of attending an international or professional conference are the opportunities to build our network and increase our awareness of new trends happening in our area of interest. Some of the presenters shared cutting-edge research on entrepreneurship, marketing, organizational development, technology, commerce and leadership. These research topics allowed learning about all of the new things that are developing in other countries while expanding current knowledge within the area of expertise.

Table 4 Interview responses of the teaching professionals on the perceived benefits for professionals who attend international conferences (n=61)

Sr No	Perceived benefits for professionals who attend international conferences	Post-conference feelings		
		Feeling motivated	Feeling more confident	Feeling isolation
1	Conference attendees felt a sense of achievement, especially if they had delivered a successful presentation.	39.00%	42.00%	19.00%
2	Conference attendees had an enhanced sense of self-worth, because they had the opportunity to compare their professional experience with that of other professionals working elsewhere.	44.00%	39.00%	17.00%
3	Conference attendees became more aware of their own potential.	43.00%	44.40%	12.60%
4	New knowledge and skills helped to bolster their credibility in the eyes of their colleagues back at their workplace.	41%	44.00%	15.00%
5	Conference participation helped to combat feelings of professional isolation.	40%	41.00%	19.00%
Avg				

According to the interview responses, a big benefit for going to conferences is to have the opportunity to compare their professional experience with that of other professionals working elsewhere. Conferences bring together people from all different geographical areas who share a common discipline or field, and they are a great way to meet new people in the same field. This is one of the obvious benefits for attending conferences: to present our work. Moreover, conference attendees became more aware of their own potential. It is good practice in talking about what we do with a variety of people from similar, related and /or completely different areas of study. Presenting will make us more confident about the work that we do, and gives us new perspective about our work as people may ask questions that make us think about our project differently.

3. Results

Attending conferences, especially the international ones, gives the chance to listen to different points of view and learn new ideas and trends in the field. They also provide with new techniques, new types of equipment, data that is yet to be published, and investigators that participants may not have heard of. Conferences are priceless chances to sharpen our saw by

learning new skills in a different environment. Overall, the evidence presented in this research is positive, highlighting a range of benefits that delegates report as a result of conferences. Although there are countless great reasons to attend a conference, Myanmar university teachers view that as they step up and attend conferences they would build a network of people who can raise their caliber of work to greater heights as they achieve shared objectives. Meeting new people with different cultures and dispositions enlightens way of thinking in the field of study. Networking is all about starting and building relationships, getting to know people, and trying to help other people. And, for a lot of people, knowing how best to do that at a conference or meeting is a learned skill. Moreover, the data collected through questionnaire revealed that the majority of the participating professionals (84.25%) developed positive feelings after attending conferences. Thousands of teaching professionals attend conferences around the world each year and such activity is assumed to make a positive contribution to these individuals' professional development and work. Current research also assert that through attending conferences, teachers can have opportunities to showcase their innovative work taking place at their institution to peers internationally, increasing the global reach of staff publishing as well as presenting their work and to hear about the latest developments in policy and practice from global leaders. As for the post-conference feelings and the activities the participants are involved, more than half of the participants feel 'confident' as they return home relatively more knowledgeable after conferences. It is vital to find out what is new in the field of study to survive in an academic discipline. Academic conferences will keep participants updated on new findings that have taken place. This is in fact one of the major reasons why one should attend an academic conference.

The data also suggest the participants' opinion on the effectiveness of attending the academic conferences. Through attending conferences, teachers can improve their presentation and communication skills and have the chance to add to their CV for the professional development. Furthermore, attending, organizing and being invited to speak at conferences are also expectations which are included in many promotions criteria and also in some hiring criteria (particularly for early career scholars who may not yet have a publication record). According to interview responses of the teaching professionals on the perceived benefits for professionals who attend conferences, they consider that conference attendees had an enhanced sense of self-worth, because they had the opportunity to compare their professional experience with that of other professionals working elsewhere and they also became more aware of their own potential. The majority of the respondents stated that they feel motivated to go to conferences and feel more confident.

Conferences are highly exclusionary spaces for all manner of reasons. They are also vital sites for learning, knowledge production and dissemination, career development, and the formation of collaborations and partnerships for publications and research projects, sites where

jobs are directly and indirectly advertised and secured, and sites of friendship, mentoring and all kinds of relationships. Conferences are recognised in research on academic careers as important sites which have a plethora of indirect benefits.

4. Discussion

Attending conferences allows participants to learn new information and tactics from hearing others' presentations, they also can converse with other researchers from different universities and even countries they may have only heard or read about. Participants argue that reading a scientific journal can provide us with most of these, but an insight that comes directly from the researcher may just have additional findings and notes that may have not been in their publications. Academic conferences help us network. We get to meet researchers and scholars not only from our own field of study, but also those from related fields. This gives us a broader perspective on our field and we will be able to see how the different areas interconnect to bring about a substantial finding. Meeting new people also means that we make new business connections and these may prove quite beneficial when we have a new research project sometime in the future. Not only that, we get to meet the most knowledgeable in the field and if you strike them up the right way, they might be keen in being your mentor, giving us valuable guidance along the way. One of the other main reasons for organizing such academic conventions is the learning factor tied to it. Just by attending them, participants get first-hand insight into certain industries and areas of study. Interestingly, much of the time, they have revolutionary moments at such conferences where they realize that a certain technique or process used in another field of study as common practice may become the next novel breakthrough in them. Besides those moments of epiphany, you may also learn new things related to better safety management and laboratory processes. One of the main skills that they will get to put into practice at an academic conference is ability to present their findings with self-confidence and a developing a personal touch to the way they connect with their audience. By presenting at an academic conference, they are also gradually getting better at presenting their research in "layman's" terms, especially for those who are not quite familiar with their field of research. When they listen to someone presenting their research, there are quite a few benefits as well. They may just pick up a few new skills and processes that they can incorporate into their daily laboratory processes and optimize overall functions at their workplace.

The best thing about academic conferences is that they are always ahead of the game. Since the main function of such convention of minds are all about sharing new findings, they would be the first to know what is happening and which advances are occurring across all fields that are of interest to them. They would also be up to speed on any possible technological advances, especially in terms of artificial intelligence and robotics and how they may play a part

in your field of study. Besides that, they would also get first hand access to the most updated basics at a laboratory, which are the standard procedures, laboratory management and ethics as well as the latest safety measures. It is an opportunity to expand the knowledge that one has and upgrade performance in accomplishing institutional objectives. Conferences bring together people who share a common discipline from different parts of the world, bringing different forms of ideas which build into something greater. They will also have the chance to socialize with their colleagues at coffee breaks, lunches and social activities. This cannot be summed up adequately as people from different parts of the world who have uniqueness in their ways of living which you are often surprised to learn from. An academic conference is a great way to have a "break" from academic responsibilities at the university and discover different cities of the world.

Finally, of course, conferences provide great opportunities to learn about the latest research in the field. Some conferences include workshops that teach valuable field-specific or more general skills. Paying attention to the talks and posters that win prizes can help with making prize-winning presentations in the future.

5. References

Biggin, A. (2007). *Environmental impact of scientific conferences*. Nature 448:749. doi: 10.1038/448749a

Borg (2015). The benefits of attending ELT Conferences. *ELT Journal*, 69(1), 35–46. https://doi.org/10.1093/elt/ccu045

Evans, L (2013). The professional status of educational research: Professionalism and developmentalism in twenty-first-century working life. *British Journal of Educational Studies, 61*(4).

Waite, J. L., & Hume, S. E. (2017). Developing mission-focused outcomes for a professional conference: The case of the national conference on geography education. *Journal of Geography, 116.*

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Constraints Faced by Teachers of English as a Foreign Language in Myanmar Universities

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Abstract

English is very important in today's global era. Although English language learning is gaining importance in Myanmar, there are serious problems with the English language proficiency of Myanmar university students. Therefore, university English education is particularly important. The purpose of this research is to explore the challenges faced by EFL teachers while imparting English language education in universities of Myanmar. In order to conduct the study, the data were collected through questionnaire and semi-structured interviews. The study was conducted through questionnaire and interview method to identify the perceptions of teachers teaching EFL at universities about the challenges faced by them and associated strategies to meet the objectives of teaching EFL. The senior teachers as respondents to semi-structured interview were contacted through telephonic method to get the results confirming the present constraints related to lack of training and development of teachers that makes it challenging for EFL teachers to impart efficient language skills, negative perception of students and lack of proper resources and text. According to the questionnaire, such issues arise due to certain specific constraints that can be categorized as constraints of beliefs, curriculum, pedagogical and administration. These constraints may be overcome through various activities and innovative methods to generate interest in learning English as a foreign language or encouragement to use the language outside the classroom and therefore extra time is required to practice and involve in activities associated with learning of English.

Keywords: Constraints, English as a Foreign Language, Myanmar Universities, Globalization

1. Introduction

Globalization has brought the world closer making it a single entity where technological advancements are contributing to the process making it possible for people located at different geographical borders to communicate and interact without barriers (Crystal, 2001). In Myanmar, the official language is Myanmar, which is generally used as a major medium of communication as well as instruction up to the university level across the region. The English language is learned in basic education high schools, as well as higher education institutions but, holds the position of a foreign language. However, recently the English language has started gaining much importance in the Myanmar education system. Earlier, students generally considered it as a language to pass in the examination, however, things have changed recently and the status of the English language is improving in Myanmar due to the global demand and being it the language of science and technology as well as business and commerce. The Ministry of Education in Myanmar is highly concerned about the pursuit of excellence in effective teaching and learning of English as a foreign language in the field of education. However, it experiences the process to be tardy especially at the university level. The English language may or may not be the official language of a nation but holds key importance as a foreign language in most countries across the world. Similarly, in Myanmar, English as a foreign language has received a lot of attention resulting in considerable development in this area following the global advancements in the trends and approaches of teaching the language. Ministry of Education presents the syllabus of English with consideration for Myanmar beliefs, customs, values, and traditions. However, there is a general lack of various technological resources like films, tape recorders, and labs to facilitate the learning and teaching of the English language.

Although English language learning is increasingly valued in Myanmar, there are serious problems with the English language proficiency of Myanmar's university students. Students carry weaknesses in English proficiency from skills to university, leading them to have more trouble in English classes and courses. The main reasons for this low proficiency are often related to instructor-centered instruction, teachers' reliance on traditional methods of language instruction, lack of student motivation, and lack of real-time practice. Students often believe that the language is useless in real-world scenarios and social life, which makes it difficult for teachers to motivate them to achieve high levels of English proficiency.

The purpose of this research study is to explore the constraints faced by EFL teachers while imparting English language education in universities of Myanmar. Thus, the route of qualitative study is selected to understand human behavior aspect in relation to EFL teaching and learning at university level. This research will focus on exploring the possible constraints associated with institutional policies, socio-cultural attitude, motivation level of learners, lack of appropriate resources and technological equipment, and negative attitude of learners towards English language

as faced by EFL teachers in Myanmar Universities. The focus is on identifying the strategies and policies that can help in improving the situation and ensuring better reading, writing, listening, and speaking skills among Myanmar students at University level.

1.1 Literature Review

English is the sole language enjoying the status of global acceptance as it plays a dominant role as a mode of communication on a worldwide basis. The language is used by major developed nations such as the United States and the United Kingdom. Due to such strong status of English language, it is studied as a second language or foreign language in many countries with the aim of enjoying the benefits related to internationalization of English (Crystal, 2001). It is being used as the major language in several different sectors like education, technology, science and commerce and research and development too. Additionally, the language is preferred in areas of international relations, higher studies, diplomacy and other fields bringing in people from different cultural and educational backgrounds to interact and work together (Liton, 2012). Therefore, learning and adopting English as a foreign language would help students to avail the merits of various factors associated with English as a medium of international communication. Myanmar has witnessed tremendous growth in several fields such as economics, health care, science, technology, and commerce. Similar growth is expected in the field of education as the country holds a formal system of schools and universities where English is taught as a foreign language at various levels and various courses. Tremendous efforts can be seen made by Myanmar government to help people acquire education in English language to develop skills required to interact and perform in an international environment. However, there are certain key constraints related with imparting education of English in the form of foreign language in the region.

There have been many studies examining the problems and challenges faced by EFL teachers in different countries. Pathan and Marayi (2016) investigated the major problems and challenges faced by the Libyan EFL school teachers. Findings revealed that most Libyan EFL teachers encounter different problems including the lack of teacher-training and development of profession skills, lack of coordination among the teachers-school authorities and quality inspection authorities, shortage in the basic educational infrastructure, teaching and learning aids and materials, and the lack of motivation among most of the students. Songbatumis (2017) attempted to investigate English teaching challenges as well as the solutions taken by the English teachers in Indonesia. Researches were taken exploring the challenges faced by EFL teachers in Saudi Arabia (Khan, 2011; Al-Seghayer, 2014; Al-Sobhi & Preece, 2018; Ashraf, 2018). In particular, Al-Seghayer (2014) conducted a research to pertain the constraints facing English education in Saudi Arabia in which the constraints are observed in several areas, including students' beliefs, aspects of curriculum, pedagogy, and administrative processes. Moreover, Fareh (2010) also identified some challenges

in the English language education such as teacher-centered instructions, insufficient training concerning English teaching methodologies, inadequate assessment techniques, inadequate preparation of teachers and lack of students' motivation. Putri (2020) investigated the experiences and challenges perceived by Indonesian EFL teachers as the NNESTs in Thailand. Kaiser (2017) discusses the many challenges faced in English language instruction in Uruguay and the new practices, policies, and proposals that support this new national objective. Past studies showed that not only the students in Arab countries but also in Asian countries like Vietnam, Japan, Indonesia and China have the difficulties in communicating in English due to the lack of exposure as one of the constraints in English language education (Khan, 2011; Al-Sobhi & Preece, 2018).

1.1.1 Constraints Faced by Teachers of English as a Foreign Language

Based on the past related studies, some common problems and challenges faced by EFL teachers are identified and discussed as follows. According to Al-Seghayer (2011,2014), these constraints are explained and discussed in detail as follows:

(i) Beliefs Constraints

Beliefs in relation to learning of foreign language are central constructs playing a key role in the success or failure of the process of teaching and learning the language. Indeed, the beliefs of students in relation to EFL that they bring along with them to the classrooms have a significant impact on the process of learning language and acquiring competitive skills to achieve the goals of learning foreign language. As argued by Al-Seghayer (2011) the lack of intrinsic motivation is the major issue acting as a barrier to grasping the lessons of English in an efficient manner. According to Khan (2011), the extrinsic influence placed by education system of the nation is responsible to encourage the students so as to avoid the influence of any personal thinking about the language.

(ii) Constraints of Curriculum

As discussed by Shah, Hussain, & Nassef (2013), there are some significant constraints impeding the teaching process in EFL classes and includes the limited time available for instruction, lack of appropriate resources and text, and constraints of teaching methodology. As English curriculum comes with high expectations, it is necessary that some more time is allocated to teaching of the language considering the fact that students in Myanmar are exposed to language only during their formal classes of EFL. There is no environment or encouragement to use the language outside the classroom and therefore extra time is required to practice and involve in activities associated with learning of English.

(iii) Pedagogical Constraints

Besides some key curriculum constraints there are some pedagogical constraints faced by teachers of EFL in Myanmar. The first constraint in this regard is the lack of appropriate courses for teachers to learn English-teaching methods. Such courses form the part of English preparation

program that teachers have to undergo before actually start teaching the language in universities. However, in-service training programs are lacking expertise as local education departments conduct such programs, which are handled in a poor manner. A majority of teachers do not even receive such in-service training and there is no incentive for these teachers who engage themselves in any programs of self-development (Al-Seghayer, 2011)

(iv) Administrative Constraints

Teachers of EFL also face administrative constraints in Myanmar. These constraints are those related with centralization, lack of cooperation and partnership with experts, lack of a comprehensive strategic plan for EFL. The Ministry of Education controls the education system of teaching English in Myanmar centrally. Teachers are provided the syllabus, guidelines, and deadlines from Ministry, which they are required to follow in a strict manner. The strong mechanism of centralization for English teaching in the region results in less or no autonomy of EFL teachers to select the teaching methods, involving technological advancements, and need of teaching with strict boundaries (Shah et al., 2013). Then there is a lack of partnerships with local and foreign training centers to reinforce the qualification and skills of EFL teachers paving the way to provide best field practices.

2. Research Objectives

The research consisted of three objectives:

2.1 To explore the language teachers' perceptions towards the common constraints making the achievement of teaching EFL difficult for the teachers.

2.2 To investigate the most significant constraints faced by EFL teachers in Myanmar.

2.3 To find out recommending strategies to manage the challenges faced by EFL teachers and improving the level of students' learning and proficiency of the language.

3. Research Methodology

3.1 Participants

This study explores the constraints faced by EFL teachers while imparting English language education in universities of Myanmar. The method of random sampling has been used to select the universities among those where English language is being taught as a foreign language in Myanmar. In Myanmar, all EFL teachers who work under the Ministry of Education transfer from one university to another and serve as a teacher at any University where they are appointed. In order to get an overview of the teachers' perceptions, this study focused on the teachers who are working at the Universities in Upper Myanmar because of the tight situations during covid-19 pandemic. In this study, the participants were 207 university teachers of English as a foreign language altogether. The sample was 80 senior teachers who can confirm the specific constraints through the interviews and 127 junior teachers from different universities in Myanmar

who contributed the responses to the questionnaire. The years of senior teachers' teaching experience ranged from 20 years to above 30 years and their current positions were professors and associate professors, the highest position of the department. The years of surveyed junior teachers' teaching experience ranged from 3 to 10 years.

3.2 Research Instruments

As the research instruments, the questionnaire and interviews were used to collect the data. The interviews were used to find out the deeper thoughts of the senior EFL teachers and the questionnaire was used to explore the attitude of the junior EFL teachers towards the constraints faced by EFL teachers in Myanmar. The interviews were conducted through telephonic way for teachers, teaching in different Myanmar universities, all of which are located in Upper Myanmar. The questionnaire, proposed by Khan (2011) was constructed on an e-survey and it consisted of demographic characteristics and 13 items on the four main constraints with 5-point Likert scale, 1. Strongly Disagree – SD, 2. Disagree - D, 3. Not Sure – NS, 4. Agree – A and 5. Strongly Agree – SA.

3.3 Data Collection

In the context of present study, the data required for quantitative content analysis were collected through the direct interviews with 80 senior teachers of English language in different universities in upper Myanmar. The interviews were semi-structured in nature, conducted through telephonic way to obtain a detailed discussion over the issues and challenges faced by teachers, focusing on belief and negative attitude of students towards English language, curriculum, pedagogy and administration. It is believed that the data obtained from the most senior teachers imparting the learning in this field can prove to be practical and effective for designing future plan of action in Myanmar universities. The online survey was contributed to the junior EFL teachers via email or official social media groups as much as possible. Consequently, 127 junior teachers from different Myanmar universities completed the online survey. The quantitative data were collected through Google form and the data entry for the statistics was stored from the Microsoft excel comma separated values file.

3.4 Data Analysis

In this study, the quantitative content analysis was used to interpret the perceptions of the senior teachers on the common constraints faced by EFL teachers in Myanmar. The data collected through the questionnaire were analyzed and the descriptive statistics were described in this study

4. Research results

To understand the current difficulties of teaching English and to get the deeper insights to the constraints faced by EFL teachers at universities in Myanmar, 80 senior university English

teachers were interviewed by telephone. Six questions were asked based on the literature review in section 2 and the interview results were shown quantitatively in Figure 1.

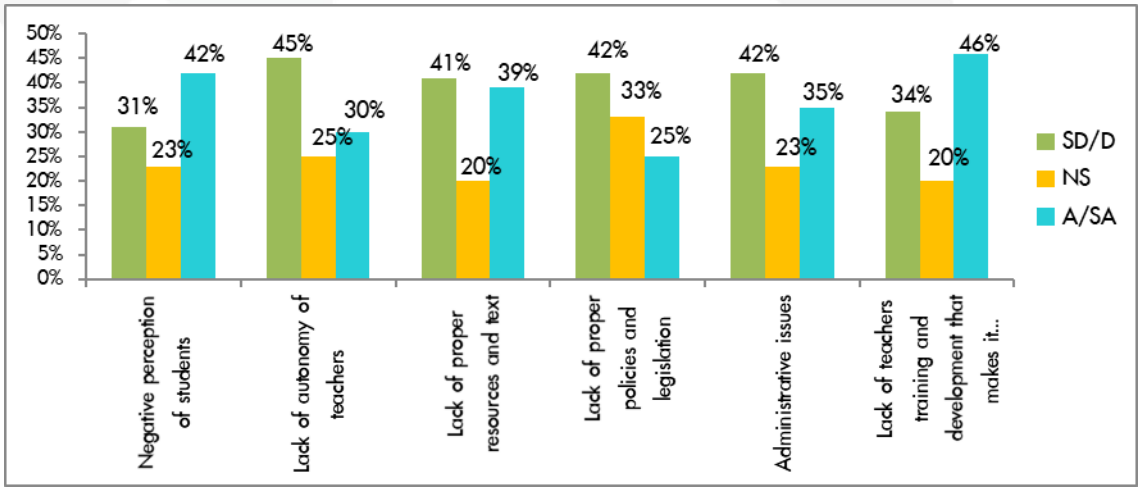

Figure 1 Senior teachers' interview responses towards constraints making the achievement of teaching EFL difficult for the teachers

As seen in figure 1, according to 46% of the senior teachers, there is a lack of qualified teachers to teach English language and therefore foreign lecturers should be employed in some Universities to ensure proper teaching and learning of EFL of the students. This is because of the lack of training and development of teachers that makes it challenging for EFL teachers to impart efficient language skills. Next, attitude of students in Myanmar in relation to English in the form of a foreign language is not positive (only 31% for strongly disagree and for disagree) although they understand the necessity of English language to ensure a prosperous country and developing in various different areas. Despite of such an understanding towards high status of English language, 39% of senior teachers agreed that universities lack proper resources and texts to help students to acquire high level of proficiency in the English language. Such issues arise due to certain specific constraints that can be categorized as constraints of curriculum. Only 30 % and 25% of the teachers revealed that there is lack of teachers' autonomy and lack of proper policies and legislation in Myanmar universities and 35% of the senior teachers admitted that some constraints faced by EFL teachers in Myanmar comes from administrative issues.

Considering the importance of English language, it is implemented as a compulsory subject from high school to the university level in Myanmar. Some key steps are also being taken by the Ministry of Education with the aim of making students acquire basic English language skills, develop their awareness about the need of learning this foreign language as a means of global communication, enabling students to acquire required linguistic capabilities and competence and enabling them to participate in transferring of various scientific and technological advancements

introduced on a global level. Thus, major constraints faced by junior teachers of English as a foreign language in Myanmar have been explored. Table 1 presents the descriptive statistics for finding out the most significant constraints. In order to get clear description, the responses are divided into two columns and expressed as a percentage.

Table 1 Junior teachers' questionnaire responses towards the four most significant constraints faced by EFL teachers in Myanmar

No	Constraints	% of (SD+D+ NS)	% of (A+SA)
1	Lack of intrinsic motivation is the major issue acting as a barrier to grasping the lessons of English in an efficient manner.	18%	82%
2	Students of Myanmar society have no opportunity of using the language outside the EFL classroom.	36%	64%
3	There is a need to keep them motivated through various activities and innovative methods to generate interest in learning English as a foreign language	8%	92%
Beliefs Constraints		21%	79%
4	A significant constraint impeding the teaching process in EFL classes includes the limited time available for instruction.	25%	75%
5	There is no environment or encouragement to use the language outside the classroom and therefore extra time is required to practice and involve in activities associated with learning of English.	25%	75%
6	There are constraints due to lack of relevant teaching resources including flash cards, audio visual aids, e-learning resources and a well-equipped computer laboratory resulting in usage of traditional methods of teaching EFL.	27%	73%
Constraints of Curriculum		26%	74%
7	There are constraints due to lack of appropriate courses for teachers, organized by the Ministry of Education to learn English-teaching methods.	60%	40%
8	In-service training programs are lacking expertise as local education departments conduct such programs, which are handled in a poor manner.	45%	55%
9	A majority of teachers do not even receive such in-service training and there is no incentive for these teachers who engage themselves in any programs of self-development.	36%	64%

Table 1 (Continue)

No	Constraints	% of (SD+D+ NS)	% of (A+SA)
Pedagogical Constraints		47%	53%
10	The Ministry of Education controls the education system of teaching English in Myanmar centrally.	28%	72%
11	Teachers are provided the syllabus, guidelines, and deadlines from Ministry, which they are required to follow in a strict manner.	29%	71%
12	There is still a lack of partnerships with local and foreign training centers to reinforce the qualification and skills of EFL teachers paving the way to provide best field practices.	27%	73%
13	There is a lack of any comprehensive strategic plan to impart English education in the country.	42%	58%
Administrative Constraints		32%	68%

Considering the data in Table 1, major challenges identified by participants include the lack of student motivation through various activities (82%) and innovative methods to generate interest in learning English as a foreign language (92%) in belief constraint. Further, there is constraints due to the lack of trained teachers, the lack of study-centered activities in universities, and the lack of any serious efforts to develop students' aptitude and motivation. There are certain beliefs and perception of society of Myanmar that are common among learners of English language resulting a lack of motivation of learners, an inappropriate behavior and attitude towards participating in activities and becoming proficient in the language. Under the constraints of curriculum, 75% of the respondents revealed that the limited time for instruction is one of the significant constraints that delay the teaching process in EFL classes and there is no environment or encouragement for students to use the language outside the classroom. Therefore, they mentioned that they need extra time to practice and to involve in activities associated with learning English. Participants (73%) also mentioned the lack of a whole language approach, relevant teaching resources including audio visual aids, e-learning resources and a well-equipped computer laboratory, resulting in the usage of traditional methods of teaching EFL. The non-availability of suitable resources and materials results in English teachers being forced to use traditional teaching methods, take too much teacher talking time and unprofessional teaching materials being used to deliver lessons. Moreover, 64% of teachers strongly agreed this constraint under the pedagogical constraints that they do not receive such in-service training and there is

no incentive for these teachers who engage themselves in any programs of self-development. Lack of partnerships with local and foreign training centers to reinforce the qualification and skills of EFL teachers (73%) could not pave the way to provide the best field practices in administrative constraint. Among all these four constraints, the overall responses pointed that the percentages of the belief constraints (79%) and constraints of curriculum (74%) are greater than that of administrative constraints (68%) and pedagogical constraints (53%) in Myanmar.

5. Discussion

In this study, senior teachers pointed out the lack of training and development of teachers that makes it challenging for EFL teachers to impart efficient language skills. Senior teacher participants consider the weakness of the teacher preparation and teachers training as a major obstacle in Myanmar Universities. The teachers also claimed that teachers' preparation is an essential part of developing a scenario to impart learning in EFL in Myanmar Universities. Teachers believe that trainings are necessary specially to get strategies of motivating students with limited learning goals in relation to EFL at Myanmar Universities. The teachers of English as a foreign language must be fully equipped through proper pre-service and in-service trainings of teachers that will make the teaching effective and learning smooth and interesting (Murdoch, 1994; Al-Nasser, 2015). In this case, the teachers said that some training is offered to them in relation to EFL teaching at the university and there are a few special trainings provided to EFL teachers to make them comfortable with issues faced with the students in this particular region. However, such training programs are not enough as they give the teachers only an overview of the importance of language and ways of teaching prevalent in the university. As a result, teachers in Myanmar face a lot of difficulties as the pedagogical constraints in teaching English as a foreign language. Next, senior teachers also pointed out the negative perception of students as the major challenges they faced while teaching English as a foreign language in Myanmar Universities. Furthermore, there is a need of innovative thinking to help students realize the importance of learning English in the environment of Myanmar. Senior EFL teachers explained that in Myanmar Universities, students follow a grade-driven approach to learning of EFL. Their ultimate goal is to get good grades and certificates without focusing on gaining proficiency in the subject. This is so because students do not need the language outside the classroom to conduct most of the tasks and thus, they limit their learning to basic skills required to pass the examination. The extrinsic influence of the educational system encourages EFL learners not to gain personal interests or their desired goals to become competent in the English language and then such lack of intrinsic motivation is the key point missing for EFL learners, as pointed out by Al-Seghayer (2011). Thus, negative perception of students becomes one of the constraints under beliefs constraints in making the achievement of teaching EFL difficult for the teachers. Moreover, teachers mentioned the lack of proper resources

and text for improving the quality of teaching. The focus is only on making students learn the language to the extent it is required to pass the exam and get good grades. According to Fareh (2010), in order to implement effective teaching, teaches need proper textbooks and teaching materials that are culturally relevant and that meet the needs and interests of learners.

According to Khan (2011) and Shah, Hussain and Nassef (2013), as the only reason for EFL learners to learn English is external pressure, internal motivation is minimal. Therefore, the attitude toward learning English is negative. In this present case, as the same with the deep discussions of the senior teachers in the interviews, junior teachers also explained in the questionnaire survey that students of EFL lack a motivation to learn English language. Lack of motivation is the major challenge that affects teaching of language as well as learning and grasping of skills associated with reading, writing, and speaking English. Motivation is the key factor associated with learning in any context and this holds true in case of EFL in Myanmar universities too. With reference to Myanmar universities, intrinsic motivation holds key importance in acquisition of language. (Fareh, 2010) pointed out that enhancing student's motivation can be achieved through the collaboration between parents, teachers, learners and Ministry of Education. If the students or learners are motivated, they can acquire more as they will participate in various activities and may design innovative ways to practice the language skills.

The junior teachers also argue that teachers need enough time for instruction and there is no environment or encouragement to use the language outside the classroom and therefore extra time is required to practice and involve in activities associated with learning of English. They also mention that there is still a lack of partnerships with local and foreign training centers to reinforce the qualification and skills of EFL teachers paving the way to provide the best field practices. In this regard, Al-Seghayer (2014) highlighted that the collaboration and partnerships with both local and foreign training centers would improve the development and execution of national plans and training and would also enhance forming platform partnerships between experienced EFL teachers from otherworld-renown EFL educational centers and the counterparts so that teaching methods and materials, effective techniques for assessments and other related issues can be discussed and exchanged. With the regard of the four common constraints faced by EFL teachers in Myanmar, the most significant constraints are constraints of beliefs and curriculum. It is followed by administrative constraints and pedagogical constraints in trying to implement effective language teaching to the students.

6. Conclusion

According to the data, there is a lack of resources, lack of proper teaching material, lack of relevant textbooks and lack of teacher-friendly policies resulting in further obstacles to teaching of EFL in Myanmar Universities. In present day scenario, teaching has become highly

sophisticated in nature which lies in lack of authentic environment and resources acting as a major obstacle in imparting quality education of EFL. Finally, the teachers also agreed on lack of motivation as a major challenge and a threat to impart education in EFL to students at the university level. Such lack of motivation in Myanmar classrooms is because of the lack of perception of the importance and objectives of learning English as a foreign language. It is necessary to reinforce the need of filtering all learning activities through motivation of students and so teachers are expected to boost the confidence and motivation of students to acquire proficiency in language. These teachers also reported that teaching practices in universities are also affected by timings of class. The duration of classes is too long, like 50 minutes that are also conducted in odd hours, which is non-supporting to mood and preferences of learners as well as that of teachers. Teachers were asked to talk about some strategies that they think can help impart better learning of EFL in Myanmar Universities. The teacher participants also emphasized on the need of teacher preparation and professional training to handle socio-cultural issues prevalent in Universities of Myanmar in relation to EFL teaching.

7. Recommendations

Talking about the strategies to impart better learning of EFL at University level, respondents to the interviews explained that a cooperative approach is required from university management to provide latest technological equipment, techniques and relevant materials as asked by teachers to ensure the availability of latest knowledge and information related with the subject. A favorable learning environment is the basic need at Myanmar Universities and respect for expatriate teachers is another issue that needs immediate resolution. Moreover, e-resources should be made available in universities so as to keep students interested in using and learning something new every day where they can explore importance and role of English language across the world. Use of technological sources will also reduce the challenges faced due to the lack of relevant teaching materials, and the latest information and knowledge can be availed in a short span of time. There is a need to change the pattern of teaching to student-centered where an active participation of students is compulsory to get good grades. Considering some of the key strategies, it is suggested that authentic text should be made available or designed with the help of EFL teachers to incorporate students' expectations, cultural values and beliefs and competent English lessons required to impart better education and skills to students at University level. A teacher pointed out that congenial relationship between EFL teacher and the students can help in developing an environment that is mutually motivating and communicative in nature. Therefore, formal training as well as informal interaction sessions should be designed and offered to develop better relations among EFL teachers and their students. Students need to move out of the formal long duration classed and discuss the issues related with language skills openly. This will help

teachers to understand the challenges better and redesign strategies suiting the needs and expectations as well as learning capacity of students at University level in Myanmar.

8. References

Al-Seghayer, K. (2011). *English teaching in Saudi Arabia: Status, issues, and challenges*. Riyadh, Saudi Arabia: Hala Printed Co.

Al-Seghayer, K. (2014). The four most common constraints affecting English teaching in Saudi Arabia. *International Journal of English Linguistics*, *4*(5), 17.

Al-Nasser, A. S. (2015). Problems of English language acquisition in Saudi Arabia: An exploratory-cum-remedial study. *Theory and Practice in Language Studies*, 5(8), 1612-1619.

Alrashidi, O. & Phan, H. (2015). Education Context and English Teaching and Learning in the Kingdom of Saudi Arabia: An Overview. *Canadian Center of Science and Education. English Language Teaching, 8*(5), 33-44.

Al-Sobhi, B. M. S., & Preece, A. S. (2018). Teaching English speaking skills to the Arab students in the Saudi school in Kuala Lumpur: Problems and solutions. *International Journal of Education and Literacy Studies*, *6*(1), 1-11.

Ashraf, T. A. (2018). Teaching English as a foreign language in Saudi Arabia: Struggles and strategies. *International Journal of English Language Education*, 6(1), 133-154.

Crystal (2001). *Language and the Internet*. Cambridge: Cambridge University Press

Fareh, S. (2010). Challenges of teaching English in the Arab world: Why can't EFL programs deliver as expected? *Procedia-Social and Behavioral Sciences*, 2(2), 3600-3604.

Kaiser, D. J. (2017). English language teaching in Uruguay. *World Englishes*, 36(4), 744-759.

Khan, I. A. (2011). Learning difficulties in English: Diagnosis and pedagogy in Saudi Arabia. *Educational Research*, *2*(7), 1248-1257.

Liton, H. A. (2012). Developing EFL Teaching and Learning Practices in Myanmar Colleges: A Review, *International Journal of Instruction*, 5, 2, 129-152.

Murdoch, G. (1994). Language development provision in teacher training curricula. *ELT journal*, 48(3), 253-265.

Pathan, M. M., & Marayi, Z. E. (2016). Teaching English as a foreign language in Libyan schools: Issues and challenges. *International journal of English and education*, 5(02), 19-39.

Putri, V. A. (2020). Experiences and Challenges Perceived by Indonesian EFL Teachers as Non-Native English Speaker Teachers (NNESTs) in Thailand. Vision: Journal for Language and Foreign Language Learning, 9(1), 61-79.

Shah, S., Hussain, M., & Nassef, O. (2013). Factors impacting EFL Teaching: An exploratory study in the Myanmar context. *Arab World English Journal*, 4(3), 104-123.

Songbatumis, A. M. (2017). Challenges in teaching English faced by English teachers at MTsN Taliwang, Indonesia. Journal of Foreign Language Teaching and Learning, 2(2), 54-67.

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An Exploration of ICT on Self-Regulated Learning for EFL Learners in Myanmar

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Abstract

These days, the rich content and innovative applications available on the Internet allow language learners to improve their language skills through self-learning. This study aims to explore Myanmar English as Foreign Language (EFL) learners' self-initiated use of ICT from the language learning perspective. The participants were 360 students who were taking English language courses at different universities in Myanmar. The study was based on an e-survey that comprised of the demographics, the backgrounds of using ICT tools and a questionnaire with 28 items to assess the self-regulated learning using ICTs. The results indicated that most Myanmar EFL students reported using the available ICT tools at a medium-usage level. Among the eight types of ICT tools, three types (Internet tools, App tools, and multimedia resources) fell into the high-usage level. The study also revealed that Myanmar EFL students are active self-regulated learners and they get many benefits from using ICTs to reconcile various English language learning perspectives, especially getting their targeted goals and online resources or materials. However, it is important for our students to have the confidence and capability to learn to use new ICT tools as they become available. Therefore, the overall results expressed the need of teachers' great support, guidance, ICT training for learners how to apply new technologies to enhance self-regulated language learning.

Keywords : English as a Foreign Language (EFL), Information and Communication Technologies (ICT), Self-Regulated Learning (SRL), MOOCS, Internet Addiction

1. Introduction

Nowadays, self-regulated learning plays an important role for learners because they have to regulate their learning on their own systematically with the help of technologies outside the classroom, especially when they don't get the chance to attend the schools or face-to-face

classes during the crisis like Covid-19 pandemic. On the other hand, the progressive development of "Information and Communication Technologies (ICTs)" has provided multiple modes of learning. The World Bank (2020) mentioned that the use of information and communication technologies in education can play a crucial role in providing new and innovative forms of support to teachers, students, and the learning process more broadly. ICT has brought forward new ways how people see the 21st century world. Worldwide research showed that ICT can improve student learning and teaching methodologies. The employment of ICTs not only enhances effectiveness and standard of education but also facilitates scholarly communication and research work. In the 21st century, there are many ICTs tools such as mobile phone, computers, internet tools, YouTube, MOOCs, multimedia resources, websites, social media that are globally used in modernizing academic subjects. All types of ICTs have the potential to arouse students' motivation and self-confidence, provide many e-resources and information sources, create active in-class and out-class learning environments and to allocate more time for facilitating fun classroom for teachers. As a result, using these ICT tools encourage students' self-determined, learner autonomy and independent learning so they feel more responsible for the personalized learning both in and outside the classroom.

With the advent of information and communication technologies, foreign language learning has expanded beyond the confines of traditional learning communities and classrooms. In this context, the concept of using ICT for self-regulated learning outside the classroom has begun to receive attention from researchers and practitioners in recent years (Korucu-Kis, 2020). Self-regulated learning activities outside the classroom help learners to better manage their learning as they are more independent in making decisions about their learning experiences (Lai and Gu, 2011). Therefore, some researchers have been looking for new ways to increase the self-regulated learning practices of English as Foreign Language (EFL) learners.

The use of ICT in education is a global trend, however, not all countries have complete ICT infrastructure and students may not be able to afford to purchase relevant computer equipment. This makes it difficult to promote the use of ICT in learning. Similarly, Myanmar has been using ICT since 1981 but there is no significant development in this sector during these years and Myanmar is recognized as the last ICT Greenfield country across the globe (USAID, 2018). Under the Universal Service Strategy for Myanmar 2018-2022, the Ministry tries to extend telecom services, internet access, and high-speed internet for all areas. In recent years, since the penetration rate of SIM cards and smartphones is getting higher than before, most Myanmar people can easily get the internet access through mobile phones. Such a great change helps both teachers and learners to some extent in Myanmar education sector. However, there is still a challenge to which extent the students are using ICT tools for their learning outside the classroom and self-regulated learning integrating with technologies is further needed to explore for EFL learners in

Myanmar. It can't be definitely said whether the students use modern ICT tools for self-regulated language learning outside the classroom although the students are using them as their essential things in their daily life. Therefore, the purpose of this study is to investigate and understand EFL learners' self-regulated learning in pursuing the accomplishment of English study using ICTs in Myanmar.

1.1 Self-Regulated Learning and ICT

The concept of self-regulated learning (SRL) has become a research problem and has continued to be crucial for researchers and teachers since 1980s (Zimmerman & Schunk, 2011). Zimmerman & Schunk (2011) stated that self-regulation is the regulation of one's thoughts, feelings and actions that are planned to attain personal achievements and a self-directed learner pursues a high-capacity goal and effective study by using metacognitive, motivational, and behavioral processes that are considered to be vital in enhancing students' personal control, a major motivation source for their learning (Zimmerman, 2000). Lai (2013) reported that since technology offers students a lot of sources to be filled with learning activities by themselves, SRL has attained new dimensions with the aid of advanced technological tools.

1.2 Self-Regulated Learning and ICT

According Zhao & Lai, (2007), technology has wonderful academic impacts for learning with the intention of emphasizing on the resources for studying language outside the class and technological sites. Lam (2004) stated a connection among uses of technologies at home and the consequences of outside learning in the previous studies. However, according to Zhang (2010) and Winke, Goertler (2008), suggested that students are inclining to refuse using ICT or to perceive its benefit in out-of-school language learning. Healey (2002) indicated that the advancement of self-regulation via different technologies assists students to comprehend that the involvement in educational procedure is very important and also motivates them to play an active and energetic position for their personalized learning.

Previous researches have offered many things with regard to academic capacity and effectiveness of single tool of ICT, outline of learning atmosphere enhanced by using technology, and the applicants' responses to the pedagogical knowledge improved by the use of technology. Yot-Domínguez and Marcelo (2017) revealed that even the participants in their research regularly use different types of technology for leisure, social and personal cases, they refuse to use them to regulate their personalized-learning process. Lai and Gu (2011) investigated the technology use of Hong Kong university students outside the school to self-directed learning and showed that though the learners have got limitations to use different technologies in learning language with self-regulation, they actively participated to use them. Celi et al. (2012) found that there is no significance in self-directed ICT employment regarding to gender and students' language proficiency status. Moreover, Kizil and Savran (2016) also investigated that the students actively

took part in applying ICT for self-disciplined learning although there were many varieties both among the aspects of controlled-learning and among the students. Anurugwo (2020) also suggested that sandwich students in Nigerian Universities should apply the various tools of ICT, namely audio tapes, smart phones, e-mail, video tape, internet, and other web-based learning in order to improve self-paced learning. Moreover, Putri (2019) reported that learning using YouTube can be beneficial to develop English skills and learning through YouTube is relatively more amusing, interesting, and flexible than traditional language classroom.

1.3 Assessing Self-Regulated Learning for EFL Students Using ICT

Lai and Gu (2011) mentioned that the exploratory factor analysis identified six distinct factors that could explain the differences in their use of technology to regulate their language learning experiences. The six aspects of technology-enhanced self-regulation of language learning included:

1.3.1 Goal commitment regulation:

The goal commitment regulation is to encourage persistence and commitment to learning goals. Kitsantas and Kavussanu (2019) emphasized the importance of goal committeemen for the success of self-regulated learning.

1.3.2 Affection regulation:

The affection regulation is to use technology to regulate emotions and enhance the attractiveness of learning. Linnenbrink (2007) proposed that affective signal approach or avoidance of a particular goal, which in turn depends on the individual's goal orientation.

1.3.3 Social connection regulation:

The social connection regulation is to enhance social connections with and seek help from native speakers and other peer learners around the world. Ala-mutka (2009) mentioned that new technologies provide people to get a sense of social connection so they can meet their learning needs to interact with each other.

1.3.4 Resource regulation:

The resource regulation is to find and expand learning resources. In educational settings, self-management involves learners' use of learning resources within the learning context (Garrison, 1997). Of course, ICT can provide EFL learners with many useful tools, such as online dictionaries, translators, and wikis.

1.3.5 Metacognitive skills regulation:

The metacognitive regulation is to plan, evaluate, and monitor the learning progress. The independent management and regulation of learning processes require the application of general meta-cognitive strategies which enable the learner to monitor and regulate the learning process (Pintrich, 2004; Narciss, Proske, & Koerndle, 2007).

1.3.6 Culture learning regulation:

The culture learning regulation is to enhance cultural understanding through the learning of foreign language. Murray (2008) documented the language learning experiences of several successful adult Japanese EFL learners and found that participation in popular culture, such as movies, television shows, music, novels, and magazines, was an important part of their language learning.

2. Research Objectives

The hereafter research questions were deployed in this study.

2.1 Do EFL learners use digital tools for out-of-school language learning?

2.2 Which types of ICTs do Myanmar learners currently apply in learning English with self-regulation?

2.3 How do Myanmar learners utilize technology to direct their out-of-school language learning experience?

3. Research Methodology

3.1 Participants

The simple random sampling method was used in this study. From the total population of university students who were taking English language courses as compulsory courses at different universities in Myanmar, 360 students participated in the online survey of this study. The sample was 93 males and 267 females. The age of the respondents ranged from 16 to 30 years old, with an average age of 20 years old.

3.2 Research Instruments

The questionnaire was used as the research instrument in this study. The questionnaire, modified the concept of Lai and Gu (2011), was constructed on an e-survey using Google Forms and it consisted of three sections. Section (A) was about demographic characteristics such as age, gender, educational level, the average time students spend online per day and the average time they spend online per day learning English, etc. Section (B) consisted of 10 items about various ICT-related items used for English language learning and section (C) composed of 28 items on learners' employment of ICTs for self-regulated learning with 5-point Likert-type scale, 1 (strongly disagree) to 5 (strongly agree). The statistics used to analyze the quantitative data were percentage, mean (M) and standard deviation (SD), calculated by SPSS version 23.

3.3 Data Collection

The online survey was promoted to the entire population, the university students, near and far by the class teachers or coordinators from different universities via e-mail, or social media during the outbreak of the Covid-19 pandemic. It can't be mentioned exactly how many university

students throughout the country got the e-survey form through the mass email and social media. As a result, 360 university students from 18 different universities in different regions of Myanmar completed the online survey and returned their complete responses. Quantitative data gathered from the respondents was analyzed to measure Myanmar students' utilization of ICTs for self-regulatory learning in their private time.

3.4 Data Analysis

The data of demographic characteristics, ICT ownership and the average hour of spending online for English language learning were analyzed by using percentages. The statistics, mean (M) and standard deviation (SD), were employed to analyze the data in order to know the samples' use of common ICT tools for English language learning and their usage level of ICT for six aspects of self-regulated learning.

4. Research Results

4.1 The demographic characteristics of participants

According to participants' responses on the demographic features, 26% were male and 74% were female. The respondents are divided into two groups in terms of their levels of education: postgraduate (12%) and undergraduate (88%). A high percentage of respondents showed their responses to their ownership to ICT: 83% for smart phones, 41% for easy internet access, 24% for laptop computer and 3% and 1% for tablet and desktop computers. The above results should be highlighted in relation to the difference between "smart phone ownership" (83%) and "easy internet access" (41%), as there are still restrictions on the amount and bandwidth of mobile internet access in Myanmar, and not most smart phone users have unlimited access to the internet. Regarding the average hour of spending online, 75% expressed that they spend for 1 to 5 hours while 21% spend 6 to10 hours and 4% use online for 11 to 15 hours each day. Only 1% of the respondents revealed that they sometimes use online without limit time. Looking at using online for English language learning, 8% of the students never use online for English language learning while most of the students use online at least 1 hour (53%), and some use between 1 and 3 hours (35%). The minority of the students use online between 3 hours and 6 hours (3%) and for about 12 hours (1%) respectively for English language learning. In this ICT usage survey, it is noteworthy that 25% of the respondents spend more than 6 hours a day online (AlAmer et al., 2020), which may be a sign of Internet addiction.

4.2 The use of ICT-related tools

In Section (B), the respondents gave a response on the common use of ICT-related tools and how often they apply them to learn English. The ICT-related tools were grouped into different types based on the framework of Yot-Domínguez and Marcelo (2017). In examining students' use of ICT-related tools in terms of the Likert scale that ranges from 1 to 5, this study

employed three levels of usages, as suggested by Oxford and Burry-Stock (1995) for strategy use in language learning, that is, high (mean of 3.5 or higher), moderate (mean of 2.5 to 3.4), and low (mean of 2.4 or lower). With regard to the first two research questions (i.e., "Do EFL learners use digital tools for out-of-school language learning?" and "Which types of ICTs do Myanmar learners currently apply in learning English with self-regulation?"), Table 1 and Figure 1 present descriptive statistics for students' perceived use of ICT-related tools.

Table 1 The common use of ICT-related tools in self-regulated learning for the English language of the participants.

No	Item	Responses		Types of ICTs
		Mean	SD	
1	I use English learning tools on the Internet such as online dictionaries, translators, Wikipedia, etc.	3.51	0.99	Internet Tools
2	I use audio and video sharing websites, like YouTube.	3.09	1.04	Repositories
3	I use audio and video sharing websites, like YouTube, to take some English learning courses.	2.93	0.94	
4	I install and use English learning apps, such as Duolingo, Google Translate, Grammarly, etc.	3.72	1.07	App Tools
5	I learn English with online English courses on MOOCs, such as Coursera, edX, etc.	2.06	1.04	MOOCs
6	I watch TV programs, movies in English on the Internet.	3.52	1.07	Multimedia Resources
7	I listen to English songs on music players, like iTunes, Spotify and Joox.	4.09	1.05	
8	I communicate with people in English on social network sites, such as Facebook, Instagram, and Twitter.	2.99	1.14	Social Networks
9	I communicate with people in English by using chat programs, like WhatsApp, Viber, Facebook messenger and WeChat.	2.92	1.07	Communication Tools
10	I read English books, magazines, newspapers, etc. on the Internet.	2.97	1.01	Internet Media
	Overall	**3.18**	**1.04**	

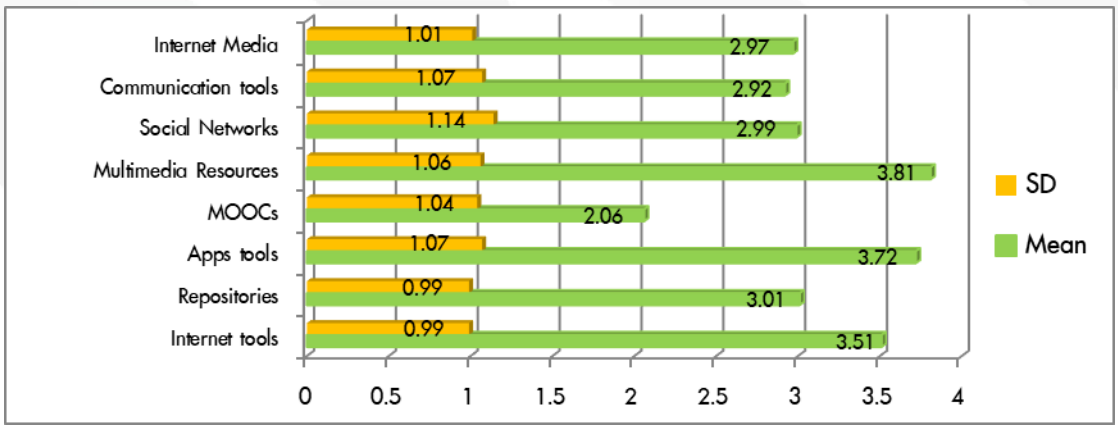

Figure 1 The values of mean and SD for common types of ICTs currently used by Myanmar learners to learn English with self-regulated learning.

The results in table 1 showed that students on the whole reported using the available ICT-related tools at a medium-usage level (M = 3.18, SD =1.04). Among the 10 items, 4 items (40%) fell into the high-usage level (M≥ 3.5), and 5 items (50%) went to the medium level (M ≥ 2.5). One item was reported at the low-usage level (M ≤ 2.4). As far as 8 types of ICT-related tools are concerned in figure 1, students showed a moderate to high usage, with "Multimedia Resources" (M = 3.81, SD = 1.06) as their most frequently used tool, followed by "English learning Apps: Apps Tools" (M = 3.72, SD = 1.07), "Internet tools" (M = 3.51, SD = 0.99), and "Repositories: using audio and video sharing websites" (M = 3.01, SD = 0.99). Of all the items, item -5: MOOCs (M = 2.06, SD = 1.04) was reported at the low-usage level (M ≤ 2.4).

4.3 Learners' employment of ICTs for self-regulated learning

With regard to the third research question (i.e., "How do Myanmar learners utilize technology to direct their out-of-school language learning experience?"), participants were asked to respond to a questionnaire with 28 items. These items were about learners' employment of ICTs for self-regulated learning and were designed based on the six aspects of technology-enhanced self-regulation of language learning in section 2.3. Table 2 presents the overall mean and standard deviation of each of the six aspects of technology-enhanced self-regulation of language learning for EFL.

Table 2 Perceptions of the participants on six regulations of self-regulatory learning

No	Statements	Responses	
Goal Commitment Regulation		**Mean**	**SD**
1	ICTs are very crucial sources and equipment to preserve my attention in attaining my English learning target.	3.95	0.78
2	I trust ICTs enable to assist me sustain in gaining my final aim in learning English.	3.95	0.73
3	I trust ICTs enable to assist me accomplish my English learning intentions more rapidly and effectively.	3.99	0.78
	Overall	3.96	0.73
Affection Regulation		**Mean**	**SD**
4	I apply ICTs to reduce my boredom and increase my pleasure when I'm not getting interested in with learning English.	3.57	0.9
5	I employ ICTs to make my English learning process more attractive to me.	3.70	0.81
6	I consider ICTs efficiently preserve my attention and willingness in learning English.	3.76	0.76
7	When I begin to refuse learning English, I apply ICTs to support myself retain my attention and eagerness.	3.50	0.84
	Overall	3.63	0.83
Social Connection Regulation		**Mean**	**SD**
8	ICTs assist to make my English learning a comfortable task.	3.80	0.76
9	ICTs make me happy learning English more.	3.72	0.84
10	I apply ICTs to rise my study time on learning English.	3.61	0.86
11	I apply ICTs to communicate with native speakers of the language.	3.55	0.95
12	I apply ICTs to communicate with other learners across the globe.	3.64	0.94
13	I employ ICTs to look for motivation and support from other learners of the language.	3.49	0.9
	Overall	3.64	0.87
Resource Regulation		**Mean**	**SD**
14	I apply ICTs to widen my learning resources when I think I want more in the language.	3.81	0.83
15	I apply ICTs to enhance my learning knowledge out of the language class.	3.82	0.86
16	I employ ICTs to make and expand my chances to study and apply English language.	3.79	0.82
17	I apply ICTs to look for learning materials and chances to help acquire my aspirations.	3.76	0.84
18	I find attractive English learning resources and knowledge contributed by ICTs.	3.73	0.84
	Overall	3.78	0.83
Metacognitive Skills Regulation		**Mean**	**SD**
19	In order to fulfil my learning targets at every step, I know how to apply ICTs to track myself efficiently.	3.50	0.82
20	I arrange to do out-of-school learning activities that integrate with ICTs employment.	3.32	0.94
21	I arrange to do out-of-school applicable materials that integrate with ICTs employment.	3.21	0.91
22	I make a balance of my English learning objectives applying ICTs.	3.54	0.84
23	I am pleased with the way I apply ICTs to aid myself sustain in achieving my learning targets.	3.61	0.84
24	Considering how much I can comprehend and enhance when applying ICTs to attain information or connect with others, I set my sub-goals for the upcoming learning steps.	3.57	0.84
25	I know how to choose and apply relevant ICTs to enhance my weak areas.	3.47	0.89
	Overall	3.46	0.87

Table 2 (Continue)

No	Statements	Responses	
Culture Learning Regulation		Mean	SD
26	I apply ICTs to assist myself to enhance my efficiency to get involved with the target culture.	3.64	0.82
27	I apply ICTs to assist myself comprehend and realize the target culture better.	3.67	0.85
28	I apply ICTs to look for replies to my questions about language and culture.	3.84	0.84
	Overall	3.72	0.84

The results showed that students on the whole reported using the ICT-related technology for regulated learning at a high-frequency level (M = 3.66, SD = 0.84). Among the 28 items, 24 items (86%) fell into the high level (M ≥ 3.5), and 4 items (14%) went to the medium level (M ≥ 2.5). No item was reported at the low level (M ≤ 2.4). As far as the six aspects of regulations are concerned, students showed a moderate to high positive attitude, with goal commitment regulation (M = 3.96, SD = 0.76) as their prime perception, followed by resource regulation (M = 3.78, SD = 0.83), culture learning regulation (M = 3.72, SD = 0.84), social connection regulation (M = 3.64, SD = 0.87), affection regulation (M = 3.63, SD = 0.83), and metacognitive skills regulation (M = 3.46, SD = 0.87).

As seen in Table 2, all three items under goal commitment regulation were reported of high-positive level (M ≥ 3.5), indicating that students' positive engagement with technology for goal commitment regulation. Then, EFL learners have very positive attitudes towards using ICT tools for affection regulation aspect. Affection regulation makes self-regulated learners willing to work hard and perseverance. This is seen from their use of ICTs like "apply ICTs to reduce my boredom and increase my pleasure" (Item 4, M = 3.57, SD = 0.90), "employ ICTs to make my English learning process more attractive" (Item 5, M = 3.71, SD = 0.81), "consider ICTs efficiently preserve my attention and willingness" (Item 6 M = 3.76, SD = 0.76), and "apply ICTs to support myself retain my attention and eagerness" (Item 7, M = 3.50, SD = 0.84).

Regarding resource regulation, ICT can provide EFL learners with many useful tools and our results also support this point of view. EFL learners have very positive attitudes towards using ICT tools for resource regulation aspect. This is seen from their use of ICTs like "apply ICTS to widen my learning resources" (Item 14, M = 3.81, SD = 0.83), "apply ICTs to enhance my learning knowledge" (Item 15, M = 3.82, SD = 0.86), "apply ICTs to look for learning materials" (Item 17 M = 3.76, SD = 0.84), and "find attractive English learning resources and knowledge contributed by ICTs" (Item 18, M = 3.73, SD = 0.84).

As for the social connection and learning culture regulations, as can be seen from Table 2, the learners indicated they have a relatively high positive attitude towards the use of ICT to improve their social connection and to learn the target culture. We are aware that the greatest

advantage of information-digital environments is that they provide learners with the opportunity for online interaction and increased access to authentic language learning through communication with native speakers (Golonka et al., 2014); in the present case, most of the EFL learners in this study took full advantage of this potential offered by ICT tools. Social connection regulation is seen from their use of ICTs like "apply ICTs to communicate with native speakers" (Item 11, M = 3.55, SD = 0.95), and "apply ICTs to communicate with other learners across the globe" (Item 12, M = 3.64, SD = 0.94). Learning culture regulation is seen from their use of ICTs like, "apply ICTs to assist myself to enhance my efficiency to get involved with the target culture." (Item 26 M = 3.64, SD = 0.82), "apply ICTs to assist myself comprehend and realize the target culture better" (Item 27, M = 3.67, SD = 0.85), and "apply ICTs to look for replies to my questions about language and culture" (Item 28, M = 3.84, SD = 0.84).

The metacognitive regulation is to plan, evaluate, and monitor the learning progress. It is the key to the success of self-regulated learning. Our result indicated that students showed a moderate attitude to metacognitive skills regulation (M = 3.46, SD = 0.87). This is seen from their use of ICTs like "know how to apply ICTs to track myself efficiently" (Item 19, M = 3.50, SD = 0.82), "make a balance of my English learning objectives applying ICTs" (Item 22, M = 3.54, SD = 0.84), and "apply ICTs to aid myself sustain in achieving my learning targets" (Item 23 M = 3.61, SD = 0.84).

5. Discussions

According to the research results, the following points were discussed. The results showed that students on the whole reported using the available ICT-related tools at a medium-usage level. Among the eight types of ICT tools, three types (Internet tools, App tools, and multimedia resources) fell into the high-usage level and four types (Repositories, Internet media, Communication tools and Social network) went to the medium level. One type was reported at the low-usage level. This type is about "learn English with online English courses on MOOCs". The MOOCs learning platform was originally established with the intention of providing free access to online courses. Since its launch in 2008, MOOCs have rapidly sprouted around the world, and many world-renowned universities have set up MOOC platforms to offer a wide variety of courses, including English-related courses. These courses provide an excellent learning channel for students who are unable to study abroad, and most of the courses offer the option of auditing for free. Unfortunately, according to our questionnaire, Myanmar students are not familiar with these programs. Therefore, teachers in schools should arrange courses to introduce MOOCs to their students so that they can make good use of this learning resource.

Self-regulated learning is an important aspect of learning and academic performance. Self-regulated students are more likely to be successful in school, to learn more and to achieve

higher levels of success. With regard to the six aspects of self-regulation, Goal setting is the most important step in self-regulated learning, and it directly affects the learner's motivation. Motivation to achieve goals and commitment to setting goals are among the outstanding characteristics of self-regulated learners (Pintrich, 2004). In this study, the students have positive engagement with technology for goal commitment regulation. Myanmar EFL learners also showed their very positive attitudes towards the other aspects: affection regulation, resource regulation, social connection and learning cultures regulation with high-frequency level. However, the metacognitive regulation was reported at the medium usage level. This indicated that EFL learners expressed their moderate attitudes towards metacognitive skills for self-regulated learning. It can be assumed that Myanmar EFL learners need more awareness the importance of metacognitive skills such as planning, evaluating, and monitoring the learning progress, the key to the success of self-regulated learning.

6. Conclusion

The study set out to investigate the degree of Myanmar EFL students' self-regulated learning using ICT, which was assessed through six aspects of technology-enhanced self-regulation of language learning. By examining the students' responses to the questionnaire, the study revealed that Myanmar EFL students are also active self-regulated learners using ICT-related tools. The hereinafter conclusions are gathered from this research. Firstly, the results indicated that most of Myanmar EFL students on the whole reported using the available ICT-related tools at a medium-usage level (M = 3.18, SD =1.04). Among the eight types of TCTs, three types (Internet tools, App tools, and multimedia resources) fell into the high-usage level. Our research result shows that our EFL learners are not familiar with the MOOCs learning platform. Therefore, teachers in schools should arrange courses to introduce MOOCs to their students so that they can make good use of this learning resource.

Secondly, in assessing self-regulated learning through the use of ICT among Myanmar EFL learners, Myanmar students are active self-regulated learners and they get many benefits from using ICTs to reconcile various English language learning perspectives, especially getting their targeted goals and online resources or materials to supplement their learning process. What's more, Myanmar participants tend to be applying technologies to get self-motivation, to create fun and exciting learning experiences, and to comprehend and to appreciate target language and culture. Regarding the lowest rank of students' use, it assumes that students selectively use ICTs with different reasons respectively. While there may have some potentials of students' tendency in deploying technologies to achieve some language skills and to prevent other unnecessary factors, this condition expresses the necessity for great support, kind guidance of language teachers and learners' training how to apply modern ICTs effectively from SRL learning model perspectives.

7. Recommendations

The integration of Information and Communication Technologies into every sphere of contemporary life has had profound implications for how people learn. However, these ICT learning tools are evolving rapidly. It is important for our students to have the confidence and capability to learn to use new ICT tools as they become available. Take the MOOCs as an example, the final results showed that Myanmar students are unfamiliar with applying MOOCs to promote their English learning. The language teachers' role includes supporting some current trend of ICT environments and ICT-related information or news for language learners. Therefore, the overall results recommend that students should be encouraged to apply new technologies effectively and supported learners' trainings both in metacognitive process and in the learning beliefs on technology-enhanced learning process. However, determining which kind of learners' trainings and how to conduct this training is further attempts of more self-regulated learning researches. As limitations, this study needs qualitative approach to elaborate the students' opinions and attitudes to the advantages and drawbacks of deploying technology by their own. Further study is suggested to evaluate the relevant statistics with educators and parents for EFL learners at different proficiency levels and for those who apply e-resources and ICT-related items in personalized learning.

8. References

Ala-Mutka, K. (2009). Review of Learning in ICT-enabled Networks and Communities. *European Commission. Institute for Prospective Technological Studies.*

AlAmer, M., Shdaifat, E., Alshowkan, A., Eldeen, A. G., & Jamama, A. (2020). Exploring Associations between Internet Addiction, Depressive Symptoms, and Sleep Disturbance among Saudi Nursing Students. *The Open Nursing Journal*, 14(1), 29-36.

Anurugwo, A. O. (2020). ICT Tools for Promoting Self-Paced Learning Among Sandwich Students in A Nigerian University. European Journal of Open Education and E-learning Studies, 5(1).

Çelik, S., Arkin, E., and Sabriler, D. (2012). EFL learners' use of ICT for self-regulated learning. *The Journal of Language and Linguistic Studies, 8 (2), 98-118.*

Garrison, D. R. (1997). Self-directed learning: Toward a comprehensive model. *Adult Education Quarterly*, 48(1), 18-33.

Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). Technologies for foreign language learning: A review of technology types and their effectiveness. *Computer Assisted Language Learning*, 27(1), 70–105.

Healey, D. (2002). Learner Autonomy with technology: What do language learners need to be successful? *TESOL 2002, CALL-IS Academic Session.*

Kitsantas, A., Kavussanu, M., Corbatto, D., & van de Pol, P. (2018). Self-regulation in sports learning and performance. Handbook of self-regulation of learning and performance, 194-207.

Korucu-Kis, S. (2020). An Investigation into EFL Pre-Service Teachers' Out-of-Class Self-Regulated Learning Experiences weith ICT. In *Enhancements and Limitations to ICT-Based Informal Language Learning: Emerging Research and Opportunities* (pp. 112-137). IGI Global.

Lam, W.S.E. (2004). Second language socialization in a bilingual chat room: Global and local considerations. *Language Learning and Technology, 8, 44–65.*

Lai, C. (2013). A framework for developing self-directed technology use for language learning. Language Learning and Technology, 17(2), 100–122.

Lai, C., and Gu, M. (2011). Self-regulated out-of-class language learning with technology. *Computer Assisted Language Learning*, 24 (4), 317-335.

Linnenbrink, E. A. (2007). The role of affect in student learning: A multi-dimensional approach to considering the interaction of affect, motivation, and engagement. In *Emotion in education* (pp. 107-124). Academic Press.

Murray, G. (2008). Pop culture and language learning: Learners' stories informing EFL. *Innovation in Language Learning and Teaching*, 2, 1-16.

Narciss, S., Proske, A., & Koerndle, H. (2007). Promoting self-regulated learning in web-based learning environments. *Computers in human behavior*, 23(3), 1126-1144.

Oxford, R., & Burry-Stock, J. (1995). Assessing the use of language learning strategies worldwide with the ESL/EFL version of the strategy inventory for language learning SILL. *System*, 23, 1-23.

Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, 16, 385–407.

Putri, F. H. (2019). Youtube for Self-Regulated Language Learning: An EFL Perspective. *English Education: Jurnal Tadris Bahasa Inggris*, 12(2), 42-57.

Şahin-Kızıl, A., & Savran, Z. (2016). Self-regulated learning in the digital age: An EFL perspective. Novitas-ROYAL (Research on Youth and Language), 10(2), 147-158.

Steffens, K. (2006). Self-regulated learning in technology-enhanced learning environments: Lessons of a European peer review. *European Journal of Education, 41, 353–379.*

Winke, P., & Goertler, S. (2008). Did we forget someone? Students' computer access and literacy for CALL. *CALICO Journal, 25, 482–509.*

Yot-Domínguez, C., & Marcelo, C. (2017). University students' self-regulated learning using digital technologies. *International Journal of Educational Technology in Higher Education*, 14(1), 38.

Zhang, G.M. (2010). Technology uses in creating second language learning environments: When learners are creators. *Unpublished doctoral dissertation.* Michigan State University, Michigan.

Zhao, Y., and Lai, C. (2007). Technology and second language learning: Promises and problems. In L.L. Parker (Ed.), *Technology-mediated learning environments for young English learners: Connections in and out of school* pp. 167–205. Mahwah, NJ: Lawrence Erlbaum Associates.

Zimmerman, B.J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P.R. Pintrich, and M. Zeidner Eds., *Handbook of self-regulation: Theory, research, and applications* pp. 13–39.

Zimmerman, B. J., & Schunk, D. H. (2011). Self-regulated learning and performance. In B. J. Zimmerman, & D. H. Schunk (Eds.), *Handbook of self-regulation of learning and performance, (pp. 1–12).* New York: Routledge.

"Education and Technology Overview." (2020, September 25, The World Bank). Retrieved from https://www.worldbank.org/en/topic/edutech#1

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Students' and English Teachers' Perceptions towards the Contribution of Short Stories to Acquire Language Skills and Communicative Competence

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Abstract

This study investigates the students' and English teachers' perceptions of the contribution of short stories to acquire language skills and communicative competence. This research is an attempt to reveal the students' perceptions of the contribution of short stories to acquire language skills and communicative competence in EFL classrooms. Applebee (1974:154) states that teachers must be encouraged to develop customized learning materials based on needs manifested by the class. It has been realized that the careful selection of short stories and their proper induction into EFL classroom teaching could definitely improve not only students' language skills and communicative competence in their target language but also build up their cultural identity which automatically develops their overall personality. The study was conducted with 111 university students receiving an English specialization course. A selection of short stories appropriate to students' language requirements was incorporated into the English language curriculum. A three-stage-model: presentation, exploration, and follow-up guided the use of each story with a special focus on student-centered learning, which required the students to take an active involvement in the learning process based on given tasks. Findings indicate that the use of short stories contributed to students' reinforcing effectively and meaningfully their knowledge of grammar and vocabulary while it helped students to be more creative and imaginative in their writing in a way to free the students from the routine procedures occurring in the classroom. The research concludes with some pedagogical suggestions for the efficient exploitation of this literary genre in English language classes.

Keywords : Perceptions, Short Stories, Language Skills, Communicative Competence

1. Introduction

Learning English through short stories is designed to introduce learners to the world of short stories, encouraging them to read, write and tell them. The activities that learners engage in should aim to develop their understanding of the major features of short stories, their language skills, communicative competence, critical thinking skills and creative writing skills. Learners are expected to write a story or develop one from a given story outline. Language classrooms, especially those in EFL contexts are isolated from the context of events and situations which produce natural language. Literature can overcome this problem because the language in literary events creates a context of situation enabling it to transcend the artificial classroom situation (Littlewood, 2011). Hence, literary texts provide the students with real world experiences, relationships between people and society where the target language (L2) is spoken. Literature can also help students master the vocabulary and grammar of the language and promotes the four language skills: reading, writing, listening, and speaking (Stern, 1992). Carter and Long (1991) acknowledge that both literature and language involve the development of a feeling for language, of responses to texts - in the broadest sense of the word that is used both in written and spoken discourses. This research illustrates incorporating short stories, as a literature genre, into an English Language Teaching (ELT) curriculum of adult learners receiving an English specialization course. First, the research deals with the use of short stories in EFL classes. The contribution of short stories to reinforce students' knowledge of language as well as to promote their creative writing skills and its enjoyment value are discussed based on the research findings.

1.1 Cultivating Language Skills

Short Story Based Language Teaching (SSBLT) allows instructors to teach the four skills to all levels of language proficiency. Murdoch (2002) indicates that "Short stories can, if selected and exploited appropriately, provide quality text content which will greatly enhance ELT courses for learners at intermediate levels of proficiency". Oster (1999) also affirms that literature helps students to write more creatively.

1.2 Building Up Extensive Vocabulary

Ellis and Brewster (1990) highly recommend teachers to use stories to teach vocabulary saying "The story notes highlight the main vocabulary areas in each story". Some will be for passive recognition only. Vocabulary in stories is presented in a vivid and clear context and the illustrations help to convey meaning. Therefore, short story-based language teaching makes the learners get the words in context and increases their retention of the words.

1.3 Short Story and Writing Skill

Stories can also help to improve students' writing. The use of short stories serves as a useful source of input and a powerful springboard for student writing, offering valuable ideas in terms of food for thought, and containing lessons which are highly relevant to student lives. This is

not only due to the more indirect, metaphorical and subtle nature of stories, but also because the story provides a stimulus to the imagination as well as supplying a convenient initial frame of reference which may be readily understood and appreciated by all the participants (King, 2001).

1.4 Developing Critical Thinking

Reading different short stories with different themes and perspectives helps the students look at the world form different lenses. Therefore, they start thinking critically when they read stories. Short stories have two crucial advantages over traditional content because they are entertaining, students' pervasive apprehension is reduced, and they learn from the beginning that critical thinking is natural, familiar, and sometimes even fun. Howie (2003) also agrees with the use of short stories to teach critical thinking.

1.5 Contribution of Short Stories to Teaching and Learning Atmosphere of the Classroom

According to Oster (1989), "focusing on point of view in literature enlarges students' vision and fosters critical thinking in various ways". This could happen because when students read, they interact with the text. By interacting with the text, they interpret what they read. The students are eager to continue reading short stories until the end to find out how the conflict is resolved. In the same line, Elliott (1990) states that literature motivates advanced students and is "motivationally effective if students can genuinely engage with its thoughts and emotions and appreciate its aesthetic qualities.

1.6 Short Story based Language Teaching (SSBLT)

Recently there have been some attempts by scholars who encourage the incorporation of literature in language classes. In other words, literature has been discovered as a valuable and interesting material for improving students' language ability. The purpose of this research is to explore the advantages of using short stories in language classes, a new language teaching method as Short Story based Language Teaching (SSBLT) is introduced in this research. SSBLT is a humanistic literature-based language teaching method that aims to promote the learners` personal, cultural and linguistic awareness.

1.7 The Procedures for Teaching Stories: Presentation, Exploration and Follow-up

The method of teaching stories as a supplementary to reinforcing language knowledge and creative writing skills involved three stages: presentation, exploration, and follow-up, each with a variety of tasks. The same method was used in this study, which involved integrating short stories into the English syllabus and produced positive outcomes in reinforcing students' knowledge of language and promoting creativity in their writing skills.

1.7.1 Presentation

The aim of this stage is to introduce the story and motivate the students in order to make the literary text comprehensible through various pre-reading tasks. Students were assisted to

activate their schema and relate the story to their own experience by various techniques, such as brainstorming events, characters, feelings, etc., and predicting the content of the story from the title.

1.7.2 Exploration

At this stage, students' attention is directed to a study of the theme and the language of the literary genre through various student-centered activities (Collie & Slater, 1991) in order to make the students appreciate the meaning of the story. In analyzing the stories, the kind of technique utilized depended on the characteristics of each text. Each story was exploited in a more communicative or student-centered manner, and students were encouraged to 'participate in the creation of meaning'.

1.7.3 Follow-up

This stage comprises various writing tasks. Students were provided with a focused purpose to help them imagine that they will, later, produce a writing task relevant to the theme of the story. Therefore, each story was extended with some follow-up tasks to consolidate the students' language knowledge, improve their creative writing skills, and to enable the students to connect the story with their own lives, practicing grammar and vocabulary needed. Writing tasks revolved around the central theme of the story, ranging from character description, relationships, identity, conflict, which are of most concern to adult students, all of which were among the objectives of the ELT curriculum.

1.8 Aim of the Study

The major aim of this study is to investigate the following research questions:

(i) What are the students' perceptions of the use of short story in terms of its contribution to their knowledge of grammar, vocabulary and their creative writing skills?

(ii) To what extent does the use of short story, as perceived by the students and teachers, contribute to teaching and learning atmosphere of the classroom?

2. Methodology

The aim of this research was to identify students' and teachers' opinion whether the short story contributed to their writing skills, through three statements. Researchers also aim to identify their opinion whether the use of short story contributed to teaching and learning atmosphere in the classroom.

2.1 Data Collection

The questionnaire aimed to determine students' opinion on the degree to which the use of stories has been effective in various aspects in learning English. The 13-item survey questionnaire comprised four sections. Section one asked the students' opinion concerning the contribution of short story to grammar knowledge through four statements. Section two aimed to elicit the students' opinion concerning the contribution of short story to vocabulary knowledge through three

statements. The aim of section three was to identify students' opinion whether the short story contributed to their writing skill, three statements. Section four aims to find out students' opinion whether the use of short story contributed to teaching and learning atmosphere in the language classroom. Students were asked to indicate their answers on a five-point Likert scale, on which value 1 represented 'never', and value 5 'always'. The research also included interviews where teacher and student respondents were invited to express any other ideas related to this issue. The questionnaire and interview were administered at the end of the academic year to have summative evaluation regarding the use of stories in English lessons.

The research adopts a mixed method approach which combines elements of qualitative and quantitative research approaches. Moreover, a language teaching method as Short Story based Language Teaching (SSBLT) is used in this research.

The research consisted of 33 university teachers and 51 students studying at university for interview survey, and 111 university students for questionnaire survey. The research used interviewing (content analysis) as a guiding method of qualitative inquire to draw the experiences of the teachers and students who responded.

2.2.1 Participants

The study was conducted with 33 English teachers and 111 university students majoring in English and they were at the undergraduate level with an average 20-year-old. The students were receiving an English language specialization at the Universities which lasted for four years.

Table 1 Demographic data of English teachers (n=33)

SN	Variables		Number (%)
(i)	Gender	Male	26%
		Female	74%
(ii)	Literature teaching experience	1 to 5 years	51%
		6 to 10 years	23%
		11+ years	26%

Table 2 Demographic data of English specialization students (n=111)

SN	Variables		Number (%)
(i)	Gender	Male	19%
		Female	81%
(ii)	Years of study	Second Year	32%
		Third Year	26%
		Fourth Year	42%

As the objective of the study was to explore students' perceptions of the contribution of short story to acquire language skills and communicative competence within the framework of the English language curriculum while following the regular syllabus. In using short stories in EFL classes, short story selection plays an important role. Choosing stories with appropriate language level (vocabulary, structures) and content (interesting, fun, motivating, memorable) encourages student participation as well as motivation (develop imagination, arouse curiosity, draw on personal experience). Regarding the length, attention was paid to selecting a complete text but not excessive in length. Each story had a different aim to accomplish within the parallel syllabus depending on its content, language features and writing tasks to be performed. Since the literature was intended to reinforce the language items, both grammar and vocabulary, each literary text was chosen with specific learning points in mind and matched the instructional objectives in the on-going syllabus to enable students to reinforce the language. An average of two or three periods a week was devoted to practicing this literary genre.

3. Results

Short stories are a compelling form of literature, and something that students often find engaging. It is important for students to learn to see short stories as more than easier/shorter versions of stories, and to appreciate the unique challenges and opportunities of the form. The research recommends that the short story can provide EFL learners with suitable study resource which is both delightful and instructive to improve their linguistic proficiency and reading comprehension. Consequently, this research aims to put forward variety of strategies to make the teaching of the short story enjoyable and an academically enriching experience. Short story makes them better readers. But for this the text selection is significant one in language classes. This paper aims at emphasizing the use of short stories in English language teaching classrooms, for developing students' communicative competence.

3.1 Phase 1: Questionnaire

3.1.1 Section 1

Now it is realized that literature can be used to reinforce the skills and it is complementary to language teaching. Murdoch (2002) indicates, "Short-stories can, if selected and exploited appropriately provide quality text content which will greatly enhance ELT courses for learners at intermediate levels of proficiency (p.9)". The average scores of the factors and the problem criteria with five-rating Likert's scale were used to analyze the data as follows:

4.51 - 5.00 means always
3.51 - 4.50 means often
2.51 - 3.50 means sometimes

1.51 - 2.50 means rarely
1.00 - 1.50 means never

Table 3 Students' opinion concerning the contribution of short story to grammar knowledge (n=111)

SN	Statement	M	SD	Meaning
(i)	I realized the particular use of language when learning short stories in EFL classes.	3.71	1.15	Often
(ii)	I reinforced the grammar subjects much better that I learnt in the course.	3.33	1.40	Sometimes
(iii)	I got to know different language structures.	3.47	1.36	Sometimes
(iv)	I used grammar in a more meaningful way.	2.92	1.53	Sometimes
	Average	3.36	1.36	Sometimes

As far as the students' perceptions of contribution of short story to grammar knowledge was concerned, the students (n=111), as seen in Table 3, they realized the particular use of language when learning short stories in EFL classes and that they sometimes got to know different language structures. The data indicate that the use of short stories contributed to students' reinforcing effectively and meaningfully their knowledge of grammar.

3.1.2 Section 2

This study aimed at investigating the effect of using short stories on enhancing vocabulary learning of EFL learners. With new methods of enhancing learners' vocabulary, both teachers and students will be able to cope with language learning and teaching better. This can be attributed to the effect of using short stories on improving vocabulary performance of learners. The results have some implications for language teachers and materials developers.

Table 4 *Students' opinion concerning the contributions of short story study to vocabulary knowledge (n=111)*

SN	Statement	M	SD	Meaning
(i)	I reinforced the words I met in the short story.	2.62	1.37	Sometimes
(ii)	I learned words that differed from those I met in the short story.	2.87	1.20	Sometimes
(iii)	I could retain the words easily since I used them in a meaningful context.	3.51	1.62	Often
	Average	3.00	1.40	Sometimes

According to the data, short stories help students enhance the vocabulary knowledge and also found that the use of short stories sometimes enhanced students' language skills. Additionally, short stories are especially useful in improving students' vocabulary, knowledge of grammar as well as four language skills.

3.1.3 Section 3

Oster (1989) affirms that literature helps students to write more creatively (p.85). Oster (1989, p85) further says this thoughtful process leads to critical thinking.

Table 5 *Students' opinion whether the short story contributed to their writing skills (n=111)*

SN	Statement	M	SD	Meaning
(i)	It enabled me to be more creative.	3.44	1.32	Sometimes
(ii)	It enabled me to be more aware of the use of English language.	3.38	1.37	Sometimes
(iii)	I could express my feelings more easily by means of short story.	2.80	1.55	Sometimes
	Average	3.21	1.41	Sometimes

As far as the students' perceptions of the contribution of short story to writing was concerned, as seen in Table 5, the students stated that stories sometimes enable them to be more creative. Furthermore, the use of stories sometimes enables them to be more aware of the use of English and students could express their feelings more easily by means of short stories.

3.1.4 Section 4

Its main purpose is to help learners to learn language by enjoying and help them use language for communication through using short stories as the materials in a friendly atmosphere. It is particularly designed to develop communicative competence and critical thinking. In the end, Table 6 discusses the advantages of SSBLT.

Table 6 *Students' opinion whether the use of short story contributed to teaching and learning atmosphere in the classroom (n=111)*

SN	Statement	M	SD	Meaning
(i)	The stories helped us realize the particular use of language and become familiar with different language structures.	3.41	1.27	Sometimes
(ii)	Short stories helped us to reinforce the grammar that we learnt in the lessons much better and we could use grammar in a more meaningful way by using stories.	3.53	1.24	Often

Table 6 (Continue)

SN	Statement	M	SD	Meaning
(iii)	The careful selection of short stories and their proper induction into EFL classroom teaching could build up cultural identity which automatically develops the overall personality.	3.86	1.15	Often
	Average	3.60	1.22	Often

As seen in Table 6, through the questionnaire, approximately, respondents reported that the stories sometimes helped them realize the particular use of language. According to the students short stories often helped them to reinforce the grammar that they learnt in the lessons much better. Students also agreed that they used grammar in a more meaningful way, using stories.

To sum up, findings indicate that the use of short stories contributed to students' reinforcing effectively and meaningfully their knowledge of grammar and vocabulary while it helped students to be more creative and imaginative in their writing in a way to free the students from the routine procedures occurring in the classroom.

3.2 Phase 2: Interviews

According to the interview responses of the student participants, it has been found that using short stories extends students' interpretive strategies, develop their sensitivity to the differences between oral and written input, and enhances their ability to assess the written text helping students to interact productively with the written text.

3.2.1 Student Interview (n=51)

It also increases students' confidence and enjoyment in reading. It will be overall benefit of the EFL learners if the teachers promote the use of stories at all levels.

Table 7 Interview responses of the student participants (n=51)

SN	Discussion Items	Sample Responses
(i)	Students' opinion concerning the contribution of short story to grammar knowledge	*I have practiced grammar better for example, adverbs, adjectives and tenses and I have also learned how to use the grammar correctly.*
		The use of short stories acted as a useful vehicle to practice specific language, both grammar and vocabulary, effectively and meaningfully.
(ii)	Students' opinion concerning the contributions of short story study to vocabulary knowledge	*I have come across many words in the stories that I had learned in my English coursebook. This helped me to remember the new words better.*

Table 7 (Continue)

SN	Discussion Items	Sample Responses
		I have learned how to use the words in appropriate places. I have found an opportunity to learn more words. This way my vocabulary knowledge expanded.
		I have also learned many new words that I had not seen before. By reading short stories I have also increased my vocabulary *knowledge.*
(iii)	Students' opinion concerning the contributions of short story study to their writing skills	*Stories give insights and help me write in L2 in a more imaginative way.*
		I become more creative by comparing my own point of view with that/ those of the main character(s) of the story.

By interpreting what students respond, they can work toward writing English more creatively. Using short stories as a source of input, various writing activities can be created to help students develop their creative writing skills. Students can be asked to write dialogues or more complex writing activities in accordance with the nature of the story, objectives of the lesson and language proficiency level of the students. Studies revealed that the use of short stories in EFL classes resulted in positive learning outcomes.

3.2.2 Teacher Interview (n=33)

Patton (1990) suggests that one way in which the research design can be enhanced is to diversify the data collection techniques. Hence, in the present study, data collection tools were used to collect quantitative and qualitative data in order to address the research questions.

Table 8 Interview responses of the teacher participants towards contribution of short stories to teaching and learning atmosphere of the classroom (n=33)

SN	Discussion Items	Sample Responses
	Cultivating all language skills	*Short stories should be used to reinforce ELT by discussing activities since instructors can create writing and acting out dialogues.*
		We can create a variety of writing activities to help students to develop their writing skills such as paraphrasing some sentences, summarizing the story, writing the theme of the story, writing a paragraph on the reason why a particular character did something, writing a specific kind of paragraph about the theme of the story

Table 8 (Continue)

SN	Discussion Items	Sample Responses
	Motivating students	*The students are eager to continue reading short stories until the end to find out how the conflict is resolved.*
		Short stories motivate students to explore their feelings through experiencing those of others.
	Developing critical thinking	*Stories put issues of critical thinking in an easily remembered context for my students.*
		We have the responsibility to help students to develop cognitive skills because everyone needs to "make judgments, be decisive, come to conclusions, synthesize information, organize, evaluate, predict, and apply knowledge."
	Building up extensive vocabulary	*The student group that usually read literary texts showed improvement in vocabulary and reading.*
		Literature should be viewed as discourse, which indicates that the student's aim should be to learn how the language system, the structures and the vocabulary used in communication.

Teachers' interview responses confirm that as stories are motivating and fun, they can help students develop positive attitudes towards the foreign language and enrich their learning experiences. Furthermore, stories encourage participation and student-centered learning; students may interact with each story through a series of activities. Finally, stories are flexible in that they may be suitable for all types and different levels of students.

3.3 Phase 3: Classroom Teaching

The second data collection tool was used to collect student writings which were produced by the students after studying each story. A language teaching method as Short Story based Language Teaching (SSBLT) is introduced in this research. SSBLT is a humanistic literature-based language teaching method that aims to promote the learners` personal, cultural and linguistic awareness. It emphasizes using short stories as the materials in a friendly atmosphere. It is designed to develop the learners` communicative competence and critical thinking. SSBLT aims at cultivating all language skills cooperatively. Then, the characteristics and teaching procedures of SSBLT have been discussed. In addition to the four language skills, short story helps teachers to teach literary, cultural and higher order thinking emotional aspects. In English language classrooms it is common to observe boredom, lack of interest, a negative attitude towards learning and phobia of English.

According to King (2001) using short stories may offer solution to such problems, it provides a relax atmosphere and creates enjoyment as well as fun.

3.3.1 Short Story Lesson Plans

Although short stories are a great tool for literature teaching, they require strong objectives and lessons to really help students become better readers and writers. Teachers think carefully about what they want their students to learn and choose the best stories to support learning. In this research, short stories are integrated into the English curriculum with mastery of the language (vocabulary and grammar) with further development of the writing skills with a special focus on student-centered learning, which requires students' active involvement in the learning process on the basis of given tasks. In other words, literature has been incorporated into the ELT curriculum as an aid to studying English language. Regarding the lesson plans, the researchers have used the reader-response approach in the following phases. Researchers included lesson plans and possible teaching objectives which were used during research period.

3.3.1.1 Lesson Plan 1

The role of the teacher is of great importance. The teacher must choose a suitable text to use in class and should help her/his students understand the story with various activities. In the following part of this study, what teaching steps should be considered and may be used in teaching a short story. First, in the pre-reading section of the lesson plan: activities, quiz and open-ended sentence starters for pre-reading method. Second, in the analysis and interpretation section: discussions about the story in terms of setting, generating possibilities and evaluating events. Third, teachers have used the approach in bridging text and context using the characters mentioned in the story. Fourth, through post reading part, students respond to the story through imaginations and creating data banks. Fifth, through the reflection part, students can reflect on what they know, want to learn and have learned. Last, there are specific questions in the summative assessment regarding the reader-response approach.

3.3.1.2 Lesson Plan 2

The reader-response theory was used in this lesson plan in order to help students be better critical thinkers. It demands imagination and ability to make connections with what the students already know and what they learned. They broaden their knowledge through comparing their own responses with their peers' responses. Regarding the lesson plans, we have used the reader-response approach in the following places. First, in the pre-reading activities, students are asked to make connections, write dialogues and pick up one character and write about their thoughts. Second, Students focus and reflect on the literature through comparing two characters. Third, in the bridging text and context, students reflect on historical portraits and expressing feelings, and having discussions about the languages. Fourth, students also reflect on the whole story through

specific questions in the reflection part. In conclusion, students developed their own individual responses to the story while reading.

4. Discussion

There are so many literary elements for students to understand in order to comprehend and appreciate what they read. Short stories are great for reinforcing this knowledge but may be too lengthy to introduce and teach specific elements properly. Students need multiple examples of literary elements being used in writing in order to understand them and identify them on their own, so the short story is perfect for this. Additionally, students will find ideas for using short stories to develop students' reading comprehension, including active reading and vocabulary skills. The findings revealed that the use of short story, in terms of its contribution as perceived by the students, might contribute to teaching and learning atmosphere of the classroom and also was able to make significant differences in the level of degree of motivation. Findings also indicate that the use of short stories contributed to students' reinforcing effectively and meaningfully their knowledge of grammar and vocabulary while it helped students to be more creative and imaginative in their writing in a way to free the students from the routine procedures occurring in the classroom.

5. Conclusion

The research proposes that the short story can provide EFL learners with suitable study resource which is both delightful and instructive to improve their linguistic proficiency and reading comprehension. Consequently, this research aims to put forward variety of strategies to make the teaching of the short story enjoyable and an academically enriching experience. Short story makes them better readers. This research aims at emphasizing the use of short stories in English language teaching classrooms, for developing students' communicative competence. Communication means the transfer of information from one person to another person through language and understanding. Finally, short stories are found to be the most suitable authentic literary genre to use in the English language teaching classrooms to improve learners' communicative competencies easily and effectively.

6. References

Abrams, M.H. 1970. *A Glossary of Literary Term*. New York: Rinehart.

Applebee A. N. (1974), *Tradition and Reform in the Teaching of English: A History, Urbana, 111.*: National Council of Teachers of English.

Carlisle, A. (2000). Reading logs: an application of reader-response theory in ELT. ELT Journal. 54 (1), 12-19. Retrieved from doi:10.1093/elt/54.1.12

Carter, R., & Long, M. (1991). *Teaching literature*. UK: Longman Group

Elliot, R. 1990. Encouraging reader-response to literature in ESL situations. ELT Journal. 44 (3), 191-8.

Ellis, G., & Brewster, J. (1991). *The storytelling handbook for primary teachers*. London: Penguin.

Hirvela, A. (1996), 'Reader-response theory and ELT'. *ELT Journal, 50 (2)*, 127-34.

King, I. (2001): Beyond Cinderella: Using Stories with Secondary and Adult Learners. BETA-IATEFL. *Language and Linguistic Studies, 4(2)*, 94-106

Tolkein, J. R. R. (1997). On Fairy-Stories in The Monsters and the Critics and other essays. C. Tolkein. London: Harper Collins.

King, I. (2001). Beyond Cinderella: using stories with secondary and adult learners. BETA-IATEFL retrieved 12 June 2012, http://www.beta-iatefl.org/813/blog-publications/beyond-cinderella-using-stories-secondary and adult learner. *Language and Linguistic studies,4(2)*, 94-106.

Littlewood, W. (2011). Communicative language teaching: An expanding concept for a changing world. In E. Hinkel (ed.), *Handbook of Research in Second Language Teaching and Learning, Volume II* (pp. 541-547). New York: Routledge.

Murdoch, G. (2002) Exploiting well-known short stories for language skills development. IATEFL LCS SIG Newsletter, 23, 9 – 17.

Oster J. (1989), Seeing with Different Eyes: Another View of Literature in the EFL Class, *TESOL Quarterly, 23*.

Stern, H H (1992). Issues and options in language teaching (edited posthumously by Patrick Allen & Birgit Harley). Oxford: Oxford University Press

Stern, H.H. (1992). *Issues and Options in Language Teaching*. Oxford: OUP.

Widdowson, H. G. (1983), *Learning Purpose and Language Use*, Oxford University Press.

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English Language Teachers' Attitude and Readiness in Implementing 21st Century Learning

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Abstract

This study aims to identify English language teachers' readiness in implementing 21st century learning. Teachers play the main role in determining the outcomes of 21st century learning. Teachers' perception and understanding towards an innovation in education influence their action, decision and practice in classroom. Teachers are the main factor that contributes to students' performance in mastering 21st century skills which consist of 4C's: i) Communication, ii) Collaboration, iii) Creativity and iv) Critical thinking skills. This survey was conducted by using questionnaire and interview survey as research instrument. Total of 242 English language teachers involved in the questionnaire survey and 61 senior language teachers participated in interviews. The sample was chosen randomly. The findings show that over 50% of the language teachers have positive attitude /level of understanding towards implementing 21st Century Learning. However, English language teachers' readiness in implementing 21st century learning is moderate. Moreover, respondents show high agreement in nurturing four of 21st century learning skills where respondents implemented learning activity that fostering creativity, critical thinking, collaboration and communication. For assessing language, the new test types are being designed to measure 21st century competencies, with emphasis on balancing formative and summative measures to assess skills. In assessment aspect, respondents show low level ability in evaluating 21st century skills among the students. According to needs aspect, the respondents need moderate level of professional development in attempt to increase their knowledge as well as instructions and assessment related to 21st century learning skills. The implication of the study is that some teachers are not ready to implement 21st century learning in classroom so that an action has to be taken to promote teachers to further their study at the higher level and improve their understanding, knowledge and skills in teaching.

Keywords : English Language Teachers, Attitude, Readiness, Implementing 21st Century Learning

1. Introduction

The need in educating students to produce high quality generation with the capability to deal with 21st century globalization has become a very important agenda nowadays.

21st century learning focuses on four skills (4Cs) that should be mastered by students, namely communication, critical thinking, collaboration and creativity. The responsibility of fostering the 4Cs 21st century learning skills is very important and all the teachers play the main role in carrying out the responsibility. Knowledge should be delivered integratedly with students learning activities. Teachers need to use variety of techniques such as brainstorming, role-play, games and other student-centered learning activities that are appropriate with contents and skills as planned to be achieved during the learning session. At this point, creativity skill becomes an important element that empowers teachers' capability to use as many as generating idea technique, develop and communicate new ideas in effective ways. Teachers should possess six expertises (Langworthy, 2013). These six expertises are: i) mastering knowledge/subject/content; ii) mastering 21st century pedagogy; iii) mastering the skill in tracing student's development and achievement and provide support; iv) mastering learning phycology skill, v) possess counseling skill; and vi) competent in using information technology and media. Thus, teachers play the main role in integrating technology in classroom routine. Integrating information technology and media make it relevant with pedagogy and teaching techniques play important parts in assisting and support 21st century learning progress among students. Integration of technology offers opportunities for students to master 21st century skills like information skills, collaboration and self-access learning. According to Langworthy (2013), the process of planning and implementing 21st century learning should base on four main principles: i) student-centered learning; ii) collaborative learning; iii) contextual learning; and iv) integrating with community. Teachers' perceptions toward 21st century pedagogy practice should be nourished with creativity thinking, innovative thinking and critical thinking. Langworthy (2013) stated that the ways teachers implement teaching process affect the outcomes of 21st learning. Thus, teachers are supposed to have high capability in planning and implementing teaching and learning that fulfill the needs of immersing 21st century learning skills through effective, interesting and interactive pedagogy practice.

1.1 Problem Statement

The attempts to instill 21st century among students are quite difficult as the students have different previous knowledge, passionate, motivation and learning style. It is teachers' responsibility to take initiatives in maintaining students passionate and motivation by applying various meaningful techniques and approaches in teaching and learning. Effective teaching approaches play important part in increasing students' ability to master knowledge and skills they required. However, Teachers are reported to face the compact curriculum and central exam issues (Walser, 2008) where teachers must cover the syllabus and prepare students for examination. Teaching should

change their teaching practice from traditional method oriented to student-centered creative teaching that focus on thinking skills and ICT-based self-learning (Amran&Rosli, 2017). The best teaching and pedagogy practice should apply various methods, strategies, techniques, approaches and resources and well blended to make sure teacher-centered, student-centered and resource-centered are combined in harmony and help students stay focus during teaching and learning session (Amran&Rosli, 2017). That is why teachers must be knowledgeable about the field of pedagogy, the subject matter and the learning needs of the students. Thus, this research is carried out to identify the teachers' attitude / level of understanding in implementing 21st century learning and level of teachers' readiness.

2. Research Objective

The objectives of this research are

(i) To find out teachers' attitude / level of understanding in implementing 21st century learning

(ii) To identify the level of teachers' readiness in implementing 21st century learning

(iii) To investigate language teacher's interpretation to students' performance in nurturing 21st century skills

(iv) To explore the language teacher's perceptions on assessment aspect and needs aspect of 21st century learning skills

3. Methodology

This research is quantitative and qualitative in survey design. This research involved 242 teachers from different states and divisions in Myanmar. There are four items corresponding to respondents' demography: gender, academic level and teaching experience. There are 15 items related to teachers' readiness in implementing 21st century learning. Table 1 shows the demographic profile of the respondents.

Table 1 Demographic profile of the respondents (n = 242)

SN	Items		Frequency (%)
1	Gender	Male	21.5%
		Female	78.6%
2	Academic level	Master's Degree	49.2%
		PhD Degree	50.8%
3	Teaching Experience	1 - 5 years	30%
		6 - 10 years	17%
		11 - 15 years	24%
		16 - 20 years	15%
		Above 20 years	14%

According to the data, respondents consist of 21.5% male teachers and 78.6% female teachers. The respondents come from two categories of academic level where 50.8% of the respondents hold PhD degrees and 49.2% of the respondents have studied Master's degree level. As for the teaching experience, 30% of the respondents have been teaching for 1 to 5 years, 17% have been teaching for 6 to 10 years, 24% have been teaching for 11 to 15 years, 15% have been teaching for 16 to 20 years while 14% have been teaching for more than 20 years.

4. Findings

Research findings can be categorized into two: teachers' attitude/level of understanding and readiness to 21st century learning skills.

4.1 Analysis of Language Teachers' Attitude/Level of Understanding in Implementing 21st Century Learning

Analysis of teachers' attitude/level of understanding in implementing 21st century learning has been done descriptively. Each item is analyzed and interpreted. Quantitative data statistics are analyzed using the percentage (%), Mean (M) and Standard Deviation (SD).

Table 2 Questionnaire responses towards language teachers' attitude/level of understanding in implementing 21st Century Learning (n=242) (Source: Langworthy, 2013).

SN	Items	M	SD	Meanings
1	21st century skills are important in determining students' success at workplace in the future.	1.22	0.44	Agree
2	The ministry has clarified the features of 21st century learning.	2.21	0.77	Neutral
3	The curriculum promotes 21st century learning.	1.90	0.79	Neutral
4	I need professional development to increase my knowledge about 21st century skills.	1.51	0.67	Neutral
5	I need professional development to build teaching for 21st century students.	1.39	0.56	Agree
6	I need professional development in assessing 21st century students.	1.47	0.62	Neutral
7	Technology plays important part in 21st century learning.	1.20	0.40	Agree
8	I am confident in using technology as a tool in 21st century learning.	2.04	0.79	Neutral
Average		1.62	0.63	Neutral

Note: Average scores: 0.5 - 1.4 = agree; 1.5 - 2.4 = neutral; 2.5 - 3.4 = disagree

From table 2, respondents highly agree (M=1.20, SD=0.40) towards the importance of technology in 21st century learning, however their confidence in applying technology as tools in teaching 21st century skills is at neutral (M=2.04, SD=0.79). The findings show that the language teacher participants have a positive attitude towards implementing 21st Century Learning (M=1.62, SD=0.63).

4.2 Analysis of Level of Language Teachers' Readiness in Implementing 21st Century Learning

Teachers are the main factor that contributes to students' performance in mastering 21st century skills which consist of 4C's: i) creativity, ii) communication, iii) collaboration and v) critical thinking skills. One of them was about teachers' readiness in implementing 21st century learning.

Table 3 Questionnaire responses towards level of language teachers' readiness in implementing 21st century learning (n=242) (Source: Amran & Rosli, 2017)

SN	Items	M	SD	Meanings
1	I have excellent understanding about 21st learning skills.	1.89	0.67	Moderate
2	I involve my students in activities that promote creativity.	1.97	0.71	Moderate
3	I involve my students in activities that promote innovation.	1.89	0.69	Moderate
4	I involve my students in activities that promote critical thinking.	2.07	0.74	Moderate
5	I involve my students in activities that promote problem solving.	1.97	0.70	Moderate
6	I involve my students in activities that promote communication and collaboration.	2.06	0.75	Moderate
7	I am able to evaluate 21st century skills among the students.	1.86	0.70	Moderate
Average		1.96	0.71	Moderate

Note: Average scores: 0.45 - 1.44= low; 1.45 - 2.44 = moderate; 2.45 - 3.44 = high

The findings show the language teachers' readiness in implementing 21st century learning is moderate (M=1.96, SD=0.71). The language teachers respond only at a moderate level among respondents related to involving students in the activities that foster five skills in 21st century learning.

The 21st century learning means that students master content while producing, synthesizing, and evaluating information from a wide variety of subjects and sources with an understanding of and respect for diverse cultures.

Table 4 Questionnaire responses towards participants' interpretation to students' performance in nurturing 21st century skills (n=242) (Source: Walser, 2008)

SN	Item	M	SD	Meanings
1	21st century learning focuses on 'Communication' that should be mastered by students.	1.20	0.51	Agree
2	21st century learning focuses on 'Critical thinking' that should be mastered by students.	1.08	0.31	Agree
3	21st century learning focuses on 'Collaboration' that should be mastered by students.	1.34	0.49	Agree
4	21st century learning focuses on 'Creativity' that should be mastered by students.	1.27	0.61	Agree
Average		1.22	0.48	Agree

Note: Average scores: 0.45- 1.44= agree; 1.45 - 2.44 = neutral; 2.45- 3.44 = disagree

Many nations around the world have undertaken wide-ranging reforms of curriculum, instruction, and assessments with the intention of better preparing all students for the higher educational demands of life and work in the 21st century. To succeed in university, career and life in the 21st century, students must be supported in mastering both content and skills. For assessing language, the new test types are being designed to measure 21st century competencies, with particular emphasis on balancing formative and summative measures to assess skills.

Table 5 Interview responses towards language teacher's perceptions on assessment aspect of 21st century learning skills (n=242) (Source: Walser, 2008)

SN	Item	M	SD	Meanings
1	Ability in evaluating 21st century skills among the students	1.61	0.68	Moderate
	Ability in determining students career in the future	1.83	0.88	Moderate
	Ability in applying curriculum at university to promote 21st century learning	1.63	0.60	Moderate
Average		1.69	0.72	Moderate

Note: Average scores: 0.45 - 1.44 = low; 1.45 - 2.44 = moderate; 2.45 - 3.44 = high

In assessment aspect, respondents show moderate level (M=1.61, SD=0.68) ability in evaluating 21st century skills among the students, moderate level (M=1.83, SD=0.88) ability in determining students career in the future and applying curriculum at university to promote 21st century learning (M=1.63, SD=0.60).

What are the skills that students need to be successful in this rapidly changing world and what competencies do teachers need, in turn, to effectively teach those skills to their students? The question that arises from this is, of course, what teacher preparation programs are needed to prepare graduates who are ready to teach well in a 21st century classroom. Teachers need professional development in attempt to increase their knowledge related to 21st century learning skills and also need to develop instructions and assessment related to 21st century learning skills.

Table 6 Interview responses towards language teacher's perceptions on needs aspect of 21st century learning skills (n=242) (Source: Walser, 2008)

SN	Item	M	SD	Meanings
1	I need professional development in attempt to increase my knowledge related to 21st century learning skills.	2.11	0.85	Moderate
	I need to develop instructions and assessment related to 21st century learning skills.	2.08	0.85	Moderate
Average		2.10	0.85	Moderate

Note: Average scores: 0.45 - 1.44 = low; 1.45 - 2.44 = moderate; 2.45 - 3.44 = high

According to the needs aspect, the findings show at a moderate level (M=2.10, SD=0.85) that the respondents need professional development in an attempt to increase their knowledge as well as instructions and assessment related to 21st century learning skills.

The finding of a research proved that the failure of some language teachers in instilling 21st century skills caused students to be unable to integrate 21st century skills in their learning process. Some language teachers are still under the paradigm of implementing traditional teaching and learning with teacher-oriented strategy. Most of the teachers apply conventional teaching methods till now. The process of delivering content has been implemented by the teacher in passive ways. As the consequence, students' involvement in learning activity has been retarded and learning process become quite limited.

5. Discussion

Considering the data, teacher participants are not ready enough to enable their best teaching practice to implement 21st century learning but their understanding related to 21st skills is

positive. They are eager to implement 21st century learning but they still need professional development to improve their understanding. A research carried out by Carlgren(2013) has withdrawn the same result that teachers face the most challenges in fostering innovation and critical thinking compared to other skills. Teachers show low agreement in ability to assess 21st century skills among their students. These findings are supported by Veloo, Krishnasamy and Ali (2015) where their respondents have shown moderate agreement regarding to understanding the implementation of assessment. Assessing 21st century learning involves the evaluation of many skills and not just paper-pencil exams. Teachers need appropriate tools to assess the different skills. Teachers show moderate levels related to how far the current curriculum supports 21st century learning. The curriculum is so compact and influences teachers' creativity in conducting teaching and learning. Teachers moderately agreed that they need professional development in three aspects which are related to knowledge, teaching and assessment in 21st century learning. Walser (2008) suggested that teachers should be provided i) well-prepared course, ii) a support system consisting of references, resources to be used in implementing teaching and learning and iii) a platform to discuss any issue related to their teaching. The level of understanding 21st century learning between the lowest and the highest academic level teachers are significantly different where teachers with master's degree understand 21st century learning skills better than teachers with certificates. The implication of this study is teachers are ready to implement 21st century learning but still needs improvement to optimize the outcomes. In the assessment aspect, respondents show moderate level ability in evaluating 21st century skills among the students followed by determining students' career in the future and applying curriculum at university to promote 21st century learning. Respondents clearly agreed that they need professional development in an attempt to increase their knowledge as well as instructions and assessment related to 21st century learning skills. Teachers clearly mentioned that they need professional development and policy makers should concern about this and fulfill the needs.

6. Conclusion

Teachers are responsible on how success the implementation of 21st century learning. Teachers' perception, knowledge, skills and practice influence the effectiveness of their teaching. Teaching in 21st century is quite challenging where teachers should concern the 4Cs learning skills: creativity, communication, collaboration and critical thinking. Teachers should be provided with opportunities to develop their profession since they are confident that profession development may help them enrich their knowledge and increase their capability in teaching and assessing. Teachers need resources and references to support their teaching. Teachers need guidance that may promote their creativity in planning effective, meaningful and fun teaching techniques. Teachers cannot stand alone in implementing effective 21st century learning. One of the most effective ways

to support the teachers is by providing a teaching module that suggests activities related to 21st century learning skills. The module is practical that teachers can use the activities suggested immediately. In addition, teachers can adopt or adapt the suggested activities to new activities to make it meaningful in their teaching. The teaching module should enable teachers to foster 4Cs 21st century skills. The suggested activities are hands-on where students involved in the activities actively and all students get a chance to contribute to the activities outcomes. Students cooperate in group activities and this will help teachers promote communication and collaboration skills. Besides hands-on activities, the module should offer ICT-based activities since ICT skills are one of the 4Cs skills. The hands-on and ICT-based activities in the module can promote students' creativity, innovation and problem solving skills. In conclusion, the module offers the best solution in increasing teachers' ability as an effective 21st century educator. The module enables teachers to implement learning activities that promote 4Cs learning skills and evaluate students' performance. The activities offered are appropriate as tools for assessing how far the students have mastered 4Cs of 21stskills. This will overcome the teachers' problem in evaluating the 4Cs skills among their students. The module may ensure the best practice pedagogy among teachers in 21stcentury classrooms.

7. Recommendation

After doing this research, I have found language teachers' perceptions and readiness about 21st century learning. Therefore, I would like to recommend that the readiness of 21st century learning of the policy makers, students and teachers from other fields could be researched.

8. References

Amran, N., &Rosli, R. (2017). *Teachers' Understanding in 21st Century* Skills.ProsidingPersidanganAntarabangsaSainsSosial&Kemanusiaan.

Carlgren. T. (2013). Communication, Critical Thinking, Problem Solving: A Suggested for All High University Students in the 21st Century. *Interchange*, 44, 63-81.

Iberahim, A. R., Mahamod, Z., & Mohamad W. M. R. R.W. (2017). 21stCentury Learning and the Influence of Attitude, Motivation, and Achievements Malay Language Secondary University Student. *Jurnal Pendidikan Bahasa Melayu*, Vol. 7(2), (Nov. 2017): 77 – 88. ISSN:2180-4842.

Langworthy, M. (2013). *21st Century Learning Design: Learning that matters*. Retrieved from https://www.internationalpublishers.org/images/press-releases/EducationalPublishing/m_langworthy.pdf

Veloo, A., Krishnasamy, H. N., & Ali, R. M. (2015). Teachers' Knowledge and Readiness towards Implementation of University Based Assessment in Secondary Universitys. *International Education Studies*; Vol. 8(11). 2015 ISSN 1913-9020, E-ISSN 1913-9039.

Walser, N. (2008). *Teaching 21st Century Skills.* Harvard Education Publishing Group. Retrieved from http://hepg.org/hel/article/184

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Culture in Language Teaching and Barriers to Teaching Culture in Foreign Language Classroom: Myanmar Context

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Abstract

In many regards, culture is taught implicitly, embedded in the linguistic forms that students are learning. To make students aware of the cultural features reflected in the language, teachers can make those cultural features an explicit topic of discussion in relation to the linguistic forms being studied. One hundred and forty-four students (98 females and 46 males ranging between 17-23 years of age) of second year, third year and fourth year students studying English at the B.A. English Course at selected Universities participated in this research. We have tried to find out what students think about the effects of the bachelor's degree course of English specialization they attended in the 2018-2019 academic year. Moreover, language teachers' barriers: 1) language teachers' beliefs and 2) the lack of professional development opportunities in learning strategies on weaving culture teaching, in foreign language classrooms at the university level have been explored in this research. The questionnaires, classroom observations, and interviews are used to study the teaching of culture and cultural perspectives in the Departments. Regarding the benefits of learning about culture, attending the English specialization course has raised cultural awareness in English specialization students concerning both native and target societies. In this study, we found language teachers' beliefs towards the teaching of culture in their language courses that can be classified into three categories: (1) teaching culture is not important, (2) teaching culture can be considered as a strategy to the teaching of grammar, and (3) teaching culture is part of a meaningful context. Many difficulties in teaching culture for instructors themselves, such as lack of knowledge by instructors, lack of enough time for preparing classes with cultural elements embedded in them, lack of appropriate materials, the absence of technological support, and students' misunderstanding or stereotypes of the target culture are found.

Keywords : Culture in Language Teaching and Learning, Barriers to Teaching Culture, Foreign Language Classroom, Myanmar Context

1. Introduction

Tylor (1871) said that culture is "that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society." It is commonly accepted that language is a part of culture and that it plays an important role in it. However, the priority given to the place of culture as a significant component in language teaching has not been equally the same in different approaches and methods of foreign language teaching. This research explores the importance of the integration of culture into the teaching of language. Through the study of other languages, students gain a knowledge and understanding of the cultures that use that language; in fact, students cannot truly master the language until they have also mastered the cultural contexts in which the language occurs. People involved in language teaching have again begun to understand the intertwined relation between culture and language (Pulverness, 2003). It has been emphasized that without the study of culture, teaching L2 is inaccurate and incomplete. For L2 students, language study seems senseless if they know nothing about the people who speak the target language or the country in which the target language is spoken. Acquiring a new language means a lot more than the manipulation of syntax and lexicon. According to Bada (2000: 101), “the need for cultural literacy in ELT arises mainly from the fact that most language learners, not exposed to cultural elements of the society in question, seem to encounter significant hardship in communicating meaning to native speakers.” Whether culture of the target language is to be incorporated into L2 teaching has been a subject of rapid change throughout language teaching history. In the course of time, the pendulum of ELT practitioners’ opinion has swung against or for teaching culture in the context of language teaching. There is no such a thing as human nature independent of culture; studying an L2, in a sense, is trying to figure out the nature of another people (McDevitt, 2004). Yet, the most striking linguists dealing with the issue of language and culture are Sapir (1962) and Whorf (1956). They are the scholars whose names are often used synonymously with the term “Linguistic Relativity” (Richards et al, 1992). The core of their theory is that a) we perceive the world in terms of categories and distinctions found in our native language and b) what is found in one language may not be found in another language due to cultural differences. For years, many ideas and perspectives concerning language teaching and the role of culture in the process of language teaching have come, and then been taken over later by others throughout the history of foreign language teaching. Today, most L2 students around the world live in a monolingual and monocultural environment. Consequently, they become culture-bound individuals who tend to make premature and inappropriate value judgments about their as well as others’ cultural characteristics. This can lead them to consider others whose language they may be trying to learn as very peculiar and even ill-mannered, which, in turn, plays a demotivating role in their language learning process.

2. Research Objective

This research has been done to answer the following research questions:

(i) What do students think about the effects of the bachelor's degree course of English specialization they attended towards the teaching of culture in university level language classrooms?

(ii) What beliefs do foreign language instructors have towards the importance of the integration of culture into the teaching of language?

(iii) What are the difficulties and barriers of teaching culture to university-level students, and what are some possible solutions?

3. Research Methodology

This study employed a mixed quantitative and qualitative method. In this study, the bounded system is a English department in selected universities. This study adopted several types of data collection including questionnaires for students, interviews with teachers and classroom observations.

3.1 Data Collection

The data for this study was collected following the completion of the B.A. English course taken during the academic year of 2016-2017 to 2018-2019. During this course lecture type sessions, tutorials as well as research project presentations were held.

3.1.1 Participants

The participants in this research were 144 students (98 females and 46 males ranging between 17-23 years of age) of second year, third year and fourth year students of English studying at the B.A. English Course at selected Universities. In this study, researchers interviewed and observed teacher participants who are representative of language teachers from various ages (from 30s to 50s). Among them, three of them are native English speakers.

Table 1 Demographic information for student participants (n=144)

SN	Information	Gender (%)		Age Range (%)	
		Male	Female	17-20	21-24
1	Second year, B.A. English Specialization	16	28	39	5
2	Third year, B.A. English Specialization	12	34	31	15
3	Fourth year, B.A. English Specialization	19	35	24	30
Total		47	97	94	50

4. Research Results

The responses of the participants were analyzed by observing frequencies of percentage. Results and their interpretations have been presented in tabular form, referring to each item included in the questionnaire.

4.1 Questionnaire Survey

Adapted from Bada (2000), the five-item questionnaire utilized in this study aimed to assess these themes: (1) language skills (Items 1, 2), (2) cultural awareness (of both native and target culture; Item 3), (3) attitude towards the target culture (Item 4), and (4) contribution to the prospective teaching profession (Item 5). In the first two items participants were asked whether the course provided any kind of contribution to any of their language skill(s), and if so, which skill(s) was/were improved compared to others. The second theme of the questionnaire aimed to investigate if the participants of this study became more aware of their own and the target culture's characteristics. The third theme was concerned with the attitude change in the participants towards the target culture. The last theme assesses the contribution of a culture class to the participants' prospective teaching profession.

Theme 1: Language Skills

We began the questionnaire with the item asking whether the culture course contributed to any of the language skills of the participants. All the 100% participants gave affirmative answers to this item. Table 1 below clearly illustrates the results received for this item.

Table 2 Responses towards item 1 of Theme 1: Language skills

No.	Item	Responses (%)	
		Yes	No
1	Did this course contribute to any of your language skills?	100	0

Table 3 Responses towards item 2 of Theme 1: Language skills

No.	Item	Skills	Responses (%)
2	To which skill did the course contribute most?	Reading	31
		Writing	33
		Listening	28
		Speaking	12

Regarding the skill improved most, the participants, by 33% expressed views suggesting that their writing skill was significantly improved. Reading and listening skills came next by 31% and 28% followed by writing by a small 12%. Since the course was not mainly presentation

based, the participants spent a few time conducting seminars and presentation projects. Students practiced writing since they wrote cultural topics in the target language.

Theme 2: Cultural Awareness

One of the main objectives of language learning was to raise awareness of language learners about the target language culture. This target culture upgrades the student's priority knowledge to achieve linguistic achievement. In Table 4 below, the participants expressed views regarding awareness raising of the target culture as well as theirs.

Table 4 Responses towards Theme 2: Cultural awareness of both native and target culture

No.	Item	Responses (%)	
3	Did this course help you raise awareness about both your own and target cultures?	Yes	83
		No	17

The data for this item suggests that the course achieved one of its goals to a great extent. Nearly 83% of the students felt such awareness.

Theme 3: Attitude towards the Target Culture

Education is sometimes compared with evolution; it is essentially an evolutionary process at the end of which the individual transforms greatly. Such transformation, mostly intellectual, could be observed in the change of the individuals' attitudes towards life in general. Culture learning could be considered as one means to transform the language learner. The fourth item of the questionnaire investigated if the participants were able to observe such a transformation in their attitudes towards British and American Societies.

Table 5 Responses towards Theme 3: Attitude towards the target culture

No.	Item	Responses (%)	
4	Did your attitude towards target culture change at the end of this bachelors' course?	Yes	81
		No	19

Having a look at Table 5 above, it can be seen that nearly 81% of the participants expressed positive thoughts regarding item 4. The B.A. English course seems to have succeeded in accomplishing a task with some humanizing effect.

Theme 4: Contribution to Prospective Teaching Profession

In the interview survey, when asked if and how the culture class would contribute to the participants' prospective teaching career almost all of them had to say something. The

responses can be grouped in six points. These points were dealt with citing some of the participants' verbatim remarks at the introduction of each point.

Table 6 Responses towards Theme 4: Contribution to the prospective teaching profession

Point		Responses
1	Teaching language is also teaching culture	a) I will be able to teach not only the language but also the culture. b) When some professors introduced the cultures of the L2s they taught, the learners' interests in those classes increased a lot and the classes based on culture became to be preferred more highly than traditional classes.
2	Familiarization with the target society	a) I will be able to answer the questions of my prospective students about English/American societies. b) I will be able to answer the questions of my prospective students about cultural topics.
3	Assistance in teaching grammar	a) I will be able to teach grammar more efficiently. b) While teaching grammar I will be able to provide genuine examples from the lives of English and American people.
4	Enhancing communicative competence in L2	a) My communicative competence has improved. b) I had the opportunity to use the L2 a lot; thus, I feel more confident in speaking English.
5	Expanding vocabulary	a) Cultural knowledge will play a facilitator role in my teaching and learning new lexical items. b) My vocabulary was expanded significantly due to the culture class.
6	Providing information prior to a visit to the UK or the USA	a) In case I visit Britain or the USA, I will not have a culture shock. b) If I take some of the courses from a university in the UK, I will adapt to the differences in Britain or the USA more easily. c) This point is also highlighted that students who identify themselves as members of a social group (family, neighborhood, professional or ethnic affiliation, nation) acquire common ways of viewing the world through their interactions with other members of the same group. d) Common attitudes, beliefs and values are reflected in the way members of the group use language-for example, what they choose to say or not to say and how they say it.

Point 1

As participants point, it should be reiterated that language teaching is culture teaching, and someone involved in teaching language is also involved in teaching culture at the same time. The participants are aware of the inevitability of teaching culture in a language course, believe that they would be well equipped to teach a language course due to the culture class they attended. They get more motivated by culture-based lessons (the use of culture-loaded words).

Point 2

As a second benefit of the language learning, participants also mentioned that however course books provide real life situations, learners who are lacking insights about the target culture, have difficulty in associating these situations with real people in real life. Therefore, learners may think that they are studying the language of some fictive people.

Point 3

Some participants believe that a language class would help them in teaching grammar. That while teaching grammatical structures and other grammatical items teachers would provide their prospective students with examples taken from real life. Therefore, dealing with grammar problems, teachers' ability to explain the new grammatical items referring to life of the target language society will help them have their students overcome comprehension problems regarding grammatical structures.

Point 4

Communicative competence, on the other hand, is a concept introduced and discussed widely in the field of language learning and teaching. They were well aware of the fact that by attending language classes their communicative competence would be improved .

Point 5

Learners need to know as much vocabulary as possible and be able to use it appropriately. Culture classes do not only help learners enrich vocabulary repertoire but also help them use the newly acquired words.

Point 6

One of the motives for studying an L2 is that people sometimes must go abroad for different reasons. The students need to be ready for cultural difference and cultural awareness. Teachers believe that such students have the right to access information about the target society prior to such visits.

4.2 Interview Survey

The participants (n=61) showed intense interest in the teaching of culture than the other instructors and talked more about specific instructional strategies they use, and/or shared more insights about teaching culture than other instructors the researchers contacted. Among them, three of them are native English speakers, and the others are not. Two types of barriers emerged from

the data regarding teaching culture in foreign language classrooms: (a) barriers in beliefs of teaching culture and (b) the lack of professional development opportunities in learning strategies on weaving culture teaching.

4.2.1 Beliefs of the Relationship between Language and Culture

Each instructor acknowledged that culture is a key component in foreign language classes. Culture helps their learners achieve linguistic goal. These instructors expressed their beliefs about the relationships between language and culture, as well as noting the possible consequences of teaching a foreign language without teaching its culture. Participants reported that language and culture are closely interconnected, and that students cannot have a comprehensive grasp of a language without understanding its culture. Thus, culture plays a role in achieving the full understanding of the target language.

Table 7 Interview responses towards beliefs foreign language teachers have towards the importance of the integration of culture into the teaching of language (n=61)

Point	Responses	
1	Instructor 1 mentioned:	*a)* Personally, every language is the carrier of its culture; therefore, it is hard to teach language without teaching culture. We need to teach students about the culture, or we will find a common phenomenon in students' language learning: students have no problem in learning the vocabulary and grammar but when it comes to using them, they do not know how to use them within a certain culture context because they do not know the culture.
2	Instructor 2 mentioned:	*b)* Culture in the classroom is something that has to be defined as a curriculum. In other words, it should be in teachers' minds even at the beginning level of learning that teachers should not only introduce the mechanics of the language, not only the format of the language, they also need to introduce to students the aspects of culture.
3	Instructor 3 mentioned:	*c)* If we do not teach culture, our students still can speak the language but would act in totally wrong ways.
4	Instructor 4 mentioned:	*d)* Language is the carrier of its culture. Language is a primarily cultural practice. Language and culture are closely interconnected. Because of the interconnection, they reached the same conclusion: instructors must teach culture while teaching a foreign language.
5	Instructor 5 mentioned:	*e)* Students need both the knowledge of a language, including vocabulary, grammar, and the knowledge of its culture, such as how to choose suitable words and behave appropriately in certain situations, in order to communicate with native speakers.

Table 7 (Continue)

Point	Responses	
6	Instructor 6 mentioned:	*f)* Students probably would not successfully communicate with native speakers in the target languages without the knowledge of the culture associated with the language.

Although some instructors in this study did not explicitly address the relationship between language and culture, all of them discussed culture as a key component in their language classes during their interviews while implying that culture and language are closely interconnected. According to the data, we found language teachers' beliefs towards the teaching of culture in their language courses that can be classified into three categories: (1) teaching culture is not important, (2) teaching culture can be considered as a strategy to the teaching of grammar, and (3) teaching culture is part of a meaningful context. Unless they realize culture, rather than grammar, is an important objective for foreign language teaching in the 21st century, these language teachers would not consider the teaching of culture as a significant part of their courses.

4.2.2 Professional Development

According to Lunenburg and Ornstein (2012), professional development in the field of education refers to improving teachers' present skills and fulfilling their potential by learning new skills and developing their abilities to the fullest. In order to understand to what extent instructors get involved in the profession of teaching foreign language and how instructors' professional development influences their teaching.

Table 8 Difficulties and barriers of teaching culture to university level students

Point	Responses	
1	Instructor 1 mentioned:	a) A new instructor said that she has a strong interest in learning culture and in other professional development materials about how to teach a foreign language.
2	Instructor 2 mentioned:	b) Only a few had achieved an understanding of the rationale and importance of teaching culture in language classrooms and expressed more confidence in the teaching of a language and its culture.
3	Instructor 3 mentioned:	c) Some believed that culture is the context for a language. In contrast, only a few taught culture to attract students' attention to the target language. While collected various authentic materials of culture and arranged various classroom activities to teach culture, one usually limited her talk about culture by talking about her own experience

Table 8 (Continue)

Point	Responses		
			in. English-speaking countries or by playing an English song from YouTube for her students
4	Instructor 4 mentioned:	*g)*	Language is the carrier of its culture. Language is a primarily cultural practice. Language and culture are closely interconnected. Because of the interconnection, they reached the same conclusion: instructors must teach culture while teaching a foreign language.
5	Instructor 5 mentioned:	*h)*	Students need both the knowledge of a language, including vocabulary, grammar, and the knowledge of its culture, such as how to choose suitable words and behave appropriately in certain situations, in order to communicate with native speakers.
6	Instructor 6 mentioned:	*i)*	Students probably would not successfully communicate with native speakers in the target languages without the knowledge of the culture associated with the language.
7	Instructor *7* mentioned:	*j)*	"In the past, language learning and teaching focused on listening comprehension, speaking, reading and writing, but now, cultural understanding is added to language learning and teaching".
8	Instructor 8 mentioned:	*k)*	The older expectations are based on skills, the four skills: reading, writing, listening, and speaking. I think we moved away from them a good bit. Those skills are certainly sorts of what we are doing. Those skills neglected the contexts of teaching culture.

We found many difficulties in teaching culture for instructors, such as lack of knowledge by instructors, lack of time for preparing classes with cultural elements embedded in them, lack of appropriate materials, the absence of technological support, and students' misunderstanding or stereotypes of the target culture. It is no wonder that many language teachers do not fully understand the goals of teaching culture or the importance of cultural perspectives. Moreover, the subtext to such thinking is that if a person can speak the language proficiently, then he/she can naturally teach the language. However, this approach definitely underestimates the pedagogy of language instructors. As a competent language instructor, one needs not only to know linguistic knowledge of the target language, but also the knowledge of the target culture and educational knowledge of how to teach, motivate, and assess students. In total, many issues that influenced the teaching of culture in foreign language classrooms emerged in this study. First, the close relationship between language and culture appears to be the primary reason for teaching culture in the foreign language classroom. Second, culture either served as an additional component or

a key component in foreign language classrooms. This focus depends on instructors' attitudes towards the role of culture in language classes.

4.3 Classroom Observation

Corresponding with results of the classroom observation, it also shows that some teachers who believe teaching culture should serve the purpose of teaching language, usually directly taught culture to their students by introducing famous people and places in the target culture, or by sharing with students the habits and general beliefs of native speakers. Some teach about famous figures, general cultural knowledge or even stereotypes of a culture are actually teaching culture as fact. Others did not seem to realize that culture is dynamic and knowledge about culture is always relevant to time, location, even individuals. A few only taught culture as static facts existing in textbooks and literature. Thus, they may require students to remember cultural knowledge taught in class rather than encourage the students to build their own cultural knowledge.

5. Discussion

Owing to the rapid overall development of the global society and social sciences, the demand for the integration of culture in FLT was increasingly felt. In the case of ELT in Myanmar, with English now being used globally across diverse cultures, English educators will not only need to be more culturally and linguistically aware but also be able to design curriculums with an international and multicultural focus. In this study, we found instructors' attitudes towards the teaching of culture in their language courses can be classified into three categories: (1) teaching culture is not important, (2) teaching culture can be considered as a strategy to the teaching of grammar, and (3) teaching culture is part of a meaningful context. Language teachers in the first category did not seem to teach culture at all as part of their classes. Our findings revealed that some language instructors have not recognized the close relationship between language and culture or the significance of teaching culture in a foreign language course. These instructors rarely used the word culture while teaching language and did not include culture-related content in the assignments or assessments for their students. Language teachers in the second category who taught culture as part of their classes were driven by the perspective that culture should be used as a way to motivate students to learn more about language. Culture, in a sense, was used as a strategy for teaching language. For these instructors, the teaching of culture is only an additional, not an indispensable, component of their language class. Even though these teachers occasionally introduced some cultural perspectives to students, they still did not help students make connections between cultural products and cultural patterns with underlying cultural perspectives. It is clear that these language instructors did not realize the importance of teaching culture as many scholars have discussed. Through a series of interviews and observations, we found many difficulties in teaching culture for instructors, such as lack of knowledge by instructors, lack of time for preparing

classes with cultural elements embedded in them, lack of appropriate materials, the absence of technological support, and students' misunderstanding or stereotypes of the target culture. However, these difficulties are superficial phenomena. Through our analysis of the data, we found two profound barriers to the teaching of cultural perspectives: (1) many language instructors did not recognize that culture is an important objective for teaching foreign language in the 21st century, and (2) the knowledge of how to teach a language is undervalued. First, many instructors set up a false dichotomy between the teaching of grammar and culture. They used the importance of teaching grammar as a major reason to explain why they do not spend more time on the teaching of culture. In the 21st century, the teaching of grammar no longer plays a major role in language classes because the primary reason for learning another language is not for the purpose of understanding classic literature anymore (Larsen-Freeman, 2000). On the surface, the conflict happens between the views on the teaching of grammar versus the teaching of culture. In fact, these instructors' beliefs are the real barrier to the teaching of culture and cultural perspectives. Unless these instructors realize that culture, rather than grammar, is an important objective for foreign language teaching in the 21st century, these instructors would not consider the teaching of culture as a significant part of their courses. The second major barrier to the teaching of culture is that there is an implicit thinking by many instructors and the department that to become a language instructor, the knowledge of the target language is sufficient, and the knowledge of how to teach a language is optional. Thus, several native speakers in the Modern Language Departments teach foreign language without knowledge or experience of teaching, and many instructors only teach as they were taught when they themselves were students. Few people are born good language instructors. A teacher education or preparation program is one major key to making a person a better language instructor.

6. Conclusion

The idea of teaching culture is nothing new to second language teachers. In many cases, teaching culture has meant focusing a few lessons on holidays, customary clothing, folk songs, and food. Understanding the cultural context of day-to-day conversational conventions such as greetings, farewells, forms of address, thanking, making requests, and giving or receiving compliments means more than just being able to produce grammatical sentences. It means knowing what is appropriate to say to whom, and in what situations, and it means understanding the beliefs and values represented by the various forms and usages of the language. Culture must be fully incorporated as a vital component of language learning. Students can be successful in speaking a second language only if cultural issues are an inherent part of the curriculum.

7. Recommendations

The classes in language and culture aim at improving one's understanding of the language and the people who speak it. Trained to be prospective teachers of English, for students of ELT, studying English culture is not an arbitrary but a necessary activity. The findings of the study suggest that a culture class is significantly beneficial in terms of language skills, raising cultural awareness, changing attitudes towards native and target societies, and contribution to the teaching profession. The participants in this study emphasized some kind of transformation in their thinking and listed six points as potential contributions of a culture class they received. This study has implications for a culture class in the curriculum of language teaching departments. Incorporated in the curriculum, a culture class would prove to be a vital component of language learning and teaching, since as this study illustrates, it has a great deal to offer to the development of communicative competence as well as other skills in the instruction of any language.

8. References

Bada, E. (2000). Culture in ELT. Cukurova University *Journal of Social Sciences* (6), 100-110.

Chandler, D. (1994). *The Sapir-Whorf Hypothesis*. Online documents at URL http://www.aber.ac.uk/media/Documents/short/whorf.html.

Chastain, K. (1971). *The development of modern language skills*: *Theory to practice*. Chicago: Rand McNally.

Hymes, D. (1972). Introduction. In Courtney B. Cazden, Vera P. John and Dell Hymes (Eds.) *Functions of Language in the Classroom*. New York: Teachers College Press.

Kitao, K. (2000). *Teaching Culture in Foreign Language Instruction in the Unites States*. Online documents at URL http://ilc2.doshisha.ac.jp/users/kkitao/library/article/culture.htm. 83

Larsen-Freeman, D. (2000). *Techniques and principles in language teaching* (2nd ed.). New York: Oxford University Press

Lunenburg, F. C., & Ornstein, A. O. (2012). *Educational administration: Concepts and practices. Belmont,* CA: Wadsworth/Cengage Learning

McDevitt, B. (2004). Negotiating the Syllabus: A win-win Syllabus. *ELT Journal* 58 (1), 3-9.

McKay, S. L. (2003). *The Cultural Basis of Teaching English as an International Language*. Online Documents at URL http://www.tesol.org/pubs/articles/2003/tm13-4-01.html.

Pulverness, A. (2003). *Distinctions & Dichotomies: Culture-free,* Culture-bound. Online documents at URL http://elt.britcoun.org.pl/forum/distanddich.htm.

Richards, J. C., Platt, J., and Platt, H. (1992). *Dictionary of Language Teaching & Applied Linguistics*. Essex: Longman.

Sapir, E. (1962). *Culture, Language and Personality*. University of California.

Smith, L. (1976). English as an international auxiliary language. *RELC Journal*, *7*(2), 38-43.

Stainer, F. (1971). *Culture: A motivating factor in the French classroom.* In C. Jay & P. Castle (Eds.), French language education: The teaching of culture in the classroom. Springfield, IL: State Department of Public Instruction.

Tylor, E. B. (1871) *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Language, Art and Custom*, London, J. Murray

Whorf, B. L. (1956) *Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf.* (Ed) John B. Carroll. Cambridge: MIT Press.

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A Study of Academic Administration for Educational Opportunity Expansion Schools under Buriram Primary Educational Service Area Offices

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Abstract

The objectives of this study were to investigate and compare an academic administration of the educational opportunity expansion schools under Buriram Primary Educational Service Area Offices classified by the educational background and work experience in an executive position. 273 school administrators were population and The sample was opened by tables, Krejcie & Morgan.162 school administrators were used as a research sample by using a Stratified Random Sampling technique. A five-rating scale questionnaire was used as a research instrument with the percentage, mean, standard deviation, and F-test as a research statistics analysis. The findings were found that 1) the overall academic administration of the educational opportunity expansion schools under Buriram Primary Educational Service Area Offices were at much level when their items were considered and categoriezed. The highest mean score item was in learning management, followed by curriculum administration. On the other hand, the lowest mean in educational supervision, 2) the comparison of academic administration classified by the different educational background was statictically significant differed at .05 3) the comparison of academic administration classified by the different work experience in an executive position were indifferent.

Keywords : Academic Administration, Educational Opportunity Expansion Schools

1. Introduction

As the globalization and wolrd's changes rapidly orrcurred, especially in technological sciences both knowledge based society and economy, each country could not be alone, and it was necessary to collaborate and rely on each other. Besides, the communication was increased, nowadays, it needed to catch up with the current situation based on the education reform in the second decade (2552-2561 B.E.). Thai people had to be developed as a high quality citizen by schooling through four changes development; 1) the development of their learning styles since their

childhoodinthe modern age, 2) new modern teachers development, 3) development of school and learning resources for better quality, and 4) new management focused on school decentralization and participation of all sectors expecting to develop Thai children for being good and happy. They were able to think, to do, to solve problems towards internationalization, and to be good Thai citizen (Office of the Education Council, 2009: 19).

School was an educational institute where its responsibility was to produce the quality person. An academic work was an important thing in school management to improve students for beinga perfect person. The perfect person means someone who has knowledge skills and the desirable characteristics followed by the curriculum goals. The aspects of academic administration was the main duty for school administrators as they connected with all activities, particularly in the quality of teaching and learning management that needed to be developed as a core objective and a performance indicator of their capability and success in the academic administration. Besides, it was a procedure of all kinds management involved in teaching and learning development, starting from the policy formulation, a plan of teaching and learning development along with teaching assessment based up on the curriculum and education goals as the beneficial outcomes for learners. Boonpirom (2009:21) stated that the academic administration was related to teaching and learning activities including curriculum development, teaching methods and media, measurement and evaluation, and educational quality assurance which supported to meet its goals. While its problems would be involved with currirulum management, for example, teachers neither understood nor participated in curriculum development. In addition, teachers could not prepare a completed lesson plan of their fields asthey were responsible to have taught various subjects for hours and more levels within one day in teaching and learning procedures. This caused a low learning achievement, lack of teaching media and standard tools in educational quality measurement and evaluation. Teachers ignored an importance of research and educational supervision (Wonganutararoj, 2010: 24). Nevertheless, the problems of academic administration aspects were found that the administrators did not pay attention to academic works (Buriram Primary Educational Service Area Office 3, 2019: 8). Consequently,the school administrators had to better understand about academic administration and to emphasize on it for better success at school administration affecting to student quality in the future. Academic administration efficiency in educational opportunity expansion schools in Thailand was in troubles under the limitation of budget, personnel, and administrative resourcesincluding a number of student which was continually decreased in school system. In other words, the academic administrative problems were concluded that 1) teachers did not understand the curriculum, 2) teachers did not participate in curriculum development, 3) teachers could not preparetheir teaching through all contents covered, 4) learning achievement of the students was quite low, 5) lacking of teaching media, 6) lacking of the standard tools in measurement and evaluation, 7) teachers were neither interested

nor focused on an importance of research, and 8) the educational supervisonhad not been met the plan. In accordance with Buriram Primary Educational Service Area Office 1 (2017: 15) found that the problems were 1) teachers lacked of understanding in contents measurement and evaluation by unsimilarly teaching to their majors and skills, 2) lack of budget supporting to academic works, 3) lack of a modernized media, 4) school administrators lacked of being an academic leadership and too less emphasized on academic works, 5) teachers were passive in understanding the new curriculum and lacked of new teaching techniques.

As the problems and importances mentioned above, researchers aimed to study on academic administration aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office. Their academic works need to be solved and developed effectively in the future.

2. Research Objectives

1. to investigate the academic administration aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office

2. to compare the academic administration aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office based on educational background and work experience in an executive position

3. Research Methodology

273 schools were population in educational opportunity expansion schools under Buriram Primary Educational Service Area Office and The sample was opened was opened by tables, Krejcie & Morgan (Krejcie & Morgan. 1986 : 345; cited Srisa-Ard, 2011: 199) with 162 samples by using a Stratified Random Sampling technique.

Research instrument was a questionnaire

The questionnaire was consisted of two parts; 1) the first part was a general information of respondents, it was a checklist questionnaire, 2) the second part was an opinion about the academic administration aspects dividing into five-point rating scale Procedures of making a questionnaire were 1) to study the concepts from the literature reviews, 2) to analyze the documents for having a guideline to make an instrument, 3) to make a five-rating scale questionnaire to ask for the opinions about an academic administration, 4) to give five experts the questionnaire to check the content validity, then to find the index of item-objetive congruence (IOC) between 0.60-1.00 based on the standard criteria used with the samples, 5) to revise the questionnaire as the experts suggested and try out with the population who was similar to the samples; 30 school administrators in educational opportunity expansion schools, and 6) to bring the tried out result to

be analyzed and adjusted,The reliability of .95 then apply it to 162 samples of school administrators.

Data collection procedures were as follows:

1. A document was asked for Graduate School Office, Buriram Rajabhat University and sent to the administrators in educational opportunity expansion schools. The questionnaire had also been delivered and collected.

2. After the questionnaire was given to the samples by researchers, the date was set to return.

3. Researchers took the questionnaire back themselves.

4. If the questionnaire was not sent back on time, researchers would followed up until it was all kept.

Descriptive statistics, percentage, was used as a data analysis of the respondents, while mean and standard deviation were analyzed by the opinion about academic administration aspects, and F-test was interpreted through the comparative data analysis. Suggestions and recommendations were considered through the content analysis, and the questions in the questionnaire were specified in a five-point rating scale for comparative data analysis with its criterion levels as the meaning followed (Srisa-Ard, 2011: 121):

4.51 - 5.00 means Most
3.51 - 4.50 means Much
2.51 - 3.50 means Moderate
1.51 - 2.50 means Less
1.00 - 1.50 means Least

4. Research Results

The findings could be summarized and met the research objectives as followed:

Table 1. General information of the respondents

Status	Amount (162)	Percentage
Sample	162	100
Sex		
Male	129	79.63
Female	33	20.37
Age		
30 – 39	29	17.90
40 – 49	51	31.48
More than 49 years old	82	50.62

Table 1 (Continue)

Status	Amount (162)	Percentage
Educational background		
Bachelor's Degree	38	23.46
Master's Degree	119	73.46
Doctor's Degree	5	3.08
Work experience in an executive position		
5 – 9 years	18	11.11
10 – 14 years	76	46.91
More than 14 years	68	41.91

As the table 1 showed that most samples were male (79.63%), more than 49 years (50.62%).They had got Master's Degree (73.46%), and their work experience in an executive position were between 10 – 14 years (46.91%).

Table 2. Mean and standard deviation ; Executive Opinion of academic administrative aspects in educational opportunityexpansion schools under Buriram Primary Educational Service Area Office that overall and each aspect

School Academic Administrative Aspects	$\bar{x}$	SD	Level	Rank
Curriculum Administration	3.80	0.83	Much	2
Learning Management Procedure	3.94	0.85	Much	1
Research for Educational Quality Development	3.55	0.81	Much	4
Innovated Media and Educational Technology Development	3.77	0.89	Much	3
Educational Supervision	3.52	0.84	Much	5
Average	**3.70**	**0.84**	**Much**	

The table 2 found that executive opinion of academic administrative aspects in educational opportunityexpansion schools under Buriram Primary Educational Service Area Office that overall was at much.When it was respectively considered on each item. The highest average was in learning management procedure (3.94), then curriculum administration (3.80). The lowest average was in educational supervision (3.52).

Table 3. The comparison executive opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office classifying based on educational background that overall and each aspect

School Academic Administrative Aspects	Bachelor's Degree		Master's Degree		Doctor's Degree		F	P-value
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD		
Curriculum Administration	3.93	0.89	3.93	0.97	3.52	0.91	2.03	0.13
Learning Management Procedure	4.13	0.98	3.97	0.73	3.69	0.56	5.91	0.00*
Research for Educational Quality Development	3.52	0.97	3.82	0.97	3.46	0.75	0.42	0.05
Innovated Media and Educational Technology Development	3.84	0.93	3.82	0.94	3.62	0.95	2.17	0.11
Educational Supervision	3.48	0.81	3.57	0.91	3.41	0.74	6.83	0.00*

* statistical significance .05

According to the table 3, the comparison executive opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office classifying based on educational background of each item, and found that the overall of each item had a statistically significant difference at .05. When it was respectively considered on each item, found that learning management procedure and educational supervision had a statistically significant difference at .05. The other side found that they were indifferent.

Table 4. The comparison executive Opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office classifying based on work experience in an executive position that overall and each aspect

School Academic Administrative Aspects	5 – 9 years		10 – 14 years		More than 15 years		F	P-value
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD		
Curriculum Administration	3.78	0.89	3.84	0.67	3.80	0.65	3.40	0.06
Learning Management Procedure	3.94	0.97	3.84	0.90	3.96	0.96	0.75	0.47
Research for Educational Quality Development	3.50	0.96	3.47	0.70	3.53	0.50	0.35	0.70
Innovated Media and Educational Technology Development	3.77	0.89	3.94	0.66	3.65	0.67	0.77	0.46
Educational Supervision	3.48	0.83	3.78	0.46	3.41	0.45	0.74	0.47

According to the table 4,the comparison executive Opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office classifying based on work experience in an executive position and found that overall and each aspect were indifferent.

5. Discussion

As the analyzed data of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office, the findings were discussed as the following research objectives.

1. Executive opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office that overall was at much. When it was respectively considered on each item. The highest average was in learning management procedure. Because the academic administration was the main responsibility of schools settled in National Education Act B.E. 2542: Editional revision (Issue 2) in B.E. 2545 (Ministry of Education. 2014 : 4). It stated that the education was a learning procedure for better growth of personnel and society through teaching, training, cultural inheriting, creating in academic progress, having a knowledge management from the environmental management in a learning society, and factor supporting personnel to have a life long learning. The education management must be developed for Thai people to be a perfect human, both mental, physical, intelligent, moral and cultural aspects in their living, so they can live happily with others. Consequently, school administrators would specially emphasize on academic administration as a schools' heart, especially in teaching and learning quality development which was the aim and the success indicators of schools. The highest score of school administrators' capability was in learning management procedures when each item was consrdered. Because it was an essential routine work affected to learners' acquisition whether it's better or not. Therefore, learning management in schools became more important to the administrators. On the contrary, the lowest score was in educational supervision as a result of the current condition and various tasks in schools based on the main point of Basic Education Commission Office. , agreeing with Runrana (2014: 183-186) to study of efficiency factors of academic administration of primary schools under the Nakhon Pathom Educational Service Area Office found that executive opinion of academic administrative aspects was in learning management procedure that overall was at much. , agreeing with Maprajong (2014: 261-267) to study of the development of the Effectiveness of Academic Affairs Administration in Small Schools under Buriram Primary Educational Service Area Offices found that executive opinion of academic administrative aspects was in learning management procedure that overall was at much. , agreeing with Thaigun (2018: 215-221) The Academic management model for education opportunity expansion schools found that executive opinion of academic

administrative aspects was in learning management procedure that overall was at much., agreeing with Sudtae (2010: 180-182) to study of development of Academic Administration Model for Small Sized Schools found that executive opinion of academic administrative aspects was in learning management procedure that overall was at much.

2. The comparison executive opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office classifying based on educational background of each item, and found that educational supervision had a statistically significant difference at .05. Because all school administrators use the educational supervision system as a tool for performing contextual work. Strength weaknesses of school,and the needs of that community. Supervision of education is part of the administration. Supervision make a mission that executives, both as supervisors and supervisors.Educational supervision is imperative that all schools operate in a continuous system. , agreeing with concept of National Institute for Development of Teachers, Faculty Staff and Educational Personnel (2007 : 511-519) Proposed that educational supervision is a process that requires cooperation from all personnel. , to brainstorm ideas. , to prepare supervision plans and supervisory projects jointly promote effective practice, effective implementation. , agreeing with Kaewfai (2008 : 211) to study of the Relationship between Supervision Procedure within the School and Instruction Efficiency of Teacher under the Office of Nakhon Phanom Educational Service Area 2 found that executive opinion of academic administrative aspects classifying based on educational background was in educational supervision had a statistically significant difference at .05.

3. The comparison executive Opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office classifying based on work experience in an executive position and found that overall and each aspect were indifferent. Because of the role of school administrators According to the National Education Act under Section 39 of the National Education Act B.E. 2542. Office of education reform (2008 : 211) to given ministry decentralized administration. ,manage of Basic Education Commission Office. ,and Educational Service Area Offices. Directly in 4 areas: academic, budget management Personnel management And general administration. All educational establishments must adhere to the principles of administration in accordance with the policy of the Ministry of Education. , Educational Service Area Offices, Education law, National Education Plan. Must use the same, but related to the context of each school. agreeing with Chatrakra (2015 : 106) to study of the Development of Education Management in Cooperation of Basic Education Commission under the Office of Primary Education in Chaiyaphum Area office 2., found that executive Opinion of academic administrative aspects classifying based on work experience in an executive position and found that overall and each aspect were indifferent. and agreeing with Soykam (2018 : 178) to study of the Development of Effective Academic Affairs Administration Model for Private Schools

under the Primary Educational Service Area Offices in Sakon Nakhon Province. , found that executive Opinion of academic administrative aspects classifying based on work experience in an executive position and found that overall and each aspect were indifferent.

6. Conclusion

This study was summarized as followed:

1. Executive opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office that overall was at much. When it was respectively considered on each item. The highest average was in learning management procedure, then curriculum administration. The lowest average was in educational supervision.

2. The comparison executive opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office classifying based on educational background of each item, and found that the overall of each item had a statistically significant difference at .05. When it was respectively considered on each item, found that learning management procedure and educational supervision had a statistically significant difference at .05. The other side found that they were indifferent.

3. The comparison executive Opinion of academic administrative aspects in educational opportunity expansion schools under Buriram Primary Educational Service Area Office classifying based on work experience in an executive position and found that overall and each aspect were indifferent.

7. Recommendation

1. Recommendations for use

1.1 As the results found that learning management in school was the highest average score, the administrators should emphasize on its academic administration leading to a better success. Educational supervision, on the other hand, was the lowest average score so that the concerned units should provide a training workshop for both administrators and teachers development to regularly and continuously have more understanding about the educational supervision.

1.2 Primary Educational Service Areas and all stakeholders should support schools to perform in all academic administration for better success.

1.3 School administrators had to understand about the academic administration based on educational quality standard.

1.4 Appropriate with the nature of organization which their administrative skills needed to be enhanced and developed for the most effectiveness in the future.

2.Suggestions for the next research

2.1 The results of this research can be further studied as research on The Development of Effective Academic Administration Model through Leadership and Teamwork under Secondary Educational Service Area Offices in the Northeast Region. and Development an academic administrative model by teamwork in basic educational schools.

2.2 Researcher had better consistently research because this study could be expanded as research on The Development of an Effective Academic Administration Model for educational Extension Schools under Buriram Primary Educational Service Area Offices

8. References

Boonpirom, S. (2009). *Principles of Educational Administration*. Bangkok: Book Point.

Chatrakra, (2015).*The Development of Education Management in Cooperation of Basic Education Commission under the Office of Primary Education in Chaiyaphum Area office 2*. Degree M.Ed. (Educational Administration). Mahasarakham: Graduate School,Mahasarakham University .

Maprajong, C. (2014). *The Development of the Effectiveness of Academic Affairs Administration in Small Schools under Buriram Primary Educational Service Area Offices*. Dissertation Ph. D. Ed. (Educational Administration). Buriram: Graduate School, Buriram Rajabhat University.

Ministry of Education. (2010). *National Education Act of B.E. 2542: Editional revision (Issue 2)*. Bangkok: Prigwhan Graphic Printing.

Ministry of Education. (2013). *National Education Act of B.E. 2542: Editional revision (Issue 2)*. Bangkok: Prigwhan Graphic Printing.

Ministry of Education. (2014). *National Education Act of B.E. 2542: Editional revision (Issue 2)*. Bangkok: Prigwhan Graphic Printing.

Office of the Education Council. (2009). *Education Reform Proposal in the Second Decade (B.E. 2552-2561)*. Bangkok: Prigwhan Graphic Printing.

Office of education reform. (2008). *Guidelines for Educational Administration and Management in Educational Areas and Schools.)*. Bangkok: Office of education reform

Primary Educational Service Area Office. (2017). *Yearly Budget Action Plan B.E. 2560*. Buriram. Buriram Primary Educational Service Area Office 1.

Primary Educational Service Area Office. (2019). *Yearly Budget Action Plan B.E. 2562*. Buriram. Buriram Primary Educational Service Area Office 3.

Soykam, W. (2018). *The Development of Effective Academic Affairs Administration Model for Private Schools under the Primary Educational Service Area Offices in Sakon Nakhon Province*. Degree M.Ed. (Educational Administrative Innovation). Sakon Nakhon: Graduate Studies, Rajabhat Sakon Nakhon University.

Srisa-ard, B. (2010). *Introduction to Research*. 9th Edition. Bangkok: Suriwittayasarn.

Sudtae, K. (2010). *Development of Academic Administration Model for Small Sized Schools*. Dissertation Ph. D. Ed. (Educational Administration). Mahasarakham: Graduate Studies, Rajabhat Maha Sarakham University.

Thaigun, U. (2018). *The Academic Management Model for Educational Opportunity Expansion Schools*. Dissertation Ph.D.Ed. (Educational Research and Development). Phitsanulok: Graduate School, Pibulsongkram Rajabhat University.

Urwongse, K. (2012). *Supervising in School*. [Online]. Retrieved on 10 January 2016 from http://mystou.files.wordpress.com/2012/02/23503-8-t.pdf.

Quality Management System for World-class Standard Primary School in Buriram Primary Education Service Area office

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Abstract

This research aimed to study the quality management system status of world-class standard primary school in buriram primary education service area office. The sample groups were 5 world-class standard primary schools: Including school directors, 2 deputy school directors, and 135 teachers. The research instrument was the clever some questionnaire consisting of 3 parts: 1) the details of the respondents, 2) the questionnaire on the quality management status of World-class Standard Primary School, 3) comments and recommendations. According to the research, it was found that. The quality management system of world-class standard primary school in Buriram Primary Education Service Area Office; was at the high level of both overall and individual aspect; the quality management system was the high lest, followed by the student characteristics and the teaching and learning management comparable world-class standard had, respectively.

Keywords : Quality Management System, Primary Schools, World-class Standard School

1. Introduction

The complete change in the Thai population structure that will enter the aging society at the end of the 12th National Economic and Social Development Plan (2017-2021) where the proportion of the elderly will increase to 19.8 percent of the population. all While the number of working-age population has started to decline since 2015, resulting in labor shortages in the state of low labor productivity due to labor quality problems. Delays in technology development And management problems are therefore a limitation in enhancing the competitiveness and potential for economic growth of the country. Including the creation of income and enhancing the quality of life of the people. When considering the quality of people, it is found that There are still problems at different ages and affecting each other throughout Life span from developmental disabilities in early childhood Educational results of school-age children are relatively low. The

development of knowledge and skills of workers does not match the job market. While the elderly have health problems and are more likely to be alone. Families are diverse and highly vulnerable, which nurturing children to grow up quality. Along with the flow of foreign cultures entering Thailand through the digital age society While a large number of Thais are unable to properly screen and select cultures. Affecting the crisis of values, attitudes and behaviors in life For the next stage of development, there must be an emphasis on laying the foundation of human development to be complete. (National Economic and Social Development Plan No. 12.2016: 65) The Constitution of the Kingdom of Thailand, B.E. 2560 (2017), Chapter 5, State Duties, Section 54, Paragraph 3, stipulates guidelines for educational management that The state must ensure that people are educated according to the needs of the various systems and promote lifelong learning. And organize cooperation between states The local government organization and the private sector in the management of education at all levels, the state has the duty to supervise, promote and support such education management to be of high quality and meet international standards. (Secretariat of the House of Representatives. 2017: 36) in line with the goals. The development of the 12th National Economic and Social Development Plan (2017 - 2021) is that the quality of education has been raised to international standards. Extending knowledge to innovation and opportunities for access to education and learning in more diverse forms (Office of the National Economic and Social Development Board. 2016: 43) and in line with the Second Decade of Education Reform (2009 - 2018), which has four frameworks for educational reform: Developing the quality of modern Thai Developing the quality of modern teachers Develop the quality of educational institutions and learning sources in the modern era And develop new management quality (Office of the Secretary-General of the Education Council. 2009: 13 - 43) Therefore, the school administrators have a direct duty to provide quality education in accordance with the present era.

Quality management system is a key mechanism to drive school development to international standards. That will bring quality to learning management This will directly affect the student who is the target of education. Therefore, the management system has been promoted, which is recognized as a system that develops the organization for excellent performance by using the guidelines for the implementation of the quality award criteria of the Office of the Basic Education Commission (OBECQA). Which the Office of the Basic Education Commission The Office of High School Administration has developed from the National Quality Award criteria (Thailand Quality Award: TQA) of the National Productivity Institute. (Office of the Basic Education Commission. 2016: 1) with the same technical background and awarding process as The Malcolm Baldrige National Quality Award (MBNQA), which is a model of the national award in many countries around the world. Have applied in their country such as Japan, Australia, Singapore, Malaysia And the Philippines, etc. The OBECQA award, which is relevant in education, has also

been applied to the organization. By setting a framework for educational excellence To help understand and apply it in education To improve the quality of the school based on the principles of systematic operation In helping schools create change Systematically in order to achieve excellent performance in education management (Office of the Basic Education Commission. 2014: foreword)

International Standards School is an innovative educational management at the Office of the Basic Education Commission. Taken as an urgent measure to raise the quality of education to be equivalent to an international standard school with the aim of giving students the potential to be global citizens, the objective is set as 1) To develop students to have the potential to be global Academic excellence, bilingual communication, innovative thinking, creative productivity, mutual responsibility towards the world society 2) Organize teaching and learning comparable to international standards by setting additional courses that are international 3) Enhance the management level. Quality system (Office of the Basic Education Commission. 2012: 8) In the beginning, there were 500 international standard schools, which were 119 primary schools, at present, 150 additional secondary school of international standard class 2 were 84 primary schools in the development of international standard schools. It aims to develop in 5 important areas, which are the development of international standard comparable educational institutions. The development of science, mathematics, using English. The development of teachers in the subject of learning a second foreign language Mathematics and science teachers use English in teaching and learning, development of school administrators, in collaboration with the Office of Teacher Development and Basic Education Personnel and School Management System Development in the formulation of international standard school strategy plans. This is to achieve the objectives of the Office of the Basic Education Commission. Therefore established guidelines Operating the school to international standards is to drive strategy for curriculum development and teaching. Quality system management, networking, co-development and promotion of student quality and supervision to improve the quality of educational management. (Office of the Basic Education Commission. 2012: foreword)

From the aforementioned problems, the researcher will study and develop the quality management system of primary schools to international standards of schools under the Buriram Primary Educational Service Area Office. Based on operational guidelines according to the quality award criteria of the Office of the Basic Education Commission (OBECQA), applied in the development of competencies in The administration of educational institutions to be used as a guideline for the administration of primary schools towards international standards in order to achieve the goal of the second decade of education reform.

2. Research objectives

To study the condition Quality management system of primary schools to international standards under the Buriram Primary Educational Service Area Office

3. Research method

This research is a quantitative and qualitative research and development (R&D). To study the condition of the quality management system of elementary schools to international standards Under the Office of Buriram Primary Educational Service Area The details are as follows

Population and sample

Elementary school Buriram Educational Service Area 1 - 4, 5 which were successful in managing primary schools to international standards Passed the 3rd round of the NSC Quality Assessment which was at a better level and received standard certification.

The sample used in this research was determined the sample, by use sing Crazy and Morgan (Krejcie & Morgan. 1970: 607 - 610). International Standard Primary School were drawn as, the informants, including 5 school directors, the deputy school director and 135 teachers, with total 142 people.

Tools used for data collection

1. The nature of the tool is a questionnaire created by the researcher, divided into 3 parts as follows:

Part 1 is the details of the respondents. Which is characterized as a checklist question

Part 2 is a questionnaire concerning the quality management status of elementary schools to international standards, which is characterized as a rating scale questionnaire (Rating Scale) with the following criteria:

Part 3 Comments and suggestions It is an open-ended questionnaire.

2. The process of building the tool.

2.1 Study documents that are principles, concepts, theories and research work related to the administrative conditions of the primary school to international standards. Synthesize the information to get the conceptual framework.

2.2 To construct a questionnaire on the administrative condition of the primary school to international standards. From the conceptual framework derived from document content synthesis Then let the advisors check the validity And improve upon suggestions

2.3. Bring the revised questionnaire. The question was presented to five experts for a comprehensive and realistic examination of the fact validity by experts as follows:

2.4 Take the questionnaire obtained from the expert's examination to revise and present the thesis advisor for consideration again. To have a more complete questionnaire

2.5 The questionnaire was used to try out with non-sample administrators.

2.6 Take a questionnaire to find the confidence value. Reliability by means of alpha coefficient according to Konbach method, it was found that Cronbach Alpha Coefficient = .962.

2.7 Take a test that has the confidence value of the questionnaire. For further data collection purposes

Data collection

The information is collected as follows:

1. The researcher requests books from the Office of the Graduate School. Buriram Rajabhat University Send to the school administrators To request assistance in accessing information

2. The researcher used the questionnaire to distribute the school administrators according to the sample schools and set the date for receiving the questionnaire.

3. When the return date is due, the researcher will collect the questionnaire by himself.

Data analysis

To successfully collect information In preparing the data, the researcher proceeded as follows: Study the status of the quality management system of primary schools to international standards. Under the Office of Buriram Primary Educational Service Area By finding the frequency and percentage for the general data of the respondents and the mean (Standard Devotion) for the condition of the quality management system of the elementary school to the international standard under the Office of the Educational Service Area. Buriram Primary And present the data in a table as follows (Likert, Rensis. 1967: 90 - 95)

Mean between 4.51 - 5.00 means the highest level of practice.

Mean between 3.51 - 4.50 means high level of practice.

Mean between 2.51 - 3.50 means having a moderate practice level.

Mean between 1.51 - 2.50 means that there is a low level of practice.

Mean between 1.00 - 1.50 means the lowest level of action.

4. Research results

The results of the research can be compared according to the research idea.

Table 1 General information about the respondents

	Number (people)	Percent
Education level		
Bachelor's degree	102	71.8
Master's degree	40	28.2
Current position		
Executive	5	3.5
Deputy Executive	2	1.4
teacher	135	95.1
Total	**142**	**100.0**

From Table 1, it was found that the majority of respondents. There are 102 people with bachelor's degree education, 71.8 percent and 40 master's degrees, accounting for 28.2 percent, most of whom have 135 teachers, or 95.1 percent, followed by 5 executives. Was 3.5 percent and 2 deputy executives, representing 1.4 percent, respectively.

Table 2 Mean and Standard Deviation of Quality Management System Condition of Primary Schools to International Standards under Buriram Primary Educational Service Area Office

The state of primary school quality management to international standards.	$\bar{x}$	S. D	Level
Learner characteristics	3.69	.758	High
Teaching and learning management comparable to international standards	3.69	.829	High
Managed with the quality system	4.01	.606	High
Total	**3.79**	**.683**	**High**

From Table 2, it was found that the quality management system of primary schools to international standards under Buriram Primary Educational Service Area Office Overall, it was at the high level, with an average of 3.79 and when considering each aspect, it was found that In all aspects Where the side with the highest mean is The quality management system had an average of 4.01, followed by the student characteristics with an average of 3.69 and the teaching and learning management comparable to international standards had an average of 3.69.

Table 3 Mean and Standard Deviation of Learner Characteristics

Learner characteristics	$\bar{x}$	S. D.	Level
Academic excellence	4.11	.824	High
Can communicate in at least 2 languages	3.16	1.104	moderate
Advance in thinking	3.97	.674	High
Creative production	3.25	1.240	moderate
Jointly responsible for the global society	4.12	.629	High
Total	**3.69**	**.758**	**High**

From Table 3, it was found that the learner characteristics Overall, it was at a high level with an average of 3.69 and when considered on a single aspect, it was found that Was at a high level of 3 aspects, with the side with the highest average value being Together with social responsibility, the world had an average of 4.12, followed by academic excellence, with an average of 4.11, advanced thinking with an average of 3.97, which was in the middle level in 2 areas: creative productivity with an average of 3.25 and communicating at least 2 languages. Have an average of 3.16.

Table 4 Mean and Standard Deviation of the International Comparative Teaching Management

Teaching and learning management comparable to international standards	$\bar{x}$	S. D.	Level
Academic quality	3.81	.768	High
Teacher quality	3.57	.988	High
Research and development	3.62	.959	High
Total	**3.69**	**.829**	**High**

From Table 4, it was found that the overall teaching and learning management compared to the international standard was at the high level with an average of 3.69. In all aspects Where the side with the highest mean is Academic quality had an average of 3.81, followed by research and development with an average of 3.62 and teacher quality at 3.57.

Table 5 Mean and Standard Deviation of Quality Management Conditions

Managed with the quality system	$\bar{x}$	S. D.	Level
Quality of school administrators	4.10	.691	High
Management system	3.94	.715	High
Fundamentals	4.07	.667	High
Network development	3.90	.751	High
Total	**4.01**	**.606**	**High**

From Table 5, it was found that the overall quality management condition was at a high level with a mean of 4.01. In all aspects Where the side with the highest mean is The quality of the school administrators had an average of 4.10, followed by the average of 4.07, the average of the management system at 3.94 and the co-development network had an average of 3.90.

5. Discussion

A Study of the Quality Management System of Primary Schools to International Standards under Buriram Primary Educational Service Area Office There are 3 aspects of education: 1) the characteristics of the learners. Indicators include Academic excellence Can communicate in at least 2 languages, advanced in thinking Creative production Jointly responsible for the global society 2) teaching and learning comparable to international standards Indicators include Academic quality Teacher quality Research and development 3) Managed with quality system Indicators include Quality of school administrators Management system Fundamentals Network development By the researcher referring to the world-class standard school operation guidelines WORLD-CLASS STANDARD SCHOOL (Office of the Basic Education Commission. 2010: 4 - 7)

The quality management system of primary schools to international standards under Buriram Primary Educational Service Area Office Overall is at a high level. And when considering each aspect, it was found that In all aspects Where the side with the highest mean is Managed with the quality system Followed by characteristics And teaching and learning comparable to international standards, respectively, in accordance with Phan Raphi Kuthana Wanichphong (2016: 124), who studied the quality management of the international standard school: a case study of Phra Pathom Wittayalai School, found that the quality management of the international standard school, Phra Pathom Wittayalai Overall and each aspect is at a high level. This is because the researcher used the sample group to be a school that has been successful in managing the primary school to international standards. Passed the 3rd round of the NSC Quality Assessment which was at a better level and received standard certification

Student features Overall is at a high level. And when considering each aspect, it was found that Jointly responsible for the global society is at a high level, indicating that Students have a high level of knowledge and understanding about the way of life, culture and national characteristics, earnest commitment in their work, do not give up on problems, obstacles, have a public mind, have a sense of social service. And have a high level of social responsibility Not lower than the country's students with high educational quality. Followed by academic excellence at a high level Show that students have high academic achievement in various fields. Not lower than the country's students with high educational quality. Advanced in thinking at a very high level

Show that students have a high level of thinking skills and abilities and the ICT skills and proficiency are comparable to that of national students with a high education quality. Producing creative work at a moderate level Show that students have skills and competence in independent study and have the potential, skills and ability to produce quality work. Not lower than the students of the country with moderate educational quality. And communicate at least 2 languages at a moderate level, indicating that students have moderate language skills and competence. Not lower than the students of the country with moderate educational quality. (Office of the Basic Education Commission 2010: 18)

The teaching and learning management is comparable to international standards overall at a high level. And when considering each aspect, it was found that The side with the highest mean is Academic quality is at a high level, indicating that There is a curriculum that promotes excellence to meet students' aptitude and potential needs. Manage teaching, learning mathematics and science with English. Develop the teaching and learning content of the study itself (Independent Study: IS) to develop the use of modern technology media. Both organizing the learning process and the students' self-study. By developing the use of a quality classroom system (Quality-Classroom System) using an international standard measurement and evaluation system. The assessment is based on written examinations, oral examinations, interview examinations and is able to transfer grades with various educational institutions, both domestic and international Followed by research and development at the high level, indicating that the school conducts research and development of educational management in the whole school in terms of management and teaching And use the research results to enhance the quality of teaching and learning management And the quality of teachers Is at a high level, indicating that Teachers have knowledge, abilities and specialization in an academic / career area. And passed the national assessment Teachers can communicate in foreign languages while using books. Textbooks and foreign language materials In teaching and learning management Teachers use electronic media In teaching and learning, measurement and evaluation, dissemination of results Both online (online) and offline (offline) teachers can share and learn experiences in teaching and teaching in the region / national / international level. Teachers use research, innovative media to develop learners (Office of the Basic Education Commission 2010: 18).

Managed with the overall quality system at a high level. And when considering each aspect, it was found that The side with the highest mean is The quality of the school administrators was at a high level, indicating that The administrators have vision and can manage the school to achieve the school vision. The management manages with the OBEC Quality Award criteria (OBECQA), the executives have academic leadership (Academic Leadership) whose results appear to be recognized. Executives have the ability to use technology to communicate and Management Management can use English to communicate. The administrators have experience

in training, study tours, and exchange of knowledge in the management of education at the national / international level. Followed by fundamentals At a high level, the school had an appropriate class size in accordance with the specified standards at all levels and had a teacher rate of 1 teacher per student not more than 20 students. The school numbered 30-40 students per classroom. The school provides books, textbooks, technology media With sufficient international quality standards, the school has a high speed internet network The links cover areas of the school. There are electronic multi-media classrooms, laboratories, laboratories and technology equipment. Management system At a high level, the school is managed by a quality system that has passed the quality standards accredited by the Office of Basic Education Commission (OBECQA) and the National Quality Award criteria. (TQA) The school has a system And creating innovations published both in the country and abroad. The school applies best practices (Best Practice) to the school management. Having independent and agile human resource management, able to seek to mobilize resources in various fields to develop excellence in Educational management Which can be managed flexibly according to the needs and necessities Management in both the country and the school has exchange of knowledge abroad. And the network for joint development Is at a high level, indicating that the school has an educational establishment that provides education at the same level as a co-development network in both local / regional / national / international Organize learning activities to exchange experiences and resources between the school network to develop There is a support network from higher education institutions and other related organizations, both public and private sectors. Both domestic and international students and teachers have a network to exchange knowledge with other people both in the country and abroad (Office of the Basic Education Commission 2010: 18). Lee Phai Rat and his colleagues (2016: 270) who studied the school quality management model for elementary school international standards. The research results were found that Model evaluation results Overall, it is at a high level. This may be due to the international standard school quality management model. Elementary level Has gone through various processes Come properly Especially interviewing experts Both at the policy level And international standard school administrators The data were collected by using questionnaires from a sample group of international standard schools.

6. Feedback

1. Suggestions for applying research results

1.1 The research results showed that Can communicate at least 2 languages at a moderate level Therefore should be developed further, such as having a foreign language teacher This is for the development of the ability to receive and transmit messages. Choosing to receive or not receive information for reasons and accuracy There is a culture in using language to convey one's own thoughts, knowledge, understanding, feelings and views. To exchange information,

news and experiences This will benefit the development of oneself and society. They will also have negotiation skills to eliminate and reduce conflicts, as well as to choose effective communication methods taking into account their impact on oneself and society.

1.2 Creative production At a moderate level, there should be a development of fundamental knowledge in the digital age, basic knowledge necessary in science, economics, technology, develop artificial thinking ability.

2. Suggestions for the next research

2.1 Should study the pattern, condition, quality management system of elementary schools to international standards. That is appropriate to the context of each community.

2.2 Should study the pattern, condition, quality management system of elementary schools to international standards. Concrete and practical and more sustainable

2.3 Should study the format of the school quality management system to international standards. In other areas or at a higher level of education Will have more complete information

7. References

Jitta Munkong. (2011). *Implementation of the International Standard School Operation Guidelines of Rattanakosin Sompot Bawornnisesalaya School*; Independent Study, M.Sc. (Educational Administration). Bangkok: Graduate School Silpakorn University.

Chaiyont Powphan. (2016). *Modern Education Institution Administrators in the 21st Century.* Document of the 1st National Academic Conference of Education, Kalasin: Kalasin University.

Nuchnara Rattanasiraprapa. (2014). *Executive Competency Affecting International Standard School Characteristics Under the Office of the Basic Education Commission*. Ph.D. Thesis (Educational Administration). Bangkok: Graduate School Silpakorn University.

Nolphan Bubpan. (2016). *Characteristics and Potential of International Learners of an International Standard School in Nakhon Phanom and Mukdahan Provinces*. Documents for academic conferences and research presentations of the 3rd national level, Nakhon Ratchasima: Nakhon Ratchasima College

Prateep Sripetchcharoen (2015, September - December). Quality Management System Study to Aim for an International Standard School of Secondary Schools Ang Thong. *Research and Development Journal Valaya Alongkorn Under Royal Patronage Humanities and Social Sciences:* 10 (3).

Phanrapee Kuthanavanichpong. (2016). *Management of the School Quality System of International Standards: a case study of Phra Pathom Wittayalai School*. Independent Study, M.Sc. (Educational Administration). Bangkok: Graduate School Silpakorn University.

Phra Maha Somboon Suthammo. (2014, May - August). "Executive role in the development of educational quality." *Journal of Periscope Education*. (1): 89.

Samaporn Leeepairat. (2016). *School Quality Management Model for Elementary School International Standards*. Ph.D. Thesis (Educational Administration). Nakhon Sawan: Graduate School Nakhon Sawan Rajabhat University.

Office of the Basic Education Commission (2013). *Guidelines for Quality Management of TQA.* Bangkok: Agricultural Cooperative Federation of Thailand.

Office of the National Economic and Social Development Board (2016). *National Economic and Social Development Plan No. 12 2017 - 2021.* Bangkok: Sutra Paisan.

Office of the Education Council Secretariat (2009). *Guidelines for Corporate School Administration*. Bangkok: Office of the Education Council Secretariat.

Office of the Basic Education Commission (2010). *Guidelines for World-CLASS STANDARD SCHOOL.* Bangkok: Office of High School Administration.

Office of the Basic Education Commission (2012). *Documents Supporting the Implementation of the International Standard School: School Development for Excellence*. Bangkok: Office of the Higher Secondary Education Administration Ministry of Education.

Krejcie, R. V. & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement.* 30(3): 607 - 610.

Likert, R. (1967). *The Method of Constructing and Attitude Scale, Reading in Attitude Theory and Measurement.* New York: Wiley & Son.

The Process Securitization : The Valuation of Mortgage-Backed Securities

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Abstract

The concept of securitization centers on the transformation residential mortgages in the mortgage-backed securities or mortgage pass-through, which the US Federal government initiated in 1938. Later, US Congress passed to laws with the explicit objectives of establishing there major government body and agencies; the Government National Mortgage Association ("Ginnie Mae"), Federal National Mortgage Association ("Fannie Mae"), and Federal Home Loan Mortgage Corporation ("Freddie Mac"). Essentially, Ginnie Mae is government organization because it is part of the Department of Housing and Urban Development; Fannie Mae and Freddie Mac are only government "agencies" Ginnie Mae has the mission of guarantee of pass throughs securities and in issuing bonds for the to purpose of financing the securitization process. Never the lees, Fannie Mae and Freddie Mac also represents crucial instrumentalities in the issuing and guarantee of the Mortgage Backed Security (MBS). At any rate, the pass-through securities issued and guaranteed by the three major corporations account for 98 percent of all pass-through securities issued (with the Value of 3.2 billion dollars in 2014. The balance of mortgage pass-through securities were privately issued. Note that the pass-through securities issued by Fannie Mae and GNMA were called mortgage backed securities, where as the pass-throughs issued by Freddie Mac is called Participation Certificate (PC).

Keywords : Government National Mortgage Association (Ganie Mae), Federal National Mortgage Association (FNMA), Federal Home National Mortgage Corporation (FHNMC), Mortgage-Backed Securities, Pass-Throughs

1. Introduction

In the days before securitization in the United States mortgage borrowers were limited to a few local banks or thrifts. These financial institutions relied on the saving of local depositors. That means saving banks and loans ($S+L_s$) originated home mortgage and kept mortgage in their portfolios. The serious problem was the shortage of capital to finance purchases in housing markets. In the U.S. society, owning one's own home is a big part of the American dream. Few people can actually afford to buy a home outright. What makes home ownership possible for the society at large is a well developed system of home mortgage financing. In 1968, and 1970 Congress introduced a number of legislations reestablishing certain strategic federal government agencies, namely, Government National Mortgage Association. (GNMA), the best known guarantor of mortgage-backed securities. Two other government-sponsor enterprises were, the Federal National Mortgage Association. (FNMA), and the Federal Home Loan Mortgage Corporation (FHLMC).

As a consequence of these government agencies transformation of mortgage loans, has been widely driven into the development of mortgage-backed securities (MBS). This development of mortgage-backed securities represents a strategic innovation in the way that capital is raised to finance purchases in the housing market. With the mission of the three major federal government agencies, GNMA, FNMA, and FHLMC, along with qualified underwriters a portfolio of mortgage is collected into a mortgage pool. The program is guaranteed by the Federal Housing Administration (FHA), the Veteran's Administration, (VA) and the Farmer's Home Administration (FHA). Mortgage in GNMA pools are fully modified, meaning full and secured payment of both principal and interest to investors. The three types of pass throughs securities were guaranteed by these agencies which successfully increase the supply of capital to the residential mortgage market and to support for the active secondary market.

2. Objectives of the Article

The objectives of this article are as follows;

First, to provide an overview of the mortgages market and development of Securitization in the U.S. economy.

Seconds, to trace the process of the transformation of residential mortgages into development of mortgage-backed securities by reviewing the related articles on the securitization process.

Third, to indicate the crucial benefits of securitization on the financial market and the real economy.

3. An Overview Mortgage Market

A number of authors who investigated the process of securities in the United State including,

Frank J. Fabozzi. Securities Lending and Repurchase Aeseement, Frank Fabozzi Associate, 1997.

Frank J. Fabozzi, Bond Markets Analysis and Strategies 1993. chs.19, chs.11, chs.12. pp. 215-277

Anthony Saunders and Marcia Mrllon Cornelt, 2003, Financial Institutions Management, Mc Graw-Hill, chapter 28: pp. 733-764

Reter Rose, 2000. Money and Capital Markets. Irwin Mc Graw-Hill.

John Hull. 2004. Fundamentals of Futures and Option markets, chs.8. pp.189-203.

Fixed-rate mortgage analysis. Fixed-rate mortgage is loan that specifies constant monthly payments at a fixed interest rate over the life of the mortgage. An analysis of mortgage-backed securities begins with an understanding of the mortgages from which they are created. Most home mortgage are 15-year or 30-year maturity ***fixed-rate mortgages*** *requiring constant monthly payment.* As an example of a fixed-rate mortgage, consider a 30-year mortgage representing a loan of $100,000 financed at an annual interest rate of 8 percent. This translates into a monthly interest rate of 8 percent / 12 months = .67% and it requires a series of 360 monthly payments. The size of the monthly payment is determined by the requirement that the present value of all monthly payments based on the financing rate specified in the mortgage contract be equal to the original loan amount of $ 100,000. Mathematically, the constant monthly payment for a $100,000 mortgage is calculated using the following formula:

$$\text{Monthly payment} = \frac{\mathrm{Fl}}{\dfrac{1 - \dfrac{1}{(1+r)^{T\times 12}}}{r}}$$

where

r = Annual mortgage financing rate

$r/12$ = Monthly mortgage financing rate

T = Mortgage term in years

$T \times 12$ = Mortgage term in months

Fl = Amount of loan $100,000

In the example of a 30-year mortgage financed at 8.125 percent, the monthly payments are $742.50, This amount is calculated as follows.

$$\text{Monthly payment} = \frac{\$100{,}000}{1 - \frac{1}{(1+0.00677)^{360}}} = \$742.50$$

This means that monthly payments required for a $100,000 thirty-year mortgage finance at 8.125 percent are $742.50. This is shown in the Amortization Schedule exhibit, the schedule that the portion of the monthly mortgage payment applied to interest declines each month and the portion in the mortgage balance increases.

Exhibit 1: Amortization Schedule for a Fixed-Rate level-Payment, Fully Amortized Mortgage

Mortgage loan: $100,000
Mortgage rate: 8.125%
Monthly payment: $742.50
Term of loan: 30 years (360 months)

	Beginning of month mortgage balance	*Monthly payment*	*Monthly Interest*	*Scheduled principal repayment*	*Ending mortgage balance*
1	$100,000.00	$742.50	$677.08	$65.41	$99,934,.59
2	99,934.59	742.50	676.64	65.86	99,868.73
3	99,868.73	742.50	676.19	66.30	99,802.43
4	99,802.43	742.50	675.75	66.75	99,735.68
...	...	...	...	...	...
233	63,430.19	742.50	429.48	313.02	63,117.17
234	63,117.17	742.50	427.36	315.14	62,802.03
235	62,802.03	742.50	425.22	317.28	62,484.75
...	...	...	...	...	...
358	2,197.66	742.50	14.88	727.62	1,470.05
359	1,470.05	742.50	9.95	732.54	737.50
360	737.50	742.50	4.99	737.50	0.00

Traditionally, saving banks and saving loans (S+L) in the U.S. issued most home mortgages and then held the mortgages in their balance sheet as interest earning assets. However, the situation changed radically during the 1970 and 1980 when market interest rates ascended to their highest levels in the U.S. history. Entering this financially turbulent period, saving banks and S+L held large portfolios of mort gages written at low pre 1970 interest rates. These portfolios of mortgages were financed from customers saving deposits. When the market interest rates ascended to near 20 percent levels in the early 1980, customers rushed to withdraw funds from their saving deposits to invest in money market funds that paid higher interest rates. As a result, savings institutions were forced to sell mortgages at depressed prices to satisfy the motivation of deposit withdrawal. For this and other reasons, the situation caused the collapse of many saving institutions in the period. (Peter Rose, John Hull, Anthony Saunders)

At present, home buyers in the U.S. still commonly turn to local banks for mortgage financing, *but few mortgages are actually held by the banks that originate them. After issuing mortgages an originator usually sells the mortgages to a mortgages repacker who combines them into mortgage pools. In this context, the mortgage repacker issues mortgage-backed bonds to finance the creation of the mortgage pool, where each bond claims a pro rata share of all cash flows derived from mortgages in the pool*. A pro rata share allocation pay cash flows in proportion to a bond's face value. In essence, each mortgage pool is set up as a trust fund and a service agent for the pool collects all mortgage payments. The service agent then passes these cash flow through to bondholders. *For this reason mortgage backed bonds are called mortgage pass-through or just pass-through. However, all securities representing claims on mortgage pools are generally called "mortgage backed securities." (MBS).*

An Analysis of *the transformation from mortgage to MBS. The method used here is the primary collateral for all mortgage backed securities that is the underlying pool of mortgages. The transformation from mortgage to mortgage backed securities is referred to as mortgage SECURITIZATION.* The concept here applies directly to residential mortgages originated by mortgage banks and related institutions. The process constitutes what has been known as mortgage pass through securities.

An analysis of ***Mortgage Pass-through Securities.*** *A mortgage pass-through security is created when one or more holders of mortgages form a collection (pool) of mortgages and sell shares or participation certificates in the pool.* A pool may consist of several thousand or only a few mortgages.

What will be the **Cash Flow**? *The cash flow of a mortgage pass-through security depends* on the cash flow of underlying mortgages. As we explain for mortgages, *the cash flow consists of monthly mortgage payments representing interest, the scheduled repayment of principal,*

and any prepayments, as in exhibit. (Frank J. Fabozzi. 1997. Chapter 11. pp 141-164. Bond Markets, Analysis and strategies. 1993. chs. 14-15.)

The method of analysis of the characteristic of the monthly cash flow for a pass through. Payments are made to security holders each month. However, neither the amount nor the timing of the cash flow from the pool of mortgages is identical to that of the cash flow passed through to investors. The monthly cash flow for a pass-through is less than the monthly cash flow of the underlying mortgages by an amount equal to servicing and other fees. The other fees are those charged by the issuer or guarantor of the pass-through for guaranteeing the issue. The coupon rate on a pass-through, called the pass-through coupon rate, is less than the mortgage rate on the underlying pool of mortgage loans by an amount equal to the servicing and guaranteeing fees.

The timing of the cash flow is also different. The monthly mortgage payment is due from each mortgagor on the first day of each month, but there is a delay in passing through the corresponding monthly cash flow to the security holders. The length of the delay varies by the type of pass-through security.

WAC and WAM Not all of the mortgages that are included in a pool of mortgages that are securitized have the same mortgage rate and the same maturity Consequently, when describing a pass-through security, a weighted average coupon rate and a weighted average maturity are determined. A weighted average coupon rate, or WAC, is found by weighting the mortgage rate of each mortgage loan in the pool by the amount of the mortgage outstanding. A weighted average maturity, or WAM, is found by weighting the remaining number of month to maturity for each mortgage loan in the pool by the amount of the mortgage outstanding

4. The Concluding Remarks

In the United States, the Congress passed regulations with a specific goal of *mortgage securitization*. In particular, the federal government promulgated laws which set up government-owned and government sponsored corporations for the achievement of the said goal. *Specifically the formation of government agency charged with promoting liquidity in the home mortgage market. In particular the* ***Government National Mortgage Association (GNMA),*** *colloquially called "Ginnie Mae," is a government agency within the Department of Housing and Urban Development (HUD). GNMA was charged with the mission of promoting liquidity in the secondary market for home mortgages.*

The role of underwriter. *GNMA operates in cooperation with private underwriters certified by GNMA to create mortgage pools. The underwriters originate or otherwise acquire the mortgage to form a pool. After verifying that the mortgages comply with GNMA requirements. GNMA authorizes the underwriter to issue mortgage-backed securities with a GNMA guarantee.*

As a simplified example of how a GNMA pool operates, consider a hypothetical GNMA fully modified mortgage pool containing only a single mortgage. After obtaining approval from GNMA, the pool has a GNMA guarantee and is called a GNMA bond. The underwriter then sells the bond and the buyer is entitled to receive all mortgage payment, less servicing and guarantee fees. If a mortgage payment occurs ahead of schedule, the early payment is passed through to the GNMA bondholder. If a payment is late, GNMA makes a timely payment to the bondholder. If any mortgage principal is prepaid, the early payment is pass through to the bondholder. If a default occurs, GNMA settles with the bondholder by making full payment of remaining mortgage principal. In effect, to a GNMA bondholder mortgage default is the same thing as a prepayment.

The Size of GNMA bond. *When originally issued, the minimum denomination of a GNMA mortgage-backed bond is $25,000, with subsequent increments of $5,000. The minimum size for a GNMA mortgage pool is $1 million, although it could be much larger. Thus, for example, a GNMA mortgage pool might conceivably represent only 40 bonds with an initial bond principal of $25,000 par value per bond. However, initial bond principal only specifies a bond's share of mortgage pool principal. Over time mortgage-backed bond principal declines because of scheduled mortgage amortization and mortgage prepayment.*

While GNMA is perhaps the best-known guarantor of mortgage-backed securities, two government-sponsored enterprises (GSEs) are also significant mortgage repackaging sponsors. These are the **Federal Home Loan Mortgage Corporation (FHLMC),** colloquially called "Freddie Mac" and the **Federal National Mortgage Association (FNMA).** called "Fannie Mae." The securities associated with these three agencies are known as agency pass through securities. The total Value of securitized mortgage accounted for $ 3.4 trillion (2014).

Benefit to of Securitization

Benefit to Consumers	Benefit to Investors
1. Lower cost of forms	1. High yields on rated securities
2. Increased buffet of credit forms	2. Liquidity
3. Competitive rates locally and nationally	3. Enhanced diversification
4. Funds available consistently	4. Potential trading profit
Benefit to Originator	**Benefit to Investment Bankers**
1. Ability to sell assets	1. New product line
2. Profits on sale	2. Continuous flow of origination and fees
3. Increased servicing income	3. Trading volume and profits
4. Potential trading profits	4. Potential for innovation

5. References

Choudhry, Moorad. (2004). *Sfructured Credit Products.* John Wiley and Sons.

Fabozzi. (1995). *The Handbook of Fixed income securities, fourth edition.* IRWIN professional publishing.

Fabozzi. (2001). *The Handbook of Fixed income securities, sixth edition.* IRWIN professional publishing

Fabozzi. (1997). *The Handbook of Fixed income securities, fifth edition.* IRWIN professional publishing

Fabozzi. (1997). *Fixed Income Securities Published by Frank J. Fabozzi Associate.*

Fabozzi. v(1997). *Advance in Fixed income valuation modeling and risk management.*

Hayre, L.S.D. Foulds, and L.A. Pendergast. (1988). *Introduction to Collateralized Mortgage Obigations.* The Handbook of Mortgage-Backed Securities, ed. F.J.Fabozzi. Chicago: Probus, 337-380.

Hull C. John. (2011). *Fundamental of Futures and Option Markets.* Pearson Education Limited. Chapter 8.

Housing Finance International. (1990). *Fannie Mae and the America Housing Finance System: A Model for Others.*

Kendall Loon.(1997). *A primer on Securitization, the MIT press.* Cambridge Massachusetts.

Kolb, Robert eds. (2010). *Lessons from Financial Crisis.*

Martellini, L.P., S. paraulet. (2003). *Fixed income Securities,* Jonh Wileg and Sons.

Sundaren, S. (1997). *Fixed income Markets and Their Derivation.* South-Western Publishing. Chapter 9.

Sundaren, Anthony and Marcia Cornelt. (2003). *Financial Institution Management.* Me Graw-Hill, pp733-766.

Perception of Chemistry Topics toward the Role of Chemical Terms in Authentic Contexts

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Abstract

This paper presents the results of a prior teaching experience on the use of chemistry topics to evaluate the cognitive learning in chemical terminology with authentic context. The method was used with the third-year undergraduate chemistry students which is called English for Chemistry course. The results were assessed with a focus on the performance level of students' understanding of the chemistry topic with chemical terms in an authentic context in the learning process. The data collection and analysis was from the scores of the activities in the class, events from the outside class's activities and by interview to assess the students' learning experience. Analysis of the designed teaching indicated that the cognitive learning of the students showed medium level of performance. The assessment was provided by a game-based learning platform. From the interview, we found that students really enjoy this method using the game-based with positive comment on the interview. Further development of such instructional activity is important, since the students are encouraged by the learning of this assignment. The students actually design the quizzes themselves and they get excited by the competition of this game-based learning system.

Keywords : Cognitive Learning, Self-Study, Game, Chemical Terminology, Chemistry Topic

1. Introduction

Chemical terminology in English language for Thai students is one of the crucial items that have to be used in the cognitive process of learning chemistry. Undergraduate chemistry students in Thailand have been learning by Thai teachers lecturing in Thai language. Chemical terms in the English language have added on only for some particular situation. In this learning process, the students do not understand English sentences with terms in chemistry if the teacher does not give an emphasis to the cognitive learning. Therefore, to motivate the students to study attentively, we use the game format in simple English to teach chemical terms. Studying the chemical terms in authentic context to facilitate cognitive learning (Leou et al., 2006). In addition,

it is also improving the students' perceptions, attitudes and learning experiences in chemistry. Self-study is the one method that is effective in improving thinking skills (Dinkelman, 2003), students improve their cognitive ability though exposure to authentic context, meaningful context and systematic presentation (Bodner and McMillen, 1986 ; Nakhleh and Mitchell, 1993). Scientific reports and scientific articles are the important materials in students' learning by preparing a supplement for learning new situations, reinforcing old contexts, and practicing problems in English language. The students wrote a report and presented their findings and the quizzes they made using Kahoot application to the class. Knowledge by stimulating effected on potential cognitive learning. Students can construct new knowledge from governing in real context sentences (Fortus et al., 2004 ; Fortus et al., 2005) so the potential for learning was designed. Therefore, self-study was the strategy to motivate students to promote their cognitive learning by themselves was developed. In addition, playing with a game of chemistry topics was used to stimulate student's ability in many chemistry topics related of that learning from the game (Capps, 2008 ; Antunes, Pacheco, and Giovanela, 2012 ; Kavak, 2012 ; Franco Mariscal and Oliva Martinez, 2013). Scientific reports and scientific articles were used to impact on students learning so then provide on critical thinking skill.

The pedagogy is to improve students of how deepen their cognitive learning in chemistry using authentic practice and to determine further if the adaptation in that practice has improved the students' perception of learning. We, therefore, designed to contribute of learning for the third-year undergraduate chemistry students through the use of many kinds of communication media with chemistry topics. These pedagogical methods were designed to regulate the students in the previous part of a whole class of English for Chemistry course.

2. Research Objectives

The aim of the study was to evaluate the performance level of chemistry topics within authentic context. It is the first part that was used to provoke students to be conscious of understanding in the next part of studying in scientific reports and scientific articles.

3. Research Methodology

3.1 Participants

The students (N = 44) have enrolled on English for Chemistry course for the third-year undergraduate chemistry students at Buriram Rajabhat University. The students were made aware of this course of studying in the second semester of the second-year undergraduate study.

3.2 Setting

The students were given a conceptual instruction to this course. The teaching was designed to provoke students to understand chemical terminology preparation by assigning the

students to learn this new pedagogical methods of researching and making a mini quiz using English language and chemical terminology. The first part of the study used the chemistry topic in English language to identify the students knowledge in chemical terminology. The assignments were designed by the students in class using online Google searches to select the preferred topics in chemistry. The students were divided into groups of two students for this assignment. The groups were established from random selection. The second part of the assignment, the students have to do reports, presentations and their mini quiz (application of Kahoot) for participating with their classmates. During these classes, all students were participating in presenting, answering the quiz. Right and wrong answers in the quizzing game were recorded. Interview the students were questioned about how much time they spent outside of class on this assignment. Finally, we combined these results to analyze their performance.

3.3 Data collection and analysis

The students' prior knowledge of basic concepts in chemistry was obtained by assigning the students to search the internet for basic English chemical terms and their meanings. They then would create a quiz in the game format using Kahoot application. The students would then write a report and make a presentation about their experience. The including part of the report contain the English document context, translation to Thai language, chemical terms, quizzes, and references. They have to submit their reports prior to giving their presentation. The performance of their presentation, explanation and 5 questions mini quiz (multiple choice questions) to the class and answer 1 or 2 questions from the class was assessed. Desirable factors included quality of presentation, explanation and quality of their mini quizzes. The performance of presentation, satisfactory of explanation, correctness of the asking questions of the class and correct of answers to the question were used to assess the students.

The students' performance level was assessed at high, medium, or low. 80 % to 100 % is considered high performance level, 50 to 79 % is medium performance level and below 50 % is considered low performance level. All students must answer the quizzes from all groups. Right or wrong on the answer of the question were also recorded. All students must ask at least one question to the groups per this previous part assignments. The score of the preferred topics also used to compare the knowledge achieved using interviews of the students in the studying group. The perception about the assessment was treated as individual responses and analyzed qualitatively using scores and inquiry analysis to gain. The total scores of performance that were obtained by each student reflected their perception of chemical terminology with authentic context. High performance (answering correct 80 % to 100 % from total correctly), medium performance (answering correct 50 to 79 % from total correctly) and low performance (answering correct lower than 50 % from total correctly). Their level of performance also reflected the requirements for the

next part of the assignment that would enable them to overcome the understanding of chemistry articles with authentic English context.

4. Research Results

The preferred topics were obtained from the students are shown in Table 1. It was found that one group sent the report late by 1 day. All groups sent the reports on time but they have no references so then I required the students to submit the references.

Table 1. Twenty two preferred topics which the students interest to learn in chemistry (The students search during in September to November 2019)

	Learning Topics	References
1.	Acid base	https://courses.lumenlearning.com/trident-boundless-chemistry/chapter/acids-and-bases/
2.	Amino acid	https://www.khanacademy.org/science/biology/macromolecules/proteins-and-amino-acids/a/introduction-to-proteins-and-amino-acids
3.	Carbohydrate	https://courses.lumenlearning.com/wm-biology1 / chapter/reading-types-of-carbohydrates/
4.	Carbon cycle	https://www.khanacademy.org/science/biology/ecology/biogeochemical-cycles/a/the-carbon-cycle
5.	Deoxyribonucleic acid	https://www.genome.gov/about-genomics/fact-sheets/Deoxyribonucleic-Acid-Fact-Sheet
6.	Electron	https://www.britannica.com/science/atom/Atomic-mass-and-isotopes
7.	Isotope	https://www.ducksters.com/science/chemistry/isotopes.php
8.	Metal	http://www.chem4kids.com/files/elem_metal.html
9.	Mixture	https://www.ducksters.com/science/chemistry/chemical_mixtures.php
10.	Neutron	https://www.physicsclassroom.com/class/estatics/Lesson-1/Neutral-vs-Charged-Objects
11.	Osmosis and diffusion	http://leavingbio.net/osmosis-diffusion/
12.	Oxidation number	https://www.britannica.com/science/oxidation-number
13.	Oxygen cycle	https://www.ducksters.com/science/ecosystems/oxygen_cycle.php
14.	pH	https://www.softschools.com/formulas/chemistry/ph_formula/570/
15.	Phase change	http://www.chem4kids.com/files/matter_changes.html
16.	Plasma	http://www.chem4kids.com/files/matter_plasma.html
17.	Protein	https://www.medicalnewstoday.com/articles/196279#what_are_proteins

Table 1. (Continue)

	Learning Topics	References
18.	Saturated hydrocarbon	https://www.ck12.org/c/physical-science/saturated-hydrocarbon/lesson/Saturated-Hydrocarbons-MS-PS/
19.	Separating mixture	https://www.ducksters.com/science/chemistry/separating_mixtures.php
20.	Solid	https://www.livescience.com/46946-solids.html
21.	Solution	http://www.chem4kids.com/files/matter_solution.html https://www.ducksters.com/science/chemistry/solutions_and_dissolving.php
22.	State of matter	https://www.ducksters.com/science/solids_liquids_gases.php

The students can do the satisfactory presentation. They used many kinds of communication media to make fascinating presentations. The results from interview showed that the students spent more than 1 hour per day for learning of the preferred topics. Almost students spent 2 hours per day in searching for the preferred topics. On the other hand, almost students spent more than 3 hours per day for making a quiz in English. They also reported that their doing for the quizzes were supported by chemistry topics with Thai language context. The preparation of presentations was found that they spent for 3 to 4 hours per a day (Table 2). Most of these students noted that they did not have enough time for learning because they have to do a lot of report for many of chemistry subjects in this semester.

Table 2. Time spent of learning for the preferred topics

Activities	Time spent per day		
	4 hours	3 hours	2 hours
Searching for the preferred topics	0 group (0 %)	2 groups (9 %)	20 groups (91 %)
Doing for the quizzes	20 groups (91 %)	2 groups (9 %)	0 group (0 %)
Doing for the presentations	12 groups (55 %)	10 groups (45 %)	0 group (0 %)

The results of the performance level of students showed average percentage of all activities in medium performance (Table 3) so then these students were the representative of the performance level of the class. Therefore, the interview was informed. The performance of presentation showed that 82 % of these students attempt to do well on stage. They declared that their performance had from comprehend the content and they had to review from Thai language context. 91 % of the students said that their preparation for explanation made them deeper understanding of chemical terminology using in sentence and provided them with a basis for application in the next step of understanding in scientific articles. 14 % of the students that made

correct questions and 59 % of the students that made correct answers said that the questions were translated to English language base on thinking from Thai language. It should be noted that 86 % of the low performance students that made uncorrected questions also reported. They believed that the questions were practically for their friends. From the interview results revealed that all of the students satisfied about self-study in the chemistry topic. The game-based platform (Kahoot) made them got pleasure on learning even though some of questions that was made in wrong implication because of tense.

Table 3. The performance level from the students' response to the chemistry topics with authentic context

Item	Activities	Performance level (%)		
		high	medium	low
1.	Performance of presentation	2 groups (9 %)	18 groups (82 %)	2 groups (9 %)
2.	Satisfactory of explanation	0 group (0 %)	20 groups (91 %)	2 groups (9 %)
3.	Correct of the asking questions	0 group (0 %)	3 groups (14 %)	19 groups (86 %)
4.	Correct answer the questions	18 people (41 %)	26 people (59 %)	0 person (0 %)

5. Discussions

The results obtained in collecting the performance level of the cognitive learning and the interview of the appropriation in the designed pedagogy method showed the students got medium of performance level. In this process, we find a desire for teacher to be engaged connecting relation between students' perspective of authentic contexts and correcting of the questions with chemical terms. From the misconception in chemical terms, necessary amendment was had to do. For example, some analytical terms "determination", "mild stirring" that included in context. Most of the students could not make the right meanings of their questions because of poor of understanding in English language. The suggestion was made in each group to identify the wrong of the sentence or question. However, we told them that the wrong questions and the wrong answers were not the mistake but it is the opportunity of learning.

6. Conclusion

From the research, it shows that their perception of enjoying using the game format instead of just taking a test is desireable. The assessments rely on providing planned communication media to serve as motivational material. This learning process is not only valid but also provokes critical thinking using the format of a quiz game presentation.

A little bit of time spent learning responses the ability of students' learning. But the students often have wrong in grammar and presentation in their mini quizzes. Hence, teachers

have to find a way to correct their wrong sentences and wrong questions. Teachers assists from different of chemical terms and general terms including scientific concepts belonging to the specific of scientific content. It was found that teachers should be considered and make comments in each part of the assignments.

7. Recommendation

Further studies on the next assignment and observation in performance level of the adapted process of learning in these English of Chemistry course would be investigated the long-term study.

8. References

Antunes, M.; Pacheco, M. A. R.; Giovanela, M. (2012). Design and Implementation of an Educational Game for Teaching Chemistry in Higher Education. *Journal of Chemical Education.* 89 (4), 517—521.

Bodner, G. M. and McMillen, T. L. B. (1986). Cognitive restructuring as an early stage in problem solving. *Journal of Research in Science Teaching*. 23 (8), *727 – 737*.

Capps, K. (2008). Chemistry Taboo: An Active Learning Game for the General Chemistry Classroom. *Journal of Chemical Education*. 85 (4), 518.

Dinkelman, T. (2003). Self-Study In Teacher Education: A Means And Ends Tool For Promoting Reflective Teaching. *Journal of Teacher Education*, 54 (1), 6-18.

Fortus, D., Dershimer, R. C., Krajcik, J., Marx, R. W., & Mamlok-Naaman, R. (2004). Design-based science and student learning. *Journal of Research in Science Teaching*. 41(10), 1081–1110.

Fortus, D., Krajcik, J., Dershimer, R. C., Marx, R. W., & Mamlok-Naaman, R. (2005). Design-based science and real-world problem-solving. *International Journal of Science Education. 27(7)*, 855– 879.

Franco Mariscal, A. J.; Oliva Martinez, J. M. (2013). Educational Games and Learning about the Periodic Table: Case Studies. *Journal of Science Education.* 14, 93—97.

Kavak, N. (2012). ChemOkey: A Game To Reinforce Nomenclature. *Journal of Chemical Education.* 89 (8), 1047—1049.

Leou, M., Abder, P., Riordan, M., & Zoller, U. (2006). Using 'HOCS-centered learning' as a pathway to promote science teachers' metacognitive development. *Research in Science Education,* 36 (1-2), 69–84.

Nakhleh, M. B. and Mitchell, R. C. (1993). Concept learning versus problem solving: There is a difference. *Journal of Chemical Education.* 70 (3), 190 – 192.

States and Desirable Expectation on Academic Administration of Small-sized Schools under Buriram Educational Service Area Offices

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Abstract

The objectives of this research were to investigate the state and needs on academic administration in small-sized schools under Buriram Educational Service Area Offices. The samples of this study were school administrators and teachers of 196 small-sized schools. questionnaire was collected and used in academic administration of small-sized schools. The descriptive statistics and $PNI_{modified}$ were used as data and analysis.

The research results revealed that the state of being in academic administration of small-sized schools under Buriram Educational Service Area Offices, was at a moderate level (M = 3.08, $S.D.$ = 0.52). Needs on academic administration process should be developed in descending order; research for educational development ($PNI_{modified}$ = 0.32), curriculum development ($PNI_{modified}$ = 0.32), supervising and monitoring in teaching and learning ($PNI_{modified}$ = 0.31), teaching and learning management ($PNI_{modified}$ = 0.30), supporting and developing in teaching materials, innovations and educational technology ($PNI_{modified}$ = 0.29), supporting and developing in Internal Quality Assurance System ($PNI_{modified}$ = 0.26), and educational measurement and evaluation ($PNI_{modified}$ = 0.25), respectively. The findings could be used as a guideline information for school administrators to make a decision in improving of academic administration in small-sized schools under Buriram Primary Educational Service Area Offices for better quality in accordance with the professional standardization.

Keywords : Needs, Small School, Office of Buriram Primary Educational Service Area

1. Introduction

Reforming of Thai education causes changes both in basic education core curriculum, development of administrative organization, teachers' modernization for developing Thai citizen and education personnel, and learning system that always reflects on educational management problem in Thailand. These problems are not only shown in a policy but also in performance which has an effect on educational quality assurance. This issue is also a weak point of Thai education to be developed. The main institution in educational management has been accused

as a fault of educational inefficiency. Teachers are still unable to do teaching and learning management that is a main cause of the problem. In addition, lack of education personnel management brings to inability of improvement in learning achievement, especially in small schools where the education personnel inefficiently arranged is being occurred. The research result definitely showed that cost of learning management per person in small schools is higher than big schools. Besides, students who are studying in small schools tend to have learning achievement less than those are in big schools. Furthermore, the important thing which small schools have been increased rapidly each year is a reduction of school age children and the popularity of parents' needs to promote their children studying in a famous school as well as a private school. A lot of small schools could not reflect an educational quality assurance and insufficient learning management as a result of resources useless. Limitations in personnel and lacks of educational technology media can continually cause diminish educational quality (Bureau of Policy and Planning, Office of the Basic Education Commission, Ministry of Education, 2011:1). A major obstacle of educational administration is management problems in laws of planning and decentralization which are results of transferring educational resources to non-readiness areas. As the result, it affects to the motivation of performers. The rapid changes in education, media, and information technology are problems in the society; especially the morality in violence that can increase the risks of children and youth's viewpoint, value, and behavior. This effect to education could not produce students to meet the goals of desired characteristics. Decreasing of population birth rate has an effect on the amount of student since its factor is logged into the education system. Some small schools have fewer amounts of students or without students. Migration or labor relocation of parents can make students leaving school early to be non-continuity and waste in educational system. The parents' attitudes in supporting their children to study in high school rather than vocational school are against with the ways of country development affecting to a procedure planning together with the disasters tend to be more seriously and regularly occurred. These can make lost much further in educational resources including the chaotic situation in the southern border provinces and security problems such as drugs, illegal migrant workers in the border areas especially in the frontier highlands. These issues must be solved and protected by the government otherwise it will be affected to the educational management in this place (Ministry of Education, 2011:35).

According to the educational management problems in small schools, Office of the Basic Education Commission informed that there were small 15,089 schools in Thailand or 50% of the total 30,112 institutes in academic year 2018. The term of "small school", defined by The Basic Education Commission Office, means the institute where students are less than 120 persons. As the report analyzed by Thailand Development Research Institute (TDRI), there were three main problems of small schools; 1) lacks of teachers, as a result of the criteria that the Basic Education

Commission Office used to specify the ratio of teacher per student, 2) its budget was lower than the big schools because small schools were only provided the budget per head by the government, therefore, they usually faced with insufficient budget problem, and also 3) learning management cost was higher than the big school. According to intensive details, it found that 14,917 small schools or 98.8% of the total 15,089 schools were primary levels (kindergarten – grade 6) which means that around 900,000 students studying at those schools had met with insufficient teachers and educational personnel problems since the semester started.

As all problems mentioned above, it showed that the academic administration in small schools was important to be handled in this period of changes. The educational management, nowadays, needed to emphasize on excellent practice. Hence, small schools under Buriram Primary Educational Service Area Offices should focus on the academic development immediately for improving their capability as the best practice school. Consequently, researchers are interested in studying the current and desirable conditions of the academic administration in the small-sized schools for their administrative needs. Besides, these informative findings can be used as a guideline to apply in an academic administration for higher quality based on the professional criteria.

2. Objectives of the study

1. To investigate the States and desirable Expectation on academic administration in small-sized schools under Buriram Primary Educational Service Area Offices

2. To evaluate needs of academic administration in small-sized schools under Buriram Primary Educational Service Area Offices

3. Methodology

This study was an evaluative research which the population consisted of the school administrators and academic teachers in 196 small-sized schools under Buriram Primary Educational Service Area Offices. In addition, there were 55 school directors with 55 academic teachers from Buriram Primary Educational Service Area Office 1, 45 school directors with 45 academic teachers from Buriram Primary Educational Service Area Office 2, and 40 school directors with 40 academic teachers from Buriram Primary Educational Service Area Office 3 , 56 school directors with 56 academic teachers from Buriram Primary Educational Service Area Office 4, in total 196 people. Stratified random sampling technique was used as a research design based on the qualification requirement. The data had been collected during in September – November 2019.

Research Instrument

Questionnaire was made for an academic administration in small-sized schools under Primary Educational Service Area Offices. Five-rating scale was applied by giving a dual response what the current and desirable conditions were and what they should be. 60 items were divided into seven categories in administrative evaluation; 9 items for school curriculum development, 8 items for teaching and learning management, 8 items for educational measurement and evaluation, 8 items for supporting and developing media innovation and educational technology, 9 items for supervising and monitoring in teaching and learning management, 9 items for supporting and developing school internal quality assurance system, and 9 items for educational research and development.

A score means the strongest disagreement with the current and desirable conditions; on the other hand, the strongest agreement was five. The five-point rating scale is explained as follows:

1.00 – 1.50	means Strongly disagree
1.51 – 2.50	means Disagree
2.51 – 3.50	means Moderate agree
3.51 – 4.50	means Agree
4.51 – 5.00	means Strongly agree

Quality Testing of Research Instrument

The content validity of the questionnaire was checked and considered by five experts in accordance with the item-objective congruence (IOC). Each item was more than 0.60. The revised questionnaire was tried out with school administrators and academic teachers under Buriram Primary Educational Service Area Office 3. 35 schools were qualified as same as the reliability based on Cronbach's Alpha Coefficient. The reliable questionnaire of the current and desirable conditions in academic administration was 0.96 and 0.92 respectively.

Data Collection

1) Preparation: Document was written and proposed to the Dean of Graduated School, Buriram Rajabhat University, asking for a permission to collect the data from 196 school administrators and academic teachers under Buriram Primary Educational Service Area Offices.

2) Data Collecting Procedure: Questionnaires were sent via the mail, and collected by the assistant researchers. Research objectives were informed to all samples. Researchers collected data themselves when the samples were pleased to participate in this study. Time allocation for the questionnaire data collection was specified and lasted for two months.

Data Analysis

Collected data was analyzed by using mean and standard deviation on each item. Modified priority needs index ($PNI_{modified}$) (Wongwanich, 2015) was calculated to have needs

identification of each type in small-sized schools under Buriram Primary Educational Service Area Offices based on the following formula:

$$PNI_{modified} = (I-D)/D$$

When I = the expectation; D = States

The findings showed the needs identification level with $PNI_{modified}$ of each item. The item with more $PNI_{modified}$ had the needs greater than the item with less $PNI_{modified}$. The more $PNI_{modified}$ should be importantly first priority to improve or develop.

4. Results of the Study

1. The states of academic administration process in small-sized schools under Buriram Primary Educational Service Area Offices was at neutral level ($\bar{x}$= 3.08, *S.D.* = 0.52). Needs identification in academic administration in small-sized schools should be respectively developed on these categories; research for educational quality development ($PNI_{modified}$ = 0.32), curriculum development ($PNI_{modified}$ = 0.32), supervising and monitoring in teaching and learning management ($PNI_{modified}$ = 0.31), teaching and learning management ($PNI_{modified}$ = 0.30), supporting and developing media innovation and educational technology ($PNI_{modified}$ = 0.29), supporting and developing school internal quality assurance system ($PNI_{modified}$ = 0.26), and educational measurement and evaluation ($PNI_{modified}$ = 0.25) as shown in the table 1.

Table 1. Mean and standard deviation on needs of the current and desirable conditions in academic administration in small-sized schools under Buriram Primary Educational Service Area Offices.

Statements	States		Expectation		Needs	
	$\bar{x}$	SD	$\bar{x}$	SD	$PNI_{modified}$	Rank
1 curriculum development	3.14	0.32	4.47	0.11	0.32	2
2. educational measurement and evaluation	3.38	0.23	4.23	0.28	0.25	7
3. supporting and developing media innovation and educational technology	2.85	0.18	3.68	0.42	0.29	5
4. supervising and monitoring in teaching and learning management	3.18	0.29	4.18	0.28	0.31	3

Table 1. (Continue)

Statements	States		Expectation		Needs	
	$\bar{x}$	SD	$\bar{x}$	SD	PNI $_{modified}$	Rank
5. supporting and developing school internal quality assurance system	3.50	0.20	4.41	0.11	0.26	6
6. research and development for educational quality	3.02	0.28	3.99	0.27	0.32	1

The finding of the states of academic administrative in small-sized schools was at moderate level on the whole. The highest mean score was in supporting and developing school internal quality assurance ($\bar{x}$= 3.50, *S.D.* = 0.20), followed by educational measurement and evaluation ($\bar{x}$= 3.38, *S.D.* = 0.23), supervising and monitoring in teaching and learning management ($\bar{x}$= 3.18, *S.D.* = 0.29), curriculum development ($\bar{x}$= 3.14, *S.D.* = 0.32), teaching and learning management ($\bar{x}$= 3.13, *S.D.* = 0.28), research for educational quality development ($\bar{x}$= 3.02, *S.D.* = 0.28), and supporting and developing innovation media and educational technology ($\bar{x}$= 2.85, *S.D.* = 0.18), respectively.

Their Expectation entirely was at much level and the highest means score was in teaching and learning management ($\bar{x}$= 4.49, *S.D.* = 0.08), then in curriculum development ($\bar{x}$= 4.47, *S.D.* = 0.11), supporting and developing school internal quality assurance system ($\bar{x}$= 4.41, *S.D.* = 0.11), educational measurement and evaluation ($\bar{x}$= 4.23, *S.D.* = 0.28), supervising and monitoring in teaching and learning management ($\bar{x}$= 4.18, *S.D.* = 0.28), research for educational quality development ($\bar{x}$= 3.99, *S.D.* = 0.27), and in supporting and developing innovated media and educational technology ($\bar{x}$= 3.68, *S.D.* = 0.42).

As priority order of the overall needs, PNI $_{modified}$, on academic administration in small-sized schools under Buriram Primary Educational Service Area Offices was in research for educational quality development (PNI $_{modified}$ = 0.32), as same as curriculum development (PNI $_{modified}$ = 0.32), then in supervising and monitoring in teaching and learning management (PNI $_{modified}$ = 0.31), teaching and learning management (PNI $_{modified}$ = 0.30), supporting and developing innovated media and educational technology (PNI $_{modified}$ = 0.29), development of school internal quality assurance system (PNI $_{modified}$ = 0.26), and in educational measurement and evaluation (PNI $_{modified}$ = 0.25).

Table 2. Needs on academic administration in small-sized schools under Buriram Primary Educational Service Area Offices.

Aspects	Needs on Academic Administration
1. Curriculum Development and Learning Management -1.1 Curriculum Development	1. Authorizing the committees for reviewing and making school curriculum ($PNI_{modified}$ = 0.38) 2. Supporting the local wise men, school advisory experts to regularly participate in making school curriculum each year ($PNI_{modified}$ = 0.35) 3. Authorizing the committees for making a curriculum regularly each year ($PNI_{modified}$ = 0.32) 4. Supporting to have a school curriculum analysis for better development each year ($PNI_{modified}$ = 0.32)
-1.2 Teaching and Learning Management	1. Providing teachers a training workshop for continually improving their skills on authentic teaching and learning management each year ($PNI_{modified}$ = 0.35) 2. Making school networks for teaching and learning process development ($PNI_{modified}$ = 0.33)
2. Educational Measurement and Evaluation	1. Teachers have to be trained for better understanding in educational measurement and evaluation, and improving their potentials in authentic teaching and learning management ($PNI_{modified}$ = 0.38) 2. Applying the measured and evaluated results to regularly improve in teaching and learning management each year ($PNI_{modified}$ = 0.32) 3. School committees specify the regulations about school measurement and evaluation ($PNI_{modified}$ = 0.32) 4. Giving teachers the opportunities to use PLC Process for sharing participated in measurement and evaluation analysis in teaching and learning management ($PNI_{modified}$ = 0.30)
3. Supporting and Developing Innovated Media and Educational Technology	1. Providing teachers a training workshop to be able to regularly make and use the innovated media and technology each year ($PNI_{modified}$ = 0.39) 2. Authorizing committees in arranging and producing innovated media and technology in teaching and learning regularly each year ($PNI_{modified}$ = 0.37)

Table 2. (Continue)

Aspects	Needs on Academic Administration
	3. Schools administrators participate in attending on innovated media usage for making their teachers courage, and always giving them suggestions (PNI $_{modified}$ = 0.35) 4. To analyze, and improve the innovated media and technology for teaching and learning each year (PNI $_{modified}$ = 0.34)
4. Supervising and Monitoring in Teaching and Learning Management	1. Training provided for teachers to understand about Supervising and Monitoring in Teaching and Learning Management (PNI $_{modified}$ = 0.39) 2. To continually evaluate and improve the supervising results in teaching and learning each year (PNI $_{modified}$ = 0.32) 3. Giving teachers opportunities to use PLC Process for analyzing the internal supervision, and also improve their teaching and learning together (PNI $_{modified}$ = 0.32)
5. Supporting and Developing School Internal Quality Assurance System	1. Bringing the analyzed results of the internal quality assurance to continually develop its quality each year (PNI $_{modified}$ = 0.32) 2. School administrators supervise the performance based on the internal quality assurance process by using PDCA Process (PNI $_{modified}$ = 0.29)
6. Research for Educational Quality Development	1. Budget was supported to do research for developing in teaching and learning management (PNI $_{modified}$ = 0.39) 2. Training workshop provided for teachers to improve their potentials for better knowledge in learning and teaching management research regularly each year (PNI $_{modified}$ = 0.37) 3. Providing teachers academic conferences for participating in sharing their studies in school teaching and learning management regularly each year (PNI $_{modified}$ = 0.34)

According to the analyzed findings of each category of needs on academic administration in small-sized schools under Buriram Primary Educational Service Area Offices, school curriculum was classified along with its components and items. It was found that the top-fourth needs were in authorizing committees to review and make a school curriculum ($PNI_{modified}$ = 0.38), then in supporting local wise man, school advisory experts to regularly participate in making school curriculum each year ($PNI_{modified}$ = 0.35), Authorizing the committees for making a curriculum regularly each year ($PNI_{modified}$ = 0.32), and in Supporting to have a school curriculum analysis for better development each year ($PNI_{modified}$ = 0.32), respectively.

Teaching and learning management when it was considered in needs identification of each item and component was the highest score: 1) providing teachers a training workshop for continually improving their skills on authentic teaching and learning management each year ($PNI_{modified}$ = 0.35), and 2) making school networks for teaching and learning process development ($PNI_{modified}$ = 0.33).

The results of needs on academic administration of measurement and evaluation were found that teachers have to be trained for better understanding in educational measurement and evaluation, and improving their potentials in authentic teaching and learning management were at the most level ($PNI_{modified}$ = 0.38), next in applying the measured and evaluated results to regularly improve in teaching and learning management each year ($PNI_{modified}$ = 0.32) as well as school committees specify the regulations about school measurement and evaluation ($PNI_{modified}$ = 0.32), and giving teachers the opportunities to use PLC Process for sharing participated in measurement and evaluation analysis in teaching and learning management ($PNI_{modified}$ = 0.30), respectively.

Needs analysis results of academic administration in supporting and developing innovated media and educational technology were categorized based on its components and items, and found that providing teachers a training workshop to be able to regularly make and use the innovated media and technology each year was at the most level ($PNI_{modified}$ = 0.39), next in authorizing committees in arranging and producing innovated media and technology in teaching and learning regularly each year ($PNI_{modified}$ = 0.37), schools administrators participate in attending on innovated media usage for making their teachers courage, and always giving them suggestions ($PNI_{modified}$ = 0.35), and in analyzing and improving the innovated media and technology for teaching and learning each year ($PNI_{modified}$ = 0.34).

Needs analysis results of academic administration in supervising and monitoring in teaching and learning management showed that a training provided for teachers to understand about Supervising and Monitoring in Teaching and Learning Management was at the most level ($PNI_{modified}$ = 0.39), then, to continually evaluate and improve the supervising results in teaching and learning each year ($PNI_{modified}$ = 0.32) equal to give teachers opportunities to use PLC Process

for analyzing the internal supervision, and also improve their teaching and learning together (PNI $_{modified}$ = 0.32), respectively.

Needs analysis results of academic administration in supporting and developing school internal quality assurance system were identified as its components and items, and found that bringing the analyzed results of the internal quality assurance to continually develop its quality each year was at the most level (PNI $_{modified}$ = 0.32), and school administrators supervise the performance based on the internal quality assurance process by using PDCA Process was next on down respectively (PNI $_{modified}$ = 0.29).

Needs analysis results of academic administration in research for educational quality development were grouped as its components and items, and found that budget supported by school to do research for developing in teaching and learning management (PNI $_{modified}$ = 0.39) was at the most level. Next, training workshop provided for teachers to improve their potentials for better knowledge in learning and teaching management research regularly each year (PNI $_{modified}$ = 0.37), and providing teachers academic conferences for participating in sharing their studies in school teaching and learning management regularly each year (PNI $_{modified}$ = 0.34) were followed respectively.

5. Discussion

1. The states try to discuss bond on theory concept of small-sized schools under Buriram Primary Educational Service Area Offices was managed at moderate level ($\bar{X}$= 3.17, *S.D.* = 0.26) when its considered in each item, and found that the highest means score did belong to supporting and developing school internal quality assurance system ($\bar{X}$= 3.50, *S.D.* = 0.20). Then, educational measurement and evaluation was at moderate level ($\bar{X}$= 3.38, *S.D.* = 0.23), likewise, curriculum administration ($\bar{X}$= 3.14, *S.D.* = 0.32), and the least was in supporting and developing innovated media and educational technology ($\bar{X}$= 2.85, *S.D.* = 0.18). As the result, school development should be strengthened the internal quality assurance in accordance with Srijaiin's study (2009) on academic administration strategies based on an educational quality assurance system in small multi-grade elementary schools. His study was found that strategy of technological application and development, curriculum development, measurement and evaluation, and teaching and learning management occasionally affected to the external atmosphere of small multi-grade elementary schools as factors in society, technology, and government's policy. Two strategies of technological development, accelerated production and innovated media improvement, were suggested to be used as a network co-teaching. Moreover, computers were sufficiently provided for teachers to promote the technological strategy and local wisdom resources both internal and external schools for variously facilitating in teaching and learning.

2. The results of expectation and needs on academic administration were respectively summarized in research for educational quality development, curriculum development, supervising and monitoring in teaching and learning management, teaching and learning management, supporting and developing innovated media and educational technology, supporting and developing school internal quality assurance system, and in educational measurement and evaluation These were consistent with Sillins et al. (2015) who studied in characteristics and process to identify organizational learning schools as a research project by using the samples of school administrators and teachers in the South Australia and Tasmania. The components of their organizational learning schools identification were presented into seven categories; environment analysis, mutual-objective development, cooperative and collaborative learning atmosphere, creative and risk activation, implicative review and influential being towards school performances, well-done job, and chances in continuously professional development. Questionnaire was used as their research instrument by the surveyed components analysis. Their results were found that the created components differed from the empirical data. The new scale of their components would be made through four models; trust environment and cooperation, initiation and risk activation, mutual obligation, and professional development. As the results showed that the structured models of its identification were similar to the empirical data, developing school academic administration should be done with various methods. It was agreed to Chester's study (1996), who investigated an academic administration of educational administrators in the United States of America. The findings were found that behaviors affecting to the high capable academic administration were in supporting teachers to have better knowledge and ability, for example, promoting to use teaching techniques, participating in a workshop planning, demonstrating to be familiar with teaching methods, training provided for teachers to have more understanding, and books and articles reading motivation about their professions to improve their teaching techniques.

6. Recommendations

1. The findings of this research indicated process factors consisting of administrative research for educational quality and curriculum development, supervising and monitoring in teaching and learning management, supporting and developing innovative media and technology which needed to be improved most. To be an effective academic performance in schools should be developed based on these issues followed:

1.1 to promote and give budget for doing research to develop educational personnel' potentials

1.2 to strengthen in personnel improvement to have better knowledge in doing research for educational quality development

1.3 to get a teamwork to perform one's mission systematically

1.4 to give the local wise man and advisory experts a chance to participate in making a school curriculum

1.5 to give the stakeholders an opportunity to participate in teaching and learning management

1.6 to support personnel to have better understanding in making, choosing, arranging innovative media and technology

1.7 to enhance personnel to beneficially apply the local media

2. This study only investigated the current and desirable conditions, and evaluated needs on academic administration in small-sized schools under Buriram Primary Educational Service Area Offices. Thus, the issue on academic administration guidelines in small-sized schools should be more examined for further studies including its strategies for school administrators to get better development in academic works effectively.

7. Researchers

Chester, N.M. (1996). *An Introduction to School Administration: Selected Reading*. New York: McMillan Company.

Dhammatada, P. (2016). *Academic Management Strategies according to the Concept of the Quality of Gifted Students Enhancement for Sustainable Development*. A Dissertation for the Degree of Doctorial Philosophy in Educational Administration Program. Graduate School. Chulalongkorn University.

Ministry of Education. (2011). *A Guideline of Standard Curriculum Approaches to Learning Design and Authentic Assessment*. Bangkok: Kurusapa Printing Ladphrao.

Paiwithayasiritham, C. (2009). *Needs Assessment of Education Management of Bachelor's Degree in the Faculty of Education, Silpakorn University for Academic Year 2008*. Faculty of Education, Silpakorn University. Bangkok.

Puprasert, K. (2001). *The Academic Administration in Schools*. Bangkok: Tips Publication.

Puprasert, K. (2002). *The Academic Administration in Schools (2nd edition)*. Bangkok: Matee Tips.

Sanguan-nam, C. (2008). *Theory and Practice in Educational Institution (2nd edition)*. Bangkok: Book Point.

Silins, H.C., Mulford, R.M., *inistration Quarterly, 38(5), 613-642*.

Srijaiin, A. (2009). *Academic Administration Strategies Based on an Educational Quality Assurance System in Small Multi-grade Elementary Schools*. A Dissertation for the Degree of Doctorial Philosophy in Educational Administration Program. Graduate School. Chulalongkorn University.

Wongwanich, S. (2015). *Needs Assessment Research*. Bangkok: Chulalongkorn University Press.

A Synthesis Study of the School Academic Administration Components under the Primary Educational Service Area Offices in Buriram Province

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Abstract

The purposes of this research were to study the school academic administration components under the Primary Educational Service Area Office in Buriram Province according to the Office of the Basic Education Commission, Ministry of Education, to be untallied as a study tool of the condition of schools' academic administration under the Primary Educational Service Area Offices in Buriram Province. The target group used in the research consisted of 16 departments/person. The research instruments were frequency distribution synthesis table research method. This research was conducted by studying relevant documents and research on the meaning, significance, scope of the school's academic administration before being synthesized by using the frequency distribution synthesis tables by which only components with a frequency of 8 or more were selected. The research results revealed that the academic administration was conducted into 7 Aspects as follows. 1) Measurement, evaluation and transfer of credit and accreditation 2) Development of school curriculum 3) Development of learning process 4) educational supervision 5) Research for educational quality development 6) Teaching and learning in educational institutions 7) development of internal quality assurance system and educational standards.

Keywords : Synthesis Study, Academic administration, School Academic Work

1. Introduction

The world current affairs is changing rapidly and constantly evolving in many areas both in the economy, social and cultural aspects life, especially in technology that plays a vital role in changing the way of life of the world's population in every way. Besides, it enables people all over the world to connectedly communicate with one another through online networking that allows them to fetch and follow the information around the world within a few minutes. The rapid change in many of the above areas has affected many countries in many ways. For instance,

Thailand is impacted by such changes, especially in the economic and social aspects. This has led the government to take measures to accommodate these changes and to prepare for other changes that will arise later, especially for economic development policy which is designed as a model of the economic structure of Thailand, so called 'Thailand 4.0', a new model of economic drive of Thailand that aims to transform the economy into an innovative economy (Value - Based Economy) to overcome the trap of working-class countries. When the economic context changes, it is causing entrepreneurs, especially those in the manufacturing sector only because they have to adjust industrial businesses to growing in a new economic context in a strong and sustainable manner. It must be complemented by creative science, innovation, science, technology, research and development ('Thailand 4.0' model, propel Thailand through innovation, 2017: 1)

To develop the country under the model "Thailand 4.0, it can be achieved through the "Pracharat" which is the driving force to be focused on the participation of the private sectors, i.e. banking sector, public sector, education sector, including universities and research institutes to cooperatively brainstorm through projects, MoU, activities or various researches by the administration of the various groups so called "Pracharat", including Group 4 regarding the Basic Education and Leadership Development (Pracharat School) as well as upgrading professional quality (Thailand 4.0, a new economic model. 2018: 1) Apparently, the development of that country needs to get collaboration from all sectors categorized into the fourth group as for education itself is another factor that is very important in preparing for the development of the country. (Office of the Secretary-General of the Education Council. 2009: 13; Cited in Yothin Sitthiprasert. 2560: 1)

Therefore, education reform has been introduced in order to provide educational development for Thai people to become perfect, good, competent and happy people and to achieve the goals with reinforcement and efficiency. There was a need for decentralization by allowing all sectors to participate which is consistent with the spirit of the constitution of the Kingdom of Thailand, 2007 and in accordance with the principles of the National Education Act B.E. 2542 (1999) and its amendments (Vol. 2) B.E. 2545 (1999), which provides a structure system, and process with Thai education provided for unity policy and diverse in practice decentralized to the educational areas and schools. Additionally, the Ministry of Education Administration Regulation Act, B.E. 2546 (2003), amended B.E. 2553 (2010), Section 35, legitimates that schools are to provide for basic education with juristic person status as a legal entity in order to make schools strong, flexible and able to manage their education independently (Office of Basic Education Development Policy and Plan. 2013: 39)

To decentralize administrative powers to schools that are juristic persons, the mission scope of the work can be divided into 4 areas that are important and different according to the nature of the mission of the work merely because academic work is the most important considerably

the heart of education, including school administrators, teachers and all stakeholders with knowledge and understanding about the work. It is vital that they take part in planning, establishing guidelines for effective evaluation and improvement systematically and continuously. Academic administration; therefore, plays the highest role in success or failure of educational administration as far as the quality is concerned (Office of Basic Education Development Policy and Plan. 2013: 39)

However, as a result, it was found that the problems of academic administration in Thailand were still very high in regard to insufficient documentation for the preparation of the curriculum for lack of knowledgeable and skilled personnel in preparation for educational school curriculum as well as the basic learning subjects, and additional learning subjects. Besides teachers do not understand learner-centered teaching style. Moreover, because of the teachers' workload, they haven't enough time to write their lesson plans (Kulthida Lanukul. 2011: 22. Based on the study results of the basic educational examination of Grade 6 students, Academic Year 2019 summarized by the National Institute of Educational Testing (TOT), the results currently show that the average scores of the examination results of Grade 6 students at the national level were lower than the national average standard - in other words, they failed in all learning subjects, including schools in the northeastern region with lower average scores compared to the national average. In this regard, Buriram Primary Education Service Area Office has reported a lower average than national standard of all the examination results in all subjects. This clearly identified problems in the management of education in terms of academic administration. (National Institute of Educational Testing. 2019: 3)

According to the aforementioned study management results, it reveals the problem of educational administration which is the main task and responsibility of the school – in other words, it is a failure in academic administration as far as the primary mission of the school is concerned. Apparently, in order to manage the academic work to be successful, those who perform important functions in academic performance in schools like school vice-principle in academic affairs, teachers who are performing their supervisory duties as the head of academic administration must have the knowledge, abilities, and skills to effectively manage and carry out the academic work within the school (The Secretariat of the Teachers Council of Thailand. 2006: 19) in line with the principles of academic administration to be successfully determined that there will be academic planning as follows: 1) Academic management planning 2) Teaching and learning management 3) Educational supervision (Office of the National Education Commission. 2008: 34)

As a result, it was concluded that many aspects of management were related to the academic administration competencies of executives. For instance, the United Kingdom takes into account the role of the head teacher with the possession of high managerial skills, long term-experience, and genuine performance responsible for the public. Similarly, as for Australia, New

Zealand, and Singapore their managements are emphasized on creativity and innovation to create the excellence for students believing that management is an important point that causes changes to the policy of educational reform (Roong Sukhaphirom. 2002). Because of these problems, many researchers have been interested in conducting their research studies on the competency and academic administration such as Pianpan Kijpanitcharoen (2009: 129-135), who conducted a study on the study of academic administration competency of school administrators under Nong Khaem District Office. Meanwhile, Thiraporn Ayewat (2009: 510-533) conducted a research on the best practices in academic administration of small basic schools. Kanok Sirimee (2014: 53), conducted the study on the relationship between Executive Characteristics and Academic Management Competency of Secondary School Administrators in Nakhon Si Thammarat Kanapatpermphun Province. Kanyapat Permpoon (2017: 415), conducted a study on academic administration competencies of school administrators at Chulabhornnarajavidyalaya Southern School. Therdkiat Khanpimul (2017: 145-160), conducted a study on dvelopment of academic management model by using teamwork process in high school based in Secondary Education Area Office 24. PiyananSae Chiu (2017: 167-187), conducted a study on the development of academic management curriculum, child development center under local administrative organization in the Northeast. YuttanaKuakool (2017: 396-425) studied the development of academic administration model of private Islamic schools, Southern border provinces to build learners towards a complete humanity.

However, in accordance with various research studies which educators have been interested in studying on performance and academic administration but none has yet studied about the Development of Academic Management Model of Schools Under the Primary Educational Service Area Office Buriram Province. Therefore, the researcher is interested in conducting this following research.

2. Research objectives

The research aims to develop school academic administration competencies under the Primary Educational Service Area Offices in Buriram Province with the following objectives.

1. To study the components of school academic administration under the Primary Educational Service Area Office in Buriram Province, under the Office of the Basic Education Commission Ministry of Education.

2. To utilize a tool for studying the condition of school academic administration under the Primary Educational Service Area Office Buriram Province, under the Office of the Basic Education Commission Ministry of Education.

3. Research method

Data source

The study is a research analysis and related theory (Documentary Research) with the development of the school academic administration competencies. The researcher has studied of 16 relevant research papers and theories as follows:

1. Miller (1965)
2. Faber and Sherron (1970)
3. Sergiovanni and the others (1980)
4. TheThe Office of the National Primary Education Commission (1998)
5. KamolPuprasert (2001)
6. Owen (2001)
7. The Ministry of Education (2007)
8. The Office of Academic and Educational Standards (2007)
9. Jantranee Sa-nguan-nam(2008)
10. The Office of Educational Reform (2008)
11. ParadeeAnannawee (2009)
12. The Office of the Basic Education Commission (2009)
13. PreeyapornWonganutrohd(2010)
14. The National Education Act (2010)
15. The Department of Local Administration Promotion (2010)
16. The Office of Basic Education Policy and Planning (2013)

Data analysis

Data was analyzed by content analysis method then categorize the important issues according to the academic scope. After that the data were brought together by using the frequency distribution synthesis table. Finally, the data were selected only the available aspects Frequency value from 8 or more.

4. Findings

According to the studying of the scope of academic work and synthesizing the content with the frequency distribution synthetic table, the result shows that there are 7 important components of the school academic administration as following:

1. Measurement, evaluation and transfer of credit and accreditation

It is the measurement, evaluation, transfer academic performance and approved grades. There must be a measure and evaluation of schools according to the school curriculum and national policy. Educational transcripts are made according to the measurement and evaluation regulations of the educational institution and organized learning assessments during the

class including providing remedial arrangements in the event that the students fail the assessment criteria. In addition, measurement and evaluation tools must be developed. The schools must be organizing an information system for measurement, evaluation and transferstudy results to use in reference, review and use in the development of teaching and learning.

2. Development of the school curriculum

It is to create their own school curriculum by organizing research and development curriculum in use to keep pace with the change of economic and social and to use as a model for other schools. The curriculum must be focused on developing learners to become a complete human being, body, mind, intelligence, knowledge, virtue, and can live happily with others. The school curriculum must be provided a complete set of subjects according to the core curriculum of basic education in line with the Ministry of Education, including adding content of the course to be higher and more in depth. The specific target groups are education in religion, music, dance, sports, vocational education, education that promotesexcellence, disabled and alternative education. The contents of the curriculum that corresponds to the problem condition, needs of learners, parents, communities, society and aims to be universal must be added in the curriculum. The schools can prepare curriculum to reorganize learning, teaching and other processes to best suit the abilities of learners.

3. Development of the learning process

The content and activities are arranged according to the students' interests and aptitudes. It takes into account individual differences, practice thinking process skills, situation facing, situation managementand the application of knowledge to prevent and solve problems. The activities must be focused on leading learners to learn from real experiences and practice to think, do, love to read and create a constant curiosity thencombining knowledge in various fields, including cultivating virtues,good values and desirable characteristics in all subjects, encouraging teachers to organize the atmosphere, environment, instructional medias and facilitate the learners to learn and able to use research to be a part of the learning process. In this regard, teachers and learners may learn simultaneously from teaching materials in various types of science sources by adhering to the principles of learning to take place at anytime, anywhere, in collaboration with parents and people in every communityto jointly develop learners according to their potentials.

4. Educational supervision

It is to raise awareness of teachers and stakeholders to understand the internal supervision process that it is a collaborative process concerning the logic. Supervision is the development and improvement of working methods of individuals to have quality. Supervision is also part of the administrative process in order to give everyone the confidence that they have to perform correctly in progress, and to benefit the learners and the teachers by thoroughly and continuously adhering to the principles of internal supervision in education institutions in terms of

quality in a system and process that can be linked to the educational supervision system of the educational service area office.

5. Research to improve educational quality

It is to define policies and guidelines for the use of research as part of the learning process and working process of learners, teachers and educator through the process of developing teachers and learners in order to gain knowledge about learning reform by means of research processes. It is important to learn more of the complexity which allows the students to practice critical thinking management, reasoning for problem solving, combining interdisciplinary knowledge, and learning about the problems that interest them. In addition, educational quality must be developed through the research process by collecting and disseminating research results for learning and improving educational quality, including encouraging teachers to apply the research results to develop learning and improve the educational quality of schools.

6. The management of teaching and learning in schools

It is the preparation of a learning plan for every group of learning subjects and organizing all learning and teaching groups of all learning subjects in every class according to the learning reform guideline. As for the learners' focus, it is important to develop morality and apply knowledge according to the philosophy of sufficiency economy via the use of teaching materials and learning resources; organizing the library development activities in various workshops to facilitate learning as well as promoting research and development of teaching and learning in all groups of learning subjects and to also promote the development of excellence of learners and assist students with disabilities and talents.

7. Development of internal quality assurance system and educational standards

This is to set additional educational standards for schools in accordance with national educational standards based on basic education standards of the Office of the Education Area and the needs of the community management and information systems are organized through an organized management structure that is conducive to a teaching job development and establishing an internal quality assurance system plus organized information systems into categories. The information is to be complete, easy to use, convenient, fast, and always up to date. There is an education plan that focuses on educational quality (Strategic Plan) along with the school development plan which has been implemented in the implementation of projects and activities. Schools have to build a strong, participatory and Deming Cycle, known as the PDCA cycle, which can monitor and review educational quality by being constantly keen on encouraging teachers, parents and the community to get involved in assessing the quality of education within schools according to the specified standards to support external quality assessment in line with an annual education quality report (SAR) which is prepared for a summary of the annual report with

the approval of the basic education institution committee for the purpose of publicizing to the concerned agency.

5. Discussion

The results of the research revealed that the school's academic administration has seven components:

1. Evaluation and the transfer of credit and accreditation is to determine the criteria and methods for measuring results to be clear, transparent, and universal. It can be used to operate conveniently, quickly and reliably in line with The Office of the National Primary Education Commission (1998); Kamol Phuprasert (2001; Ministry of Education (2007); Chandrani Sanguanam (2008); Educational Reform Office (2008); Paradee Anannavee (2009); Office of the Basic Education Commission (2009); Priyaporn Wonganutarot (2010); National Education Act (2010); Department of Local Administration (2010); Office of Basic Education Policy and Planning (2013); Faber and Sherron (1970); Sergiovanni and others (1980) and Owen (2001)

2. Development of the curriculum of schools is the preparation to improve and develop the curriculum to be up to date, reliable performance consistent with the needs of all sectors, in line with The Office of the National Primary Education Commission (1998) Kamol Phuprasert (2001); Ministry of Education (2007); Academic and Educational Standards (2007); Chandrani Sanguanam (2008); Reform Office Education (2008); Bharadee Anannavee(2009); Office of the Basic Education Commission (2009), National Education Act (2010); Department of Local Administration (2010); Office of Basic Education Policy and Planning (2013); Faber and Sherron (1970) and Sergiovanni and others (1980).

3. Development of the learning process is the content and activities arranged according to the students' interests and aptitudes by taking into account the differences between individuals, consistent in line with the Ministry of Education (2007); the Office of Academic Affairs and Education Standards (2007); Chandrani Sanguannam(2008); the Educational Reform Office (2008); Bharadi Anannavee (2009); the Office of the Education Commission Basic (2009); National Education Act (2010); Department of Local Administration (2010); Office of Basic Education Policy and Planning (2013); Miller (1965); Faber and Sherron (1970) and Owen. (2001).

4. Educational supervision is the development and improvement of working methods for each person to have quality in line with The Office of the National Primary Education Commission (1998); Kamol Phuprasert (2001); Ministry of Education (2007); Office of Academic Affairs and Standards (2007); Chandrani Sanguannam (2008); Bharadee Anantnavee (2009); Office of the Basic Education Commission (2009); National Education Act (2010); Department of

Local Administration (2010); Office of Basic Education Policy and Planning (2013) and Owen (2001).

5. Research to improve educational quality is a policy and guideline by means of research as part of the learning process and working process of the learners in accordance with Kamol Phuprasert (2001); Ministry of Education (2007); Office of Academic and Standards (2007); Office of Reform Education (2008); Bharadee Anan Navee (2009); Office of the Basic Education Commission (2009); the National Education Act (2010); the Department of Local Administration (2010); and the Office of Basic Education Policy and Planning (2013).

6. The management of teaching and learning in schools is the preparation of learning plans for all groups of all learning subjects in all learning and teaching groups, in every class according to the learning reform guideline focusing on the learners as a priority, in compliance with The Office of the National Primary Education Commission (1998); Kamol Phuprasert (2001); Ministry of Education (2007); ChandraniSanguannam (2008); Bharadi Anannavee (2009); Priyaporn. Wong Anutarot (2010); Office of Basic Education Policy and Planning (2013); and Miller (1965).

7. Development of internal quality assurance system and educational standards is to set educational standards of schools in accordance with national educational standards for basic education standards of The Office of the Education Area and the needs of the community, according to The Office of the National Primary Education Commission (1998); Kamol Phuprasert (2001); Ministry of Education (2007); ChandraniSanguannam (2008); Office of Educational Reform (200; Paradee Ananavee (2009); Office of the Basic Education Commission (2009); and the Office of Basic Education Policy and Planning (2013).

6. Conclusion

According to the studies of documents and related research, data can be synthesized with frequency distribution tables in the areas that educators and education agencies agree on as a critical component. As for academic administration to be successful, resulting in efficiency and effectiveness, it consists of 7 components: evaluation, evaluation and academic transfer of credit accreditation, a development of curriculum of schools, development of learning processes, educational supervision to improve educational research quality.

Meanwhile, teaching and learning in schools and the development of internal quality assurance systems and educational standards will be utilized in the development of academic administration competencies in schools consisting of 4 phases: Phase 1: Current State Study, Problems and Concepts of Competency Model for Academic Administration of Schools under the Primary Education Area Office Buriram Province; Phase 2: Building a Competency Model for Academic Administration of Schools Under the Primary Educational Service Area Office Buriram Province; Phase 3: An Experiment for Academic Management Competency Model of Schools Under the

Primary Educational Service Area Office Buriram Province; and Phase 4: Assessment of Correctness, Suitability, Feasibility And the usefulness of the academic administration competency model of schools under the Primary Education Service Area Office Buriram Province.

7. Reference

Kanoksiri M. (2014). Relationship between executive characteristics and administrative Performance Academic of high school administrators in Nakhon Si Thammarat Province. *JournalSouthern technology*. 7, 53-60.

Kannaphat Permpoon. (2017). *Academic Administration Competencies of School Administrators Chulabhorn the Royal College of Southern RegionInternational* No. 9. 20-21 July 2018. Hat Yai University. 415-430.

Therdkiat Khanphimul. (2017). *Development of an academic management model using the Work as a team in high school Secondary Education Service Area Office 24*. Ph.D. Thesis (Educational Administration). Mahasarakham: MahaSarakhamRajabhat University

Theeraporn Ayewat. (2009). *Best Practice in Academic Management of Higher Education Institutions Small basics*. Bangkok: Silpakorn University.

Piyanan Saejew. (2017). *Development of Academic Management Curriculum*, Child Development Center, affiliated withLocal government organizations in the Northeast. Ph.D. Thesis (Educational Administration). Graduate School: Buriram Rajabhat University.

Pianphan Kitpanichcharoen(2009). *Study the academic administration competencies of the Executives Schools under the NongKhaem district office*. Master of Education Thesis Educational Administration Srinakharinwirot University.

YuttanaKuakool. (2017). Development of Academic Management Model of Private Religious SchoolsIslam in the southern border provinces to build learners towards a complete humanity. *Al – journal Hikmah Graduate School Fatani University* 5 (8) F.1.

Yothin Sitthiprasert. (2017). *Management strategies to develop consistent learning management With the 21st century of the school that provides lower secondary education Chiang Rai Primary Educational Service Area Office, Area 3*. Doctor of Education Educational administration. Chiang Rai: Graduate School Chiang Rai Rajabhat University.

Office of the National Education Commission (2008). *Competencies in the Thai civil service System*. Bangkok: Office of the National Education Commission.

The Secretariat of the Teachers Council of Thailand (2006). *Teachers' Professional Standards Criteria of Teachers Council B.E. 2537*.Bangkok: Teachers Council.

Office of the Education Council Secretariat (2017). *National Education Plan 2017 - 2036*. Bangkok: Chili Sweet Co., Ltd.

National Educational Testing Bureau. (2019). *Summary of the national level educational test Elementary level,* grade 6, academic year 2019.online.

Integrating SDG 4 and 17: An International Ph.D. Program Model

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Abstract

For the past decade, I have presented papers and delivered keynotes speeches at international conferences in Southeast Asia and North America. Lately, my presentations have focused on the 17 Sustainability Development Goals, and as a professor with a background in multiculturalism and international business, I have a natural tendency to gravitate toward goal #4, Education, and goal # 17, global partnerships. After narrowing my focus to these two goals, I then consulted with professors about the possibility of developing an international Ph.D. program. I was especially interested in a value-added model that would incorporate goals 4 and 17, and offer a doctoral education experience with an emphasis on cultural respect, global understanding, cost effectiveness, and international sustainability that would flourish; even during a pandemic such as Covid-19. Based on these objectives, my presentation will include a framework for an international model that will promote the sustainability goals of both education and transnational partnerships.

1. Program Format

The program example I will be discussing, is a Ph.D. in Leadership and Policy with a primary focus on Global Leadership that would highlight International Sustainability Development Goals. However, dissertation topics would not be limited to only SDGs, as students would be encouraged to incorporate their personal and work experiences within a global context. The philosophical orientation of the program would be constructivist in nature as it is student centered and research based, with authentic assessments such as digital portfolios, a global cohort student body, and a hybrid, (in-person and online) delivery system. All courses will be conducted in English and the latest APA edition will serve as the required format for citations and references.

2. Curriculum

Leadership and Policy Core (30 Credit Hours=10 courses)

Below, I have provided seven examples of required content courses (21 credits) in the Leadership and Policy Study Core of the Doctor of Philosophy Program. The students, in consultation with their advisor, would be allowed to select three additional graduate courses designated as

Electives (nine credit hours) in their concentration within the field of leadership and policy. The following are examples of possible required Leadership and Policy Core Courses:

IDS 710 - Organizational Theory, Development and Strategic Change
IDS 720 - Process, Politics and Evaluation of Public and Social Policy
IDS 730 - Organizational Assessment and Accountability
IDS 740 - Leadership in a Global Society
IDS 750 - Diversity in Organizations
IDS 760 - Ethical Practices in Leadership and Policy
IDS 770 - Economic and Financial Policy Leadership In A Global Society
3 Electives from the partner or host universities course offerings

Research Core (30 Credit Hours= 10 courses)

There are six examples of required research courses (18 credits) and three required dissertation courses (9 credits) in the Research Study Core of the Doctor of Philosophy Program. The students, in consultation with their advisors must also select one additional graduate-level research course related to their concentration topic (three credit hours) as a research study core elective. The following are the nine examples of required Research Study Core Courses:

IDS 805 - Research and Statistics
IDS 807 - Geographical Information Systems and Research
IDS 810 - Research Seminar
IDS 820 - Advanced Quantitative Research
IDS 830 - Advanced Qualitative Research
IDS 840 - Doctoral Seminar
IDS 850 - Dissertation
IDS 852 - Dissertation
IDS 855 - Dissertation
1 Elective from the partner or host universities course offerings (Research based core subject)

3. Proposed Dissertation Requirements

Given the serious scholarly nature of dissertations associated with this degree, the following minimum criteria must be met:

- References – Dissertations must meet the minimum requirements of 100 individual academic sources including books and articles.

- Length – Dissertations must be a minimum of 100 pages in length excluding ancillary materials (e.g., title page, abstract, dedications, appendices and reference pages).
- Dissertations must conform to all requirements outlined in the latest edition of the APA Manual as amended by the University Librarian.

As an example, there will be a total of 60 credit hours (20 courses) in the International Ph.D. Model. If there are 6 host (member) universities in the model, who recruit 4 students each for the program, there will be a total of 24 students enrolled in each cohort. If the students are required to enroll in 3 courses with the 5 non-host universities, that would account for a total of 15 courses, and 5 courses remaining to be taken at their host university. A minimum of 2 from the 3 dissertation courses should be taken at the host university, in addition to 2 or 3 additional course offerings from the host institution to make a total of 5 courses.

4. Digital Personal Program Portfolio

At the onset of their doctoral studies, all students in the International Ph.D. Program in Leadership and Policy would be required to create a digital personal program portfolio that showcases their personal and professional accomplishments. Students may choose various technological media, the format, and content of their digital portfolio. The purposes of this digital portfolio requirement are to facilitate doctoral student awareness and appreciation of the interests and values of cohort members, and to provide a process framework to record significant student and/or cohort experiences, references, and documents. Students would be expected to update their digital portfolios throughout the Ph.D. program, and their personal portfolio would be evaluated at various assessment points in the program.

The digital personal program portfolio outlines a student's learning journey in much the same way that a curriculum map describes a teacher's teaching journey. Accordingly, the collection of information in a digital portfolio can do two things: it can show that a student has met standards and show who the student is as a learner" (Niguidula, 2009, p.154). Thus, the digital personal program portfolio is a multimedia collection of student work that provides evidence of a student's personal and professional background, skills, disposition, and knowledge.

This constructivist requirement emphasizes the significance of doctoral students as active learners who link their new knowledge with prior knowledge and apply their expanded understandings to authentic situations (Foote, Vermette & Battaglia, 2001). The digital portfolio assignment for doctoral students is consistent with the curriculum planning and instructional improvement concepts articulated by Krug (1957) over fifty years ago and referenced in subsequent educational development projects since that time (Polka, 2010).

5. Program Model

The proposed model will be cohort based, involving four students from each of six international universities. The universities would include two founding school partners; Buriram Rajabhat University, Buriram, Thailand, and Niagara University, Lewiston, New York, USA. The program convenor for Thailand's university program would be Dr Ak, and Dr. Michael Smith would be in charge of the U.S. university program.

6. Program Partners

Potential International Partners include universities from the following countries: Thailand and the USA as founding partners, and then four additional schools selected from India, Taiwan, Japan, China, Myanmar, Vietnam, Korea, Spain, Canada, and the Philippines.

7. Challenges

Over the past few years, I have discussed, the idea of an online international Ph.D. program with attendees at BRU conferences and discovered that their universities could not offer a Ph.D. program that was 100% online. However, after further discussion, I was pleased to discover that they were not averse to considering a collaborative online hybrid doctorate degree that combined in-person class time with asynchronous and synchronous online conferencing. As the program would be conducted in English exclusively and adhere to current APA format and standards, non-native English speakers must be fluent in English, and all dissertations will require IRB approval before the research can be conducted.

8. Benefits and Opportunities

1. Cost effective for students (tuition will be paid to host universities and the average cost will be much lower than any Ph.D. program at a North American university
2. Shared institutional resources and increased diverse faculty expertise
3. Opportunity for student and faculty exchanges
4. Increased global understanding, cultural respect, and collaboration among international students and faculty
5. Increased diversity in student body
6. Increased diversity in faculty
7. Increased variety of course offerings conducted in English
8. Greater opportunity to collaborate and share innovative global research ideas
9. Larger network for university partners to co-convene and attend international conferences
10. The degree will be granted from the host university and all partner universities will be listed as collaborative partner institutions

11. The host countries will have additional research readily available to them to assist them in their creative efforts to better implement their SDGs
12. Inter-country travel will be facilitated by new friendships created within the university collaborative
13. Non-native English speakers will have the opportunity to work with native English speaking professors to hone their English language skills (reading, writing, speaking)
14. Student diversity is guaranteed with over 80% of the students enrolling from abroad.
15. Instructional expertise and diversity is ensured with the host institutions representing six different countries throughout the world.
16. Students will have access to the complete IRB review process, and therefore their research submissions will meet the strict requirements of North American, European, and numerous top-ranked international conferences and journals.
17. Students will work with colleagues who have the skills to accurately translate other languages into English as necessary.
18. Life-long friendships, alumni associations, and networking channels will be established for cohort group members to assist with international careers and promotions.
19. A hybrid course program of in-class and online courses will better prepare graduates for online life and technology-based employment opportunities in the future.
20. International Sustainability Development will gain a strong research base to prepare tomorrow's innovative leaders for future pandemic and sustainability challenges, and **the world's citizens will be in a better place!**

Solutions

In addition to the many benefits listed above, the International Ph.D. program is a viable model for universities to advance international Ph.D. programs during pandemics such as Covid19, and flourish when the world returns to a new and improved "state of normalcy." The planet as a whole will also benefit from new, informed international leaders, and the solutions that will come about as a result of the research involving international SDGs and solutions.

In closing, thank you for attending this presentation, and if anyone is interested in learning more about the possibilities of an International Ph.D. program, please contact me at msmith@niagara.edu

Multimodality and EFL Teaching

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Abstract

This article proposes an integration of multimodality in language teaching. It starts with a brief discussion on multimodality and the social semiotic approach to analysis of multimodal texts. The article subsequently explores the connection of multimodality and language teaching, and reviews recent studies on integration of multimodality in language teaching. Accordingly, it foregrounds benefits of addressing multimodality in educational contexts and practical suggestions for teaching multimodality. Based on the reviewed theoretical frameworks, a detailed proposal is outlined for adapting a unit from a language-dominated textbook to integrate multimodality in an EFL writing class.

Keywords : multimodality, social semiotic approach, image-language relation

The Effectiveness of Community-Based Social Marketing on Promoting Self-Protective Behaviors from PM2.5 among Thai Youths

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Abstract

This study aimed to evaluate the effectiveness of a community-based social marketing (CBSM) for promoting self-protective behaviors from PM2.5 among Thai youths. As a result, a community-based social marketing campaign to promote self-protective behaviors from PM2.5 was created and piloted with a small class of Thai university students in Bangkok with purposive sampling. This project was evaluated using a one-group pretest-posttest design for checking the effectiveness. Paired-sample t-test was employed in this evaluation. After intervention, it found that a community-based social marketing was effective to promote self-protective behaviors from PM2.5. The post-intervention mean scores were higher than the pre-intervention mean scores significantly in all five effectiveness indicators: attitude towards behavior, subjective norm, perceived behavioral control, intention to perform behavior, and actual behavior. These results were recognized as valuable findings in the field of social marketing in Thailand. They were strongly beneficial for social marketing practitioners, health communication campaign planners, and any health organizations related to promote self-protective behaviors from PM2.5 among Thai youths.

Keywords : Community-Based Social Marketing, Self-Protective Behaviors, PM2.5, Thai Youths

1. Introduction

Nowadays, air pollution with small particulate matter (PM2.5) has become a major public health concern in Thailand. This was because PM2.5 could cause the negative impacts on human health in several conditions (Phupong, 2019). These negative impacts on human health could include respiratory illness, heart and blood vessel diseases affecting cardiovascular system, brain malfunction, lung cancer, and even death (Cho & Kim, 2019; Sahanavin, Tantrakarnapa, & Prueksasit, 2016). Long term exposure to PM2.5 might be a significant risk factor of hypertension and could also deteriorate the reproductive system. PM2.5 dusts were particulate matters with diameter averaging less than 2.5 microns that were suspended in the air (Qian et al., 2016; Xiong et al., 2018). The sources of PM2.5 were mostly from the diesel engine combustion, the burning

of biomass both in open and enclosed areas, dusts from combining of pollutant gases, and the industrial activities in factories and electrical generator plants (Phupong, 2019). Therefore, it was urgently necessary for Thailand to recognize and find the ways to solve this problem sustainably. Countermeasures to handle with this problem by the government sectors could be implemented in many ways such as controlling the vehicles emitting black smoke on the roads, preventing people from lighting a fire outdoors and indoors, asking people to reduce their use of private vehicles, spraying water in the areas with high traffic, collecting environment tax or fees, replacing all types of public transport vehicles with electric vehicles, and even giving away N95 masks to the public (Chulalongkorn University, 2020; Phupong, 2019). Apart from those ways in the government level, learning how to prevent and protect ourselves from PM2.5 was also needed. Hence, promoting self-protective behaviors from PM2.5 among Thai population, especially in youths, should be proceeded.

When literatures related to behavior change was reviewed, the author found an interesting approach called Community-Based Social Marketing (CBSM). This approach was recognized as an effectively innovative approach to behavior change (Celik, 2016; Cole & Fieselman, 2013; Kennedy, 2010). It has received a greater attention among social marketing academicians and practitioners across the world. Unlike conventional social marketing approach, Community-Based Social Marketing (CBSM) approach was applying of two social sciences: psychology and social marketing. This approach would use various tools of behavior change such as commitment, social norm, social diffusion, prompt, convenience, incentives, and communication in behavior change (Tabanico, 2007). Community-Based Social Marketing (CBSM) was originated in 1996 by Dr. Dough Mckenzie-Mohr, an environmental psychologist teaching at Department of Psychology, St. Thomas University in Canada. He wrote a book named "*Promoting a sustainable future: An introduction to Community-Based Social Marketing*" to make readers understand the concept about Community-Based Social Marketing (CBSM) in promoting sustainable behavior. After that, he wrote many papers to introduce this concept in various international academic journals (McKenzie-Mohr, 2000a; 2000b; 2008). And then, this concept was widespread in several countries, especially in Canada, Australia, and The United States of America and it was followed by several research papers from social marketing academicians and practitioners who successfully used this concept in promoting behaviors in their community (Celik, 2016; Cole & Fieselman, 2013; Kennedy, 2010; Vantamay, 2015; 2017; 2019).

The interesting point of this approach was designing a strategy that utilizing psychological tools to alter the behavior. These tools were as follows: 1) commitment, 2) social norm, 3) social diffusion, 4) prompt, 5) convenience, 6) incentives, and 7) communication (McKenzie-Mohr, 1996; 2000a; 2000b; 2011). It was note that these tools will be more effective when used together. Commitment involves trying to make people had engagement with a desired

behavior consistently. Therefore, commitment could be information on billboard, poster, pledge card, certificate, or even extra activities infused into classroom. Social norm involved using influences of reference group to build behavior change. The reference group can be a normative reference group; such as parents, friends, family members, colleagues, couples, teachers, seniors, or even alumni in educational institutions, and a comparative reference group; such as actor, actress, singer, or other celebrities. Social diffusion involved speeding the adoption of new behaviors by using various media. They could be either personal media or ad hoc media such as stickers, wrist bands, umbrella, T-shirt, activities, manuals, or even booklets. Prompt was an aid that reminded people to carry out an action they might forget. Prompts could be many types such as online media, mobile telephone, signs with interesting slogan, billboard, cutout, and poster. Convenience involved trying to make it easy to perform behaviors. This tool could also include place of implementing a CBSM campaign program to reach target group. Incentives involved providing the motivation for individuals to perform behavior more effectively. Incentives were useful when motivation to perform behaviors was low or people couldn't show activity as effectively as they could. For example, if social marketers wanted to change sustainable behaviors among students, scores from classroom activity could be a powerful incentive effectively. Lastly, communication involved process of conveying the message through various media to target audiences for fostering behavior change. Social marketers could use media both online and offline for the highest communication impacts (McKenzie-Mohr, 1996; 2000a; 2000b; 2011; Vantamay, 2019).

Therefore, in this study, the author applied CBSM approach to promote self-protective behaviors from PM2.5 among Thai university students. For evaluating the effectiveness, 5 variables from theory of planned behavior by Ajzen (1988) (attitude towards the behavior, subjective norm, perceived behavioral control, intention, and actual behavior) were used as the effectiveness indicators in this study because these indicators were suggested from past studies as appropriate indicators for evaluating the effectiveness of social marketing campaign (Vantamay, 2015; 2017; 2019; McKenzie-Mohr, 2000a; 2000b; 2008; Tabanico, 2007; Liu et al., 2018).

2. Research Objective

To evaluate the effectiveness of Community-Based Social Marketing on promoting self-protective behaviors from PM2.5 among Thai youths

3. Research Methodology

To evaluate the effectiveness of a community-based social marketing (CBSM) for promoting self-protective behaviors from PM2.5 among Thai youths, an experimental research method in the form of a one-group pretest-posttest design was used in this study, as shown in

Figure 1. The community-based social marketing (CBSM) campaign to promote self-protective behaviors from PM2.5 was created and then piloted in a 15-week period with a small class of 61 university students in the Department of Communication Arts and Information Science, Faculty of Humanities, Kasetsart University (KU) in Bangkok. Purposive sampling was used by selecting a class that the author was a lecturer in this class because the author could give CBSM interventions to all students throughout a 15-week experimental period. A self-administered questionnaires both pre-intervention (O1) and post-intervention (O2) were used in this study to record the effectiveness evaluation. The effectiveness indicators were based on the theory of planned behavior (TPB). They consisted of five variables: 1) the attitude towards the behavior; 2) the subjective norm; 3) the perceived behavioral control; 4) the intention; and 5) the actual behavior.

Figure 1: a one-group pretest-posttest design

Group	Pre Intervention	Intervention	Post Intervention
One Group	O1	X	O2

Note: O = Observed Scores
X = Treatment (community-based social marketing)

For operational definition and measurement, 1) the attitude towards the behavior was an individual's feeling towards self-protective behaviors from PM2.5. It was measured using the 5-point Likert scale with 5 items. 2) The subjective norms were the beliefs that his or her reference groups (friends, family members, and celebrity) thought the individual ought to perform and how significant their notions were to his or her self-protective behaviors from PM2.5. It was measured using the 5-point Likert scale with 9 items. 3) Perceived behavioral control was the perceived self-efficacy to perform self-protective behaviors from PM2.5. It was measured using the 5-point Likert scale with 6 items. 4) The intention is the perceived level of intent to show self-protective behaviors from PM2.5. It was measured using the 5-point Likert scale with 15 items. Lastly, 5) the actual behavior was defined as the actions that youths perform to protect themselves from PM2.5. It was measured using yes/no questions with 15 items. Therefore, scores of self-protective behaviors from PM2.5 range from 0 to 15 points. Most of the questions in these five variables were adapted from studies that were undertaken previously (Cho & Kim, 2019; Sahanavin, Tantrakarnapa, & Prueksasit, 2016; Qian et al., 2016; Xiong et al., 2018; Liu et al., 2018). The author checked the validity of all questions by using the Item Objective Congruence (IOC) Index. The results found that IOC Index of all questions had more than 0.5. Scores within this range (more than 0.5) were considered as an adequate indication of validity (Cottrell & McKenzie, 2005). Furthermore, the author also checked the reliability analysis of the research instruments using Cronbach's alpha to evaluate the internal consistency of all variables. The results showed that their alpha levels ranged

from 0.81 to 0.88 (the attitude toward the behavior = 0.87; the subjective norm = 0.88; the perceived behavioral control = 0.85; the intention = 0.85; the actual behavior = 0.81). Scores within this range (more than 0.7) were considered as an adequate indication of internal consistency (Cottrell & McKenzie, 2005). After intervention, the author hypothesized that the mean scores of these five variables in post-intervention (O2) should be significantly higher than the mean scores of these five variables in pre-intervention (O1). Therefore, paired-sample *t*-test at the .05 statistically significant level was employed after intervention.

In this campaign, the author designed seven tools of behavior change including commitment, social norms, social diffusion, prompt, convenience, incentives, and communication. It had been already noted that these tools will be more effective when they were used in combination with one another. Tools of behavior change were created in accordance with the CBSM approach and were briefly summarized in Table 1. They were infused in a regular class of students.

Table 1: Tools of Behavior Change in this study

Strategies	Tools of Behavior Change in this study
1) Commitment	1.1) Final Project
2) Social Norms	2.1) Personal Media such as a lecturer and classmates
3) Social Diffusion	3.1) Personal Media such as a lecturer and classmates 3.2) Training Activity in Class 3.3) Online Media such as Facebook, LINE, E-poster
4) Prompt	4.1) Online Media such as Facebook, LINE, E-poster
5) Convenience	5.1) Training Activity in Class
6) Incentives	6.1) Scores from the Final Project
7) Communication	7.1) Video Clip 7.2) Training Activity in Class

4. Research Results

In this part, the research findings were presented in two parts: 4.1) characteristics of the samples and 4.2) evaluating the effectiveness of a community-based social marketing (CBSM) campaign for promoting self-protective behaviors from PM2.5 among university students by comparing the mean scores of five effectiveness indicators between pre-intervention (O1) and post-intervention (O2).

4.1) Characteristics of the samples

The samples consisted of 61 university students enrolling in the class of Principles of Advertising at Department of Communication Arts and Information Science, Faculty of Humanities, Kasetsart University in Second Semester, 2019. Most subjects were female (75.41%) and studying in the second year (93.44%). The average age was 19.05 years, (S.D. = 0.637).

4.2) Evaluating the effectiveness of a community-based social marketing (CBSM) campaign for promoting self-protective behaviors from PM2.5

In evaluating the effectiveness of a community-based social marketing (CBSM) campaign in this study, paired-sample *t*-test at the .05 statistically significant level was computed in the analysis. This statistics was often suggested in the experimental research form of one-group pretest-posttest design for checking the effectiveness of the treatment (Cottrell & McKenzie, 2005; Hair, Anderson, Tatham, & Black, 1992). The findings showed that there were differences among the five effectiveness indicators between pretest (O1) and posttest (O2) at the .05 statistically significant level, as shown in Table 2.

Table 2: Checking the differences of 5 effectiveness indicators between pre intervention (O1) and post-intervention (O2)

Indicators	Observation	Mean	S.D.	t	Sig.
1) ATT	O1	3.937	.578	-11.214	.000**
	O2	4.678	.415		
2) SN	O1	3.601	.860	-5.317	.000**
	O2	4.164	.759		
3) PBC	O1	3.481	.963	-3.626	.000**
	O2	3.748	.684		
4) INT	O1	3.548	.629	-6.168	.000**
	O2	4.263	.729		
5) AB	O1	8.754	2.285	-10.709	.000**
	O2	9.705	2.201		

** $p < .01$

Note: ATT = attitude toward self-protective behaviors from PM2.5
SN = subjective norm
PBC = perceived behavioral control
INT = intention to perform self-protective behaviors from PM2.5
AB = actual behavior (self-protective behaviors from PM2.5)

5. Discussions

This study aimed to evaluate a community-based social marketing (CBSM) campaign for promoting self-protective behaviors from PM2.5 amongst Thai youths. This campaign was evaluated using in the form of one-group pretest-posttest design. Paired-sample t-test was computed in the results analysis to check differences among the five effectiveness indicators between pre-intervention (O1) and post-intervention (O2) at the .05 statistically significant level. After intervention, the analysis found that a community-based social marketing (CBSM) campaign for promoting self-protective behaviors from PM2.5 was effective. The mean scores of post intervention were higher than the mean scores of pre intervention significantly in all of the five effectiveness indicators; the attitude towards behavior, the subjective norm, the perceived behavioral control, the intention to perform behavior, and the actual behavior. These results supported the effectiveness of the concept of a community-based social marketing (CBSM), as proposed by Doug Mckenzie-Mohr (McKenzie-Mohr, Nemiroff, Beers, & Desmarais, 1995; McKenzie-Mohr & Smith, 1999; McKenzie-Mohr, 1996, 2000a, 2000b, 2008, 2011). Besides, these results were also consistent with the results of several previous studies (Celik, 2016; Cole & Fieselman, 2013; Kennedy, 2010; McKenzie-Mohr, Nemiroff, Beers, & Desmarais, 1995; Tabanico, 2007; Zhang, Li, Gao, Wang, & Yao, 2016; Vantamay, 2019) all of which had applied a community-based social marketing (CBSM) approach in behavior changes successfully. As all the research projects were specifically located in a university or a campus setting, this approach was rather supported and utilized evidently. For example, in Cole and Fieselman's study, they designed CBSM campaign to alter sustainable behavior in paper reduction, commingled recycling, and purchasing environmentally friendly products with faculty and staff teams at the Pacific University Oregon in the USA (Cole & Fieselman, 2013). The CBSM strategies used in their study were prompts, communication, incentives, commitment, convenience, norms, and social diffusion. The name of the campaign was entitled "Greening Pacific!" After intervention, an increase in campus-wide purchasing of recycled content paper and environmentally friendly products was found. Post-survey results found that 74 percent of the staff and faculty had changed their behavior because of the CBSM campaign (Cole & Fieselman, 2013).

Moreover, the results of this study were also consistent with another interesting study conducted by Vantamay (2019). It also supported CBSM approach in behavior change. In his study, CBSM campaign, called "3S Project", to promote sustainable consumption behavior among youths was developed and piloted with a group of university students. The various tools of behavior change were provided such as commitments, social norms, incentives, prompts, social diffusion, and communication, and convenience. The project was evaluated using quasi-experimental research in the form of a non-equivalent control group. Multivariate analysis of variance (MANOVA) was employed. After intervention, it found that the "3S Project" was effective. The

mean scores of the experimental group were higher than the mean scores of the control group significantly in all five effectiveness indicators, including the attitude towards behavior, the subjective norm, the perceived behavioral control, the intention, and sustainable consumption behavior. From the results of this study and other past studies mentioned above, the author strongly believed that CBSM was significantly effective. The strength of CBSM was a combination of knowledge in psychology and social marketing to alter behavior change by using various tools, including commitment, social norms, social diffusion, prompt, convenience, incentives, and communication. Although it originated in sustainable behavior change, the result of this study supported that it could be also applied to health behavior change.

6. Conclusion

This study aimed to evaluate the effectiveness of a community-based social marketing (CBSM) for promoting self-protective behaviors from PM2.5 among Thai youths. As a result, a community-based social marketing plan to promote self-protective behaviors from PM2.5 was created and piloted with a small class of Thai university students in Bangkok with purposive sampling. This project was evaluated using a one-group pretest-posttest design for checking the effectiveness. Paired-sample t-test was employed in this evaluation. After intervention, it found that a community-based social marketing was effective to promote self-protective behaviors from PM2.5. The post-intervention mean scores were higher than the pre-intervention mean scores significantly in all five effectiveness indicators: attitude towards behavior, subjective norm, perceived behavioral control, intention to perform behavior, and actual behavior. These results were recognized as valuable findings in the field of social marketing in Thailand. They were strongly beneficial for social marketing practitioners, health communication campaign planners, and any health organizations related to promote self-protective behaviors from PM2.5 among Thai youths.

7. Recommendations

There are recommendations from this research to note. First, this pilot study supported a community-based social marketing (CBSM) approach in behavior change. Therefore, social marketing practitioners, health promotion planners, or organizations related to promote any social behaviors could take this approach to promote or to alter desirable behaviors. Second, educational institutions including schools and universities should be the place for promoting health or any social behaviors among youths. Tools of behavior change including commitment, social norms, social diffusion, prompt, convenience, incentives, and communication could be infused in a regular class of students. Therefore, a university or a campus setting was appropriate for a social marketing campaign to youths. Third, a community-based social marketing (CBSM) approach should be trained and disseminated to social marketing practitioners, health promotion planners, or even

teachers in a university or a school. However, this study had at least two limitations that need to be recognized. Firstly, this study focused on the pilot study, only one group participating in the campaign. Therefore, it may need to apply this approach into more university student groups to expand the results. Another limitation to note was the self-reported questionnaire in evaluating the effectiveness of the campaign. This limitation might make the respondents over-report their behaviors, possibly because of any potential shame or guilt. Despite these limitations, the strength of this study was extending the existing body of knowledge of social marketing more broadly, especially within Thailand.

For future research directions, the author suggested three possible paths to follow. First, a community-based social marketing campaign to promote self-protective behaviors from PM2.5 should be also piloted with other groups of population vulnerable to PM 2.5 such as aging people and pregnant women. Second, a longitudinal study to examine a retention effect would have much more benefits for social marketing practitioners in planning to promote self-protective behaviors from PM2.5 among youths. Third, a community-based social marketing campaign to promote other social behaviors should be more needed to expand and increase knowledge in the field of social marketing in Thailand.

8. References

Ajzen, I. (1988).*Attitudes, Personality, and Behavior*. Chicago, IL: Dorsey Press.

Celik, S. (2016). A new method of social marketing: Community based social marketing. *J. Hum. Sci., 13*, 3057-3072.

Cho, M. E., & Kim, M. J. (2019). Residents Perception and Response Behaviors to Particulate Matter – A case study in Seoul, Korea. *Applied Science, 9*, 1-16.

Chulalongkorn University. (2020). Stay Safe in the PM2.5. Retrieved from https://www.chula.ac.th/wp-content/uploads/2020/01/e-Book_Stay-Safe-in-the-PM2.5-EN.pdf

Cole, E.J.; Fieselman, L. (2013). A community-based social marketing campaign at Pacific University Oregon: Recycling, paper reduction, and environmentally preferable purchasing. *International Journal of Sustainability in Higher Education, 14*, 176-195.

Cottrell, R. R. & McKenzie, J. F. (2005).*Health Promotion and Education Research Methods*.Sudbury, MA: Jones Bartlett.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W.C.(1992). *Multivariate Data Analysis*. New York, NY: McGraw-Hill.

Kennedy, A. L.(2010). Using Community-Based Social Marketing Techniques to Enhance Environmental Regulation. *Sustainability, 2*, 1138-1160.

Liu, S. et al. (2018). The theory of planned behavior to predict protective behavioral intentions against PM2.5 in parents of young children from urban and rural Beijing, China. *International Journal of Environmental Research and Public Health, 15*, 1-17.

McKenzie-Mohr, D., Nemiroff, L. S., Beers, L., &Desmarais, S. (1995). Determinants of responsible environmental behavior. *Journal of Social Issues, 51*, 139–156.

McKenzie-Mohr, D. (1996). *Promoting a sustainable future: An introduction to community-based social marketing*; Ottawa, Ontario, Canada: National Round Table on the Environment and the Economy.

McKenzie-Mohr, D. & Smith, W. (1999).*Fostering sustainable behavior: An introduction to community-based social marketing* (2nd ed.). Gabriola Island, BC: New Society.

McKenzie-Mohr, D. (2000a). Promoting sustainable behavior: An Introduction to community-based social marketing, *Journal of Social Issues, 56,* 543–554.

McKenzie-Mohr, D. (2000b). Fostering sustainable behavior through community-based social marketing. *American Psychologist, 55,* 531–537.

McKenzie-Mohr, D. (2008). Fostering sustainable behavior: Beyond brochures. *International Journal of Sustainability Communication, 3,* 108–118.

McKenzie-Mohr, D. (2011). *Fostering sustainable behavior: An introduction to community-based social marketing* (3rd ed.). Gabriola Island, BC: New Society.

Phupong, V. (2019). Particulate matter 2.5 and obstetric complications. *Thai Journal of Obstetrics and Gynaecology, 27*(1), 2-5.

Qian, X. et al. (2016). Knowledge and perceptions of air pollution in Ningbo, China. *BMC Public Health, 16*, 1-7.

Sahanavin, N., Tantrakarnapa, K., & Prueksasit, T. (2016). Ambient PM10 and PM2.5 Concentrations at different high traffic-related street configurations in Bangkok, Thailand. *Southeast Asian Journal of Tropical Medicine and Public Health, 47*(3), 528-535.

Tabanico, J. (2007). People aspect of recycling programs: Community-based social marketing. *BioCycle, August*, 41-44.

Vantamay, N. (2015). Using the DELPHI TECHNIQUE to Develop Effectiveness Indicators for Social Marketing Communication to Reduce Health-risk Behaviors among Youth. *The Southeast Asian Journal of Tropical Medicine and Public Health, 46*(5), 949-957.

Vantamay, N. (2017). Validating the Effectiveness Indicators of Social Marketing Communication Campaigns for Reducing Health-risk Behaviors among Youth in Thailand. *Jurnal Komunikasi Malaysian Journal of Communication, 33*(1), 127-146.

Vantamay, N. (2019). "3S Project": A Community-Based Social Marketing Campaign for Promoting Sustainable Consumption Behavior among Youth. *Jurnal Komunikasi Malaysian Journal of Communication, 35*(4), 32-49.

Xiong, L. et al. (2018). Risk reduction behaviors regarding PM2.5 exposure among outdoor exercisers in the Nanjing metropolitan area, China. *International Journal of Environmental Research and Public Health, 15*, 1-13.

Zhang, S., Li, L., Gao, W., Wang, Y., & Yao, X. (2016). Interventions to reduce individual exposure of elderly individuals and children to haze: a review. *Journal of Thoracic Disease, 8*(1), E62-E68.

The Internal Quality Assurance Administration of Extension Schools under Roi-Et Primary Educational Service Area Offices : Components Synthesis

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Abstract

This research aims to synthesize components of quality assurance administration within schools, expanding opportunities under the Roi Et Primary Educational Service Area Office by studying the principles, concepts and theories related to the internal quality assurance management components of schools. Pieces of information were collected by compiling documents, academic textbooks, and various related research works both at home and abroad. Data analysis is used to analyze content and summarize the essence, classified and organized according to the document analysis form synthesized as the following components: 1. Designation of education standards of educational institutions 2. Education development plans for educational institutions that focus on quality according to educational standards of educational institutions 3. Management and information management system. 4. The implementation of the educational management development plan of educational institutions 5. The organization of education quality monitoring and inspection 6. Arrangement of internal quality assessment according to the educational standards of the educational institutions 7. An annual report preperation for an internal quality assessment report. 8. Provision of continuous educational quality development.

Keywords : Administration, Internal Quality Assurance, Educational Opportunity Expansion Schools

1. Introduction

The complete transformation of the Thai population structure towards aging society at the end of the 12th National Economic and Social Development Plan, where the proportion of the elderly will increase to 19.8 percent of the total population. As a result, labor shortage in the condition that the productivity of Thai labor is still low. Due to labor quality problems, when considering the quality of people, it is found that there are still problems at different ages and affect each other throughout life. Since developmental disabilities in early childhood educational results of school-age children are relatively low, the development of knowledge and skills of workers does not match the job market. Along with the flow of foreign cultures entering Thailand

through the digital age society, many Thais are unable to properly screen and get adjusted to cultures affecting the crisis of values, attitudes and behaviors in life development in the next phase that must give an air of importance to the foundation of human development to be complete. Starting from early childhood groups, it is needed to develop having a good physical and mental health with brain learning skills and life skills to grow with good quality (Office of the National Economic and Social Development Board, 2016: 65)

School administration is a very important part. This is because there must be cooperated from all competent parties to bring about changes in teaching and learning, including coordination, mobilizing, allocaing resources efficiently as well as leading the organization to the desired goals (Antika Busarakul et al. 2015: 1342) School management is also the process and responsibilities of the school administrators to lead the educational institution to the success according to strategic plan in which management must use both science and knowledge applied according to the teaching of Phra Dharmakosajarn, quoting that management is to run a business successfully in cooeration with others, whether it be an enterprise for business benefits, government affairs or family affairs, are under the same principle. Therefore, the management is concerned with all businesses by conducting business with others, having both external and internal elements (PrayoonThomjitto. 2010: 12). In addition, education administration is an ongoing systematic and operational management. There are people and agencies responsible for the implementation of the pattern, procedures, rules and procedures. There are also resources to support along with a direct and reliable evaluation of education results (Pruchya Wesarach 2011: 3). Therefore, educational administration is necessary to have a mechanism in the quality assurance of education.

Educational quality assurance is a systematic activity or operation of the main mission in accordance with a predetermined plan with quality control, quality inspection and quality assessment until causing confidence in the quality, standards of the key indicator systems and production processes. Meanwhile, output and results of education contains internal quality assurance and external quality assurance. The quality assurance is a key mechanism that can drive the continual improvement of the quality of education with the systematic work quality standards of those who have graduated with quality as expected (Panpopchangploy.2013: 14-15).

Internal quality assurance is the evaluation and monitoring of the educational quality and standards of an educational institution from within by the personnel of the educational institution itself or by an agency that has the duty to supervise that educational institution (National Education Act, B.E. 2542 (1999), Amendments (Vol. 2), 2002 and (Vol. 3), 2010. The implementation of the internal quality assurance of the educational institution involves all personnel, both inside and outside the school with the external quality assessment involved Therefore, educational institutions and stakeholders, especially the agency under The Educational Service

Area Office, must have roles, duties and missions undertaken to improve the quality of education to effectively be driven to keep up with the changes in social conditions in the future. Education personnel should have important roles, duties and tasks in the development of the internal quality assurance system of educational institutions. (Educational Testing Bureau. 2010: 31 - 47)

The Office of the National Primary Education Commission has expanded educational opportunities by introducing Grade 1 to the needs of learners who wish to continue from Grade 6 by providing special opportunities for rural education focused on students who do not have access to further education in lower secondary education in the remote area. Teaching and learning is focused on basic skills training for occupation and when students graduate, they can pursue a career as well as using local wisdom sources to benefit teaching and learning in order that they are able to adapt themselves to social conditions as a good citizen. (Kanchanaburi Primary Educational Service Area Office, District 4. 2014: 1 - 6) found that the teachers who teach in the educational opportunity expansion schools are not majored in their teaching subjects, especially in elementary schools. Besides, teachers were not knowledgeabout about using modern media, equipment, teaching technology that made it impossible to transfer knowledge through media and equipment to learners. This caused the students to be for lack of the enthusiasm for their studies, and made the students' knowledge base different, making the teacher's teaching activities difficult. In addition, teachers are for lack experience in creating teaching materials.

Due to the background and importance of the aforementioned problems, the researcher is interested in studying the synthesis of components of the quality assurance administration within the educational opportunity expansion schools under the Roiet Primary Educational Service Area Office. This will be one of the most important mechanisms that can drive the development of educational quality to continue to operate in a systematic manner with quality standards and to also bring the research results to improving and developing the quality assurance of education for more efficiency used as information for educational development planning of Roiet Primary Educational Service Area Office. This will bring benefits to the administration of educational institutions for quality learners.

2. Purpose of the research

To synthesize internal quality assurance management components for the educational opportunity expansion schools under the supervison of Roiet Primary Educational Service Area Offices.

3. Research method

Thie research is to synthesize components of quality assurance management within the educational opportunity expansion schools under the supervison of Roiet Primary Educational

Service Area Offices. The researcher conducts a study of principles, concepts and theories related to internal quality assurance management components as following details:

4. Resources

This study is a synthesis of research and documentary research related to the quality assurance management within the school in which the researcher studied from the document of 22 academic texts and related researches from both domestic and international papers published in 2007-2018 as follows:

ThiphawanLekwattana (2007)
SomchaiChanyaphaiboon (2012)
LamudRodkwan (2012)
MaitreeBoontot (2011)
SittichaiCharoenpiwatpong (2009)
PhuwadonChulsukon (2012)
ArpornRajsingho (2012)
AmnuayMeesri (2012)
Panopchangploy (2013)
ChanthonPhetchabun, SomchaiWongnaya, and CharoenwitSompongtham (2013)
NatthaphonTancharoensup et al. (2013)
KetsarinThatsi et al. (2014)
WeerasakLansisirithiasa and SunyaKenaphum (2014)
WatcharasakSongpan (2015)
KrongboonPromsri, SubanMooktarakosa and SasiradaPhaengthai (2016)
SiriphanSunthorn (2016)
Thammasit Pet Sri-Ngam (2017)
ChaweewanInsugul (2017)
SupakPuangkachon, ChonkornWorain and AnuchaKornphuang (2018)
Arif Sari. (2016)
Francis K.Waweru.(2017)
Jang Wan Ko. (2017)

5. Research results

This research is to synthesize components of quality assurance management within the educational opportunity expansion schools under the supervison of Roiet Primary Educational Service Area Offices are as following approaches: In accordance with the Ministerial Regulation on the System, Criteria, and Methods for Educational Quality Assurance, B.E. 2553 (2010), the

criteria and guidelines for quality assurance within educational establishments have been made based on the participation of communities and related agencies both in the government and private sectors as follows:

1) Education standards setting of educational institutions.

2) Education development plans for educational institutions that focus on quality according to educational standards of educational institutions.

3) Management and information systems

4) The implementation of the educational management development plan of the educational institution.

5) The organization of education quality monitoring and inspection.

6) The internal quality assessment in accordance with the educational standards of the educational institution.

7) The organization of an annual report based on internal quality assessment report.

8) Provision of continuous educational quality development.

1. Education standards setting of educational institutions

Educational standards are requirements regarding desirable quality characteristics of an educational institution, and to also to be used as a benchmark for promoting, supervising, reviewing, evaluating and ensuring educational quality with the goal of being the most important learner base quality.

The educational standards of educational institutions are therefore set in line with national educational standards, uniqueness of the school in Early Childhood Education Standards, and basic education arising from the participation of all parties. Therefore, the operation of the educational institution is in the presence of early childhood education standards related to basic educational standards of educational institutes that are in line with the national educational standards as well as a request for approval to the basic education institution committee. Therefore, the implementation of supervision, monitoring and evaluation of the educational administration of the supervisors is to examine the school educational standards that are consistent with the early childhood education standards; basic education standards that has been promulgated ror all concerned parties to be informed. Therefore, the operation of supervision, monitoring and evaluation of educational management has the following guidelines.

1. There is a standard of early childhood education in line with national educational standards.

2. There are educational standards for the basic education level of the school in line with the national educational standards.

3. Have an identity consistent with the philosophy, vision, school motto.

4. Have a unique school

5. It has been approved by the basic education committee.

6. All stakeholders are aware of and participate in the work of achieving the school's image and its QA standards.

2. Education development plans for educational institutions focused on the quality according to educational standards of educational institutions.

A plan is a document showing a project / activity; a method that has been thought through in advance with all stakeholders' joint consulting to consider it carefully together as a guide to any action in line with the goals, vision, and mission of the organization as the following 2 types of educational institutions plans:

1) Educational management development plan for educational institutions, which is a plan with a development period that focuses on quality according to the educational standards of an educational institution, it may be a 3-year plan, a 4-year plan or a 5-year plan, depending on the context of the educational institution. This type of plan reflects the strategic planning process that will be used to develop or improve in order to achieve a goal to meet the quality standards designated.

2) The annual action plan is a plan that is different from the educational development plan of the educational institution for the annual operation, with the action plan for each year. There should be a clear focus on developing learner quality. There are operational activities according to the time frame, venue, budget, responsible person, calendar activities, monitoring operations, operational progress with improvements to make the operation more efficient as well as the project reports for information and information for improvement and development in the future years.

3. Management and information systems.

The organization of the school administrative and information system has the following operations.

3.1 Organization of educational administration system, organization of educational institution administration structure in accordance with the work division structure according to the decentralization of education administration and managemen.t This includes academic administration, budget management, personnel management, and general administration. The management structure should have a clear responsible person performed.

3.2 The organization of information systems is important to planning for the quality of learners. Therefore, school information must be operated in a systematic manner which includes information of individual learners that are current every semester. Actually, teachers' teaching management information consists of methods / patterns / innovation in the teachers' teaching management, use of learning resources. Meanwhile, the school management information involves

project management, community building, educational resources. In this regard, the organization of information systems should have systematically stored information, either in the form of a file or using a computer to assist.

4. The implementation of the educational management development plan of the educational institution.

The educational management development plan and the annual action plan are the key directions in school management towards quality. School administrators have academic leadership along with management through quality and moral systems to organize facilities and support various resources for efficient and effective implementation of the plan supervised by the work of teachers and stakeholders to encourage the implementation of the plan focused on and operate to improve work processes continuously by focussing on the participation of all sectors. In other words, school administrators are the people who are essential to lead the way in performing the programs / projects / activities set out for each academic year as well as promoting, supporting, supervising, following up and providing assistance to teachers to achieve their objectives. Therefore, the guidelines for supervision, monitoring and evaluation of educational management are as follows.

1. There is a calendar to implement the work plans / projects / activities for each academic school year.

2. A person responsible for the implementation of the project / activity

3. There is a report meeting minutes to discuss the implementation of the plan continuously.

4. There is a periodic report on follow-up and supervision of the implementation of the plan.

5. The organization of education quality monitoring and inspection

The monitoring of educational quality is to verify the progress of the implementation of the educational quality development plan, including organizing, following up, ensuring the quality of education, the school collects data and information. Continuing the implementation of plans / projects in order to see the performance trend as improving or declining, what improvements should be made? By monitoring the quality of education Schools should do this every year. The implementation of the educational quality examination is a cooperation of all stakeholders and puts learner quality first and connects the school's educational standards in other areas; including, the school's identity. Therefore, guidelines for supervision, monitoring and evaluation of educational management in education quality monitoring are as follows.

1. There is a calendar to monitor the implementation of the plan / project./school supervision

2. There is a person responsible according to the calendar clearly.

3. There is a project assessment report according to the annual action plan.

4. There is a report on the quality of school education every academic year.

5. There is a meeting of relevant persons to apply results to improve work plans / projects / activities / teaching / courses.

6. The results from the educational quality monitoring are used as information for the development of the following years.

6. The internal quality assessment in accordance with the educational standards of the educational institution.

The internal quality assessment is considered as part of the administration in order to know the educational management capability of the school whether it meets the educational goals or standards of the educational institution or not. It reflects the success in 3 areas:

1) The quality of the learners according to the learning standards that are linked from the curriculum's learning standards to the school's educational standards by identifying standardized learners and non-standard learners whose results are assessed. Will this indicate the state of education that the standards are met or not. And what needs to be done to improve and develop even better?

2) Teachers' quality according to teaching standards is an assessment of the teaching quality of teachers whether they are in accordance with the learning management standard or not, and what things need improving and to be improved?

3) Educational quality in education administration is an assessment of the quality of education administration and management according to educational standards through a variety of methods such as observation, interviews, empirical examination related to the learners' standards and teachers' teaching.

7. The organization Make an annual report that is an internal quality assessment report.

Preparing an annual report is a common practice that an educational institution has to produce after each year of education has passed. This is to present to the school board, affiliated agencies and related agencies as well as public disclosure. The annual report that is the internal quality assessment report of the school will be used as a database and evidence confirming the development of the school for supporting the external quality assessment. The annual report consists of 4 parts: 1) basic information, 2) educational management development plan of educational institutions, 3) results of educational management development of educational institutions, and 4) summary of the development and implementation results affecting the supervision, monitoring and evaluation of educational management. Preparing the annual report as an internal quality assessment report has the following guidelines:

1. To have an annual report for the early childhood education level.

2. To have an annual report for the basic education level.

3. To have an annual report approved by the basic education institution committee.

4. It is proposed to the agency.

5. It is disclosed to the public.

8. Provision of continuous educational quality development.

Continuing the development of educational quality is the sustainability of school quality improvement based on information from self-assessment and preparation of annual reports by adopting development approach to improve the implementation of programs / projects / activities / operations / teaching to continually develop learners to meet the standard of education by improving the quality of education is a normal workload that everyone has to be responsible for together with the results provided that the operation has progressed continuously that may have an effect on the quality of the students in the whole school. Therefore, the supervision, monitoring and evaluation of educational management for continuous educational quality development has the following guidelines.

1. There is information on guidelines for upgrading the school's educational quality and standards from the annual report.

2. There is a meeting to communicate with stakeholders every semester in the use of information to develop the quality of learners for the new academic year.

3. Having work plans / projects / activities according to information.

6. Conclusion and discussion

Based on the study of the document of academic textbooks and related researches, it has been found that the components of the internal quality assurance of each academic institution were similar and different in detail. The researcher was able to synthesize some items only. There are 8 components of internal quality assurance of the educational institutions as follows:

1. Education standards setting of educational institutions.

Educational standards are requirements regarding desirable quality characteristics of an educational institution used as a benchmark for promoting, supervising, reviewing, evaluating and ensuring educational quality. The goal is for the most important learner quality in line with Thipawan Lekwattana (2007); Somchai Chanyaphaiboon (2012); Lamud Rodkwan (2012); Maitri Bunthot (2011); Sitthichai Charoenpiwatpong (2009); Phuwadon Chulsukon. (2012); Arporn Rachsingho (2012 ; Amnuay Meesri (2012); Phanpchangploy (2013).

2. Education development plans for educational institutions focused on quality according to educational standards of educational institutions.

It is a plan that is different from the educational management development plan of the educational institutes to operate annually. The action plan for each climbing year should have a

clear focus on quality development of learners, with operational activities according to time frame, venue, budget, responsible person, calendar activities, operational monitoring, and progress of operations with improvements to make the operation more efficient, as well as to report the project for information and information for improvement and development in the followng years in line with Chanthon Phetchabun, Somchai Wongnaya and Charoenwit Sompongtham (2013); Natthaphon Tancharoensup et al. (2013); Ketsarin Thatsi et al. (2014); Virasak LansiSirithiasa and Sunya Kanaphom (2014).

3. Management and information systems

It is an educational institution administration structure that is in line with the work division structure according to the decentralization of education administration and management, academic administration, budget management, personnel management, and general administration. The management structure should have a clear responsible person and information system organization. An information system is important to the planning for quality development of learners, in line with Virasak Lansee, Sunya Kenapoom Contract (2014); Watcharasak Songpan (2015); Krong Boonpromsri, Suban Muktarakosa and Sasirada Phangthai (2016); Siriphan Sunthorn (2016); Thammasit Petsrigam (2017); Chaweewan Inchukul (2017); Supak Puangkachon, Chanikorn Worin and Anucha Kornphuang (2018)

4. The implementation of the educational management development plan of the educational institution

The educational management development plan and the annual action plan are the key directions in school management towards quality. School administrators have academic leadership along with management through quality and moral systems to organize facilities: supporting resources for efficient and effective implementation of the plan, supervising, monitor and supervise the work of teachers and related persons to encourage and promote the work according to the plan, in accordance with Arporn Rajsingho (2012); Amnuay Meesri (2012); Panpachangploy (2013), Chan Phetchabun, SomchaiWongnaya and Charoenwit Sompongtham (2013); Natthaphon Tancharoensup et al. (2013); Ketsarin Thatsi et al. (2014)

5. The organization of education quality monitoring.

This is to check the progress of the implementation of the educational quality development plan, including the organization of work to monitor and inspect the educational quality, the school has collected information implemented of plans / projects in order to see the performance trend as improving or declining, what improvements should be made? By monitoring school education quality that should be done every year in accordance with Watcharasak Songpan (2015); Krong Boonpromsri, Suban Mooktarakosa and Sasirada Pangthai (2016); Siriphan Sunthorn (2016); Tham. Sittipet Sri-Ngam (2017); Chawewan Inchukul (2017)

6. The internal quality assessment in accordance with the educational standards of the educational institution.

Internal quality assessment is considered as part of the management to know the educational management capability of the school whether it meets the educational goals or standards of the educational institution or not, reflecting the success in 3 areas as follows: 1) The quality of the learners according to the learning standards linked from the currirulum of learning standards to the school educational standards 2) Teachers' quality according to the teaching standards 3) Educational quality in education administration in accordance with the Maitree Boontot (2011); Sitthichai Charoenpiwatpong (2009); Phuwadon Chulsukon (2012); Arporn Rachsingho (2012); Amnuay Meesri (2012); Phanopchangploy (2013); Chanthon Phetchabun, Somchai Wongnaya and Charoenwit Sompongtham (2013) Natthaphon Tancharoensap et al. (2013)

7. The organization Make an annual report that is an internal quality assessment report.

Preparing an annual report is a common practice that an educational institution has to produce after each year of education has passed. This is to present to the school board, affiliated agencies and related agencies as well as public disclosure. The annual report that is considered the internal quality assessment report of the school will be used as a database and evidence confirming the development of the school for supporting the external quality assessment. In accordance with Phuwadon Chulsukon (2012); Arporn Rajsingho (2012); Amnuay Meesri (2012); Panaphachangploy (2013); Chantha Petchabun, Somchai Wongnaya and Charoenwit Sompongtham (2013); Natthaphon Tancharoensap et al. (2013)

8. Provision of continuous educational quality development.

It is the sustainability of school quality improvement based on information from self-assessment and preparation of the annual report by adopting development approaches to improve the implementation of plans / projects / activities / teaching to continuously develop learners to meet educational standards with improvement of the quality of education, which is a normal task for everyone to be responsible for the results that would ccur together. Operation has also progressed continuously and ffecting the quality of learners within the whole school in accordance with Wacharasak Songpan (2015); Krong Boonpromsri, Suban Mooktarakosa and Sasirada Paengthai (2016); Siriphan Sunthorn (2016); Thammasit Petchsringam (2017); Chaweewan Insugul (2017)

7. References

Amnuay Meesri. (2012). *Components Relating to Quality Assurance Effectiveness within Basic Educational Institutions under the Office of Sisaket Primary Educational Service Area.* Doctor of Education Thesis Department of Educational Administration Graduate schoolUbonRatchathaniRajabhat University, UbonRatchathani.

Antika Busarakul et al. (2015, January - April). *"Administration of educational institutions according to the educational reform approach in the second decade of educational institutions.Under the Office of Chiang Rai Primary Educational Service Area* 1."Veridian E - Journal, Slipakorn University, Thai version of the humanities branch Social sciences and arts. 8 (1): 1340 - 1349.

Arif, S., Altay F. & Ali K.(2016, February). "Quality Assurance Issues in Higher Education Sectors of Developing Countries; Case of Northern Cyprus." *Procedia - Social and Behavioral Sciences.*229 : 326 – 334

Francis K. W., Robert B. M. & Elijah M. K. (2017, April). "Influence of school based quality assurance practices on academic performance of pupils in public primary schools in Subukia sub County, Kenya." *International Journal of Innovation and Applied Studies.* 20(1) : 251 – 266.

Government Gazette. (23 February 2018). *Ministerial Regulations for Educational Quality Assurance, B.E. 2561 (2018),* Volume 135, Part 11 Kor, Page 3.

Jang W. Ko. (2017). *"Quality Assurance System in Korean Higher Education: Development and Challenges."* In The Rise of Quality Assurance in Asian Higher Education. Cambridge :Chandos Publishing

Kanchanaburi Primary Educational Service Area Office 4.(2014). *Annual Action Plan 2014.*Kanchanaburi: Policy and Planning Group.

Ketsarin Thatsi et al. (2014). *A study of quality assurance operations within schools under the Office of Kalasin Primary Educational Service Area 3.*Journal of PraeWaKalasin Academic. KalasinRajabhat University Year 1 No. 1 January - April 2014.

Lamud Rodkwan. (2012). *Development of Quality Assurance Model in Basic Educational Institutions under the Office of the Upper Southern Education Service Area.*Doctor of Philosophy Thesis in Educational Administration.Graduate school Ramkhamhaeng University, Bangkok.

Maitree Boontod. (2011). *Development of a management model for internal quality assurance that affects the quality of schools under Of the Office of the Basic Education* Commission Doctor of Education Thesis Department of Educational Administration Graduate school UbonRatchathaniRajabhat University, UbonRatchathani.

Ministry of Education.(2010). *Ministerial Regulation on the System, Criteria and Methods for Educational Quality Assurance, 2010*. Government Gazette Volume 127, Part 23, Date 2 April 2010, Bangkok.

Natthaphon Tancharoensap (2013). *Development of Quality Assurance System Checklist for Schools Basic education level*. Educational Research Journal Faculty of Education SWU Vol 7, No 2 (2013): Year 7, Issue 2, October 2012 - March.

Office of Educational Testing (2010).*Guidelines for the development of the internal quality control system of schools According to the ministerial regulations on the system Criteria and Methods for Educational Quality Assurance 2010*. Bangkok: Agricultural Cooperative Federation of Thailand.

Office of the National Economic and Social Development Board. (2016). *12th National Economic and Social Development Plan (2017 - 2021).* Bangkok: Office of the National Economic and Social Development Board. Office of the Prime Minister.

Panop Chaengploy. (2013). *A study of the quality assurance operations within educational institutions under Office of Chanthaburi Primary Educational Service Area.*Master's Thesis (Educational Administration).Chanthaburi: RambhaibarniRajabhat University.

PruchyaWesarach. (2011). *Principles of educational management*. Bangkok: Pappim.

Somchai Chanyaphaibun. (2012). *Quality Assurance Development Model in Educational Institutions Under the Office of the Secondary Educational Service Area 29.*Doctor of Education Thesis in Educational Administration.Graduate school UbonRatchathaniRajabhat University, UbonRatchathani.

Thammasit Petsri-Ngam (2017). *Strategies to Promote Participatory Management in Internal Quality Assurance of Rajabhat University Personnel*. Journal OfNakhonratchasima College Vol.11 No. 2 May - August

Thiphawan Nukwattana. (2007). *Development of Quality Assurance Model in Basic Education Institutes by Competency Comparison Method.*Doctor of Education Thesis Department of Research and Educational Evaluation Naresuan University.

Watcharasak Songpan. (2015). *Development of a School Management Model to Achieve Internal Quality Assurance Results of Secondary Schools in the Southern Andaman Region.* Doctor of Education Thesis Educational Administration Hat Yai University.

Characteristics of Primary Professional Teachers in Buriram Province

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Abstract

This article purpose to study the current and desirable conditions of primary school professional teachers in buriram province. The sample group was teacher under the office of buriram primary educational service area 1-4, 400 sample size from the tables of crazy and morgan. The instrument used for data collection was a questionnaire with alpha . 94. The statistics used for data analysis consisted of percentage, mean and standard deviation,

The results of the research showed that; comments on the current state of primary school professional teachers in buriram province overall is moderate, when considering each aspect it was found that the side with the highest mean was learning management followed by analysis, synthesis and research for student development and classroom management has the lowest average. And the desirable state of elementary professional teachers in buriram province overall is at a high level, when considering each aspect it was found that the side with the highest mean was analysis, synthesis and research for learner development, followed by selection development creation of learning materials and organizing learning promotion activities and building relationships and cooperation with communities for learning management were the lowest.

Keywords : Professional Teacher, Elementary School

1. Introduction

Education is the most important foundation for creating progress and solving problems in society because it is a process that helps people develop in various fields from birth to develop their potential and competencies to Living and working happily (Thammasat Yao Thani. 2017: 28), while the 12th National Economic and Social Development Plan (2017-2021) sets the strategy for developing people to a lifelong learning society with a sustainable focus. With developing the quality of thai people to be immune to change, aiming to improve the quality of thai people of all ages therefore, quality education is the focus of human development, the most important person in the educational development process and the development of learning is "teacher". That remains the most important and meaningful person in the classroom and who is important to the quality of education (Kiratikorn, K. 2014: 10) because the quality of the learners depends on the

quality. Of teachers. Teachers are the key factors at the school level that affect learners' learning the most. (Ministry of Education. 2018: 1-3)

Teachers are important factors affecting the quality of education. The National Education Act 2542, Section 52 stipulates that the Ministry of Education promotes a system of production and development of teachers and educational personnel to have quality and standards suitable for high professionalism by directing and coordinating for institutions that have the duty to produce teachers, faculty and educational personnel to have quality and standards suitable for high professional level and the Teachers Council Act and educational personnel, 2003 provided in section 8, the teachers of the professional standards development council shall issue, revoke the license, supervise and comply with the professional standards and ethics of the profession, promote and develop the profession according to the professional standards and professional ethics, and section 25 (4) supervise the promote, praise and develop professionalism towards excellence in the field to be in line with the changing times (Chinnabut, T. 2017 :25)

The teachers are selfless professions, constantly working hard and devoting their own time each day to students. It is both a national model, both academically and in life, and to be able to inspire people. To students, where the meeting agreed that in the 21st century teachers must be a learning designer, the ability to design learning that is tailored to the context and nature of the class, the ability to make content from difficult to easy, creating a suitable learning environment. To the class to foster good enthusiasm and emphasize on learning management for the learner as a true center. In addition, the real goal of teaching education should add to the cognitive and humanity of the person. The teachers' work is the student body, not the research paper, which is sometimes counter to the current measurement of student achievement at the meeting. Ideas and suggestions on the teacher development approach were discussed, such as: there should be training on the foundation of teachers, the supervision and promotion of new teachers is very important, the development of the assistant teacher system should also be encouraged to support and develop teachers in particular. At the regional level, etc. (Ministry of Education. 2017 : 16)

Developing teachers to meet professional standards to be able to perform their teaching and learning management duties effectively and in line with 21st century learning management, Ministry of Education (2019 : 17). The teacher competencies have been defined in two competencies, which consist of core competencies and work performance by core competency. Consists of 4 capacities t consists of a focus on performance, good service, self-development, teamwork, and functional competency. It consists of 5 competencies which are curriculum and learning management, learner development, classroom management, analysis, synthesis and research for learner development, and building relationships and cooperation with communities

for learning management. Therefore, teachers must be developed or developed themselves to have knowledge that fits in the modern era social change.

The role of thai teachers in the 21st century must change accordingly they need to guide the knowledge that learners have gained from external media. Teach them to think critical scrutinize knowledge before it is properly and properly applied, teaching methods must be adjusted and the 21st century learning skills must be developed of their own in the future, including 1) must have the skills to use technology effectively it must be understood that learners can create knowledge by themselves. Therefore, teachers should develop learning activities to provide students with persistent knowledge and the skills they need 2) able to organize activities to link between learners together. Students and teachers in the same school or different schools or communities to create a practical learning environment that will create a direct experience for students 3) teachers have a role in organizing learning activities in a cooperative learning style between students and teachers 4) teachers must have communication skills both lectures choice of media and presentation to provide an environment conducive to learning to transfer knowledge appropriately 5) have empathy to show love a sincere concern for students to build trust Resulting in relaxation which students will learn best and 6) effective use of computers in network interaction learning (Office of Educational Research and Development. 2016 : 32)

The conditions for the development of elementary professional teachers when technology has progressed greatly Society and economy of each country are more easily linked, learners can learn from many sources. In addition to schools such as the internet, teachers in the next century will have to change as well, with the need to change the self-control, the occupation of the good, and the possession of good jobs. Which will allow to recognize and teach analytical thinking critically scrutinize knowledge in the age of education 4.0 and 21st century learning, where teachers must have knowledge and skills in the subject taught as well. And must adjust teaching methods appropriately. Has the capability to use technology to assist in teaching and learning and to stimulate students' interest and to be able to create knowledge by themselves, kindness, love and sincere concern for students to become. Trust provides the best learning environment and must be developed with training ongoing clinical supervision and mentoring will make the teachers of the future more efficient. Able to develop students to have quality. In social and national development most of which from the history and importance mentioned above. The researcher is interested to study. "Characteristics of elementary professional teachers in Buriram Province" to be used as a guideline for the development and implementation of the concepts acquired in planning, development and formulating strategic policies so that the school can create the quality of teacher education that has been developed to meet the qualifications required by all parties in the future.

2. Research Objectives

Current and desirable state of primary school professional teachers in buriram province

3. Research Methodology

Population and sample

This research is a quantitative research, the population used in the research is 3,896 teachers under the buriram primary educational service area office, academic year 2019, totaling 3,896 people. Is a teacher under the buriram primary educational service area office 1-4, academic year 2019, obtained by determining 400 sample size from crazy and morgan's tables (Krejcie & Morgan, 1970).

Research instruments

The instrument used to collect information are the researcher created primary professional teacher development questionnaire, it is characterized as a rating scale (Rating scale) 5 levels through the quality of tools from experts. Have confidence value (reliability) is equal to .89.

Collection of data

The researcher collected data by using a questionnaire on a sample of 400 people, which was a questionnaire on primary professional teacher development. After that, the questionnaire was used to analyze the data in the next order.

Analysis and statistics used in data analysis

The present and desirable conditions of primary school professional teachers in buriram province were analyzed using statistics such as mean and standard deviation.

4. Research Results

Table 1 Average of current and desirable state of primary school professional teachers in buriram province

Item	Current state		result	Desirable state		result
	$\bar{x}$	S.D		$\bar{x}$	S.D	
1. Curriculum and learner-centered learning management	3.70	1.00	moderate	4.15	0.75	most
2. Student development	3.46	1.16	moderate	4.37	0.64	most
3. Classroom management	3.25	1.31	moderate	4.23	0.79	most
4. Analysis, synthesis and research for student development	3.83	0.24	moderate	4.47	0.69	most
5. Teacher leadership	3.55	0.81	moderate	4.34	0.69	most

Table 1 (Continue)

Item	Current state		result	Desirable state		result
	$\bar{x}$	S.D		$\bar{x}$	S.D	
6. Building relationships and cooperation with communities for learning management	3.53	0.95	moderate	4.06	1.04	most
7. Learning management	3.94	0.76	moderate	4.18	0.72	most
8. Selecting, developing, creating learning materials and organizing learning promotion activities	3.80	1.01	moderate	4.43	0.60	most
overall	**3.63**	**0.91**	**moderate**	**4.28**	**0.74**	**most**

From table 1 the results of the research showed that; comments on the current state of primary school professional teachers in buriram province overall is moderate, when considering each aspect it was found that the side with the highest mean was learning management followed by analysis, synthesis and research for student development and classroom management has the lowest average. And the desirable state of elementary professional teachers in buriram province overall is at a high level, when considering each aspect it was found that the side with the highest mean was analysis, synthesis and research for learner development, followed by selection development creation of learning materials and organizing learning promotion activities and building relationships and cooperation with communities for learning management were the lowest.

5. Discussion

From the research results it was found that comments on the current state of primary school professional teachers in buriram province overall is moderate. When considering each aspect, it was found that the side with the highest mean was learning management in developing professional teachers It is very important that teachers understand the nature of the learners. The student focus is important focus on proactive learning management along with having easier access to knowledge teachers do not need to share all the knowledge. The teachers need to analyze peer content to design a learning arrangement in accordance with the standards, indicators and competencies required by the given curriculum. The professional teachers must always be able to better organize their own teaching and learning activities meets the needs of learner development In line with the concept of the secretariat of the teachers council of thailand (2018: 32) and Puangmali (2007: 67), said that professional teachers refer to those who have a passion for the profession who can manage their own teaching activities. It is always better to meet the needs of students with a variety of teaching techniques systematically. And able to adjust

themselves to be in accordance with the changing situations of each era effectively learning management is therefore one of the most important qualities of professional teachers.

Comments on the desirable state of primary professional teachers in buriram province under the office of buriram primary educational service area 1-4, overall at a high level. In each aspect, the areas with the highest average were analysis, synthesis and research for student development. Since there is the National Education Act 2542 and the amendment (No. 2) BE 2545, section 30 requires teachers to do research. Which is a part of promoting development for learners to learn and have knowledge And solving problems in the classroom professional teachers pay more attention to analysis, synthesis and research to develop learners in accordance with Khammanee (2009 : 102) has summarized the characteristics of professional teachers. It was found that teacher research knowledge was one of the characteristics of professional teachers. Therefore, teachers need to have a research understanding to help them develop their teaching and learning management systems for the most efficiency and benefit of learners. And in line with the research of lamsaad (2007 : 9) and the state of Thamanus (2007 : 11) found that the guidelines for developing classroom research it is important that an intensive classroom research workshop should be organized. Until able to do research, support budget and time for research, have experts or consultants to do research. Organize training for computer programs for data analysis and interpretation for use in solving student problems. This will further enhance the professionalism of teachers.

6. Conclusion

The researcher would like to summarize the research results according to the research objectives as follows:

6.1 Comments on the current state of primary school professional teachers in buriram province overall is moderate, when considering each aspect it was found that the side with the highest mean was learning management followed by analysis, synthesis and research for student development and classroom management has the lowest average.

6.2 Comments on the desirable state of elementary professional teachers in buriram province overall is at a high level, when considering each aspect it was found that the side with the highest mean was analysis, synthesis and research for learner development, followed by selection development creation of learning materials and organizing learning promotion activities and building relationships and cooperation with communities for learning management were the lowest.

7. Recommendations

Suggestions for applying research results from research

1. A study of the current condition of primary school professional teachers in buriram province. The aspect with the lowest average is classroom management. Should manage teaching and learning by combining knowledge in various fields such as proportionate and able to arrange the environment atmosphere learning materials and facilitation for learners born to learn and have knowledge

2. From a study of the desirable state of primary school professional teachers in buriram province. The areas with the lowest average were building relationships and cooperation with the community for learning management. There should be a relationship and cooperation with the community. Because it is an essential element of being a professional teacher in organizing teaching and learning activities, it is essential that community cooperation is required to utilize local or community resources.

Suggestions for further research

Should be conducted qualitative research through in-depth interviews about the approach to professional teacher development or policy setting to enhance the quality of teachers to become professional teachers

8. References

Chinnabut, T. (2017). *Teachers' Perspectives, School Group, Educational Quality Development Network 21, Phu Sing District, Sisaket Province*. Towards learning management that focuses on the learner is important Educational Thesis Master's Degree in Educational Administration North Bangkok University. [in thai]

Hengsomboon, P. (2008). *Needs Assessment Research is Necessary for the Development of Professional teacher*. Master's thesis. (Measurement and evaluation of studies). Bangkok: Chulalongkorn University. [in thai]

Iamsaad. A. (2007). *Study of problem conditions and research development approaches in teachers' classrooms. Under the Office of Sisaket Educational Service Area 1.* Master's Thesis (Grading measurement). Mahasarakham: Mahasarakham University. [in thai]

Khaemmanee, T. (2009). *Teaching Science "Knowledge for effective learning process"*. Bangkok: Chulalongkorn University Press. [in thai]

Kiratikorn, K. (2014). *Upgrading teacher quality*. Production and Teacher Development Reform Committee Meeting No. 2/2014 on 24 January 2014. [in thai]

Krejcie, R., & Morgan, D. (1970). Determining Sample Size for Research Activities. *Educational and Psychologic al Measurement*, 30, 607-610.

Ministry of Education. (2018). *Education Quality Assurance 2018.* Bangkok: Royal Gazette. Bangkok: Agricultural Cooperative Federation of Thailand. [in thai]

Ministry of Education. (2019). *Education Reform.* Bangkok: Cabinet and Royal Publishing House.Kijanuksa. [in thai]

Office of Educational Research and Development (2016). *Directions and research problems of Thai education to achieve the goal of Sustainable development of the world.* Bangkok: 21 century Company Limited. [in thai]

Office of the Basic Education Commission (2010). *Guidelines for developing the internal quality assurance system of Educational institutions according to the Ministerial Regulation on the system, criteria and methods for educational quality assurance 2010.* Bangkok: Printing House of Agricultural Cooperatives Assembly of Thailand. [in thai]

Puangmali, C. (2007). *Characteristics of professional teachers of schools in one district, one school project. Under the Office of the Nong Khai Educational Service Area.* Master of Education Thesis (Administration Education). Udon Thani: Udon Thani Rajabhat University. [in thai]

Rojanavee, T. (2011). *National Teacher Path: Multi-Research Case Study.* Department of Educational Research Bangkok: Chulalongkorn University. [in thai]

Yaothanee, T. (2017). *Quality assurance system administration according to the CUPT QA educational quality assurance criteria of the Faculty of Nursing.* Master of Educational thesis. Phayao : Phayao University. [in thai]

Needs Assessment on Academic Management of Medium Secondary Schools under the Office of the Basic Education Commission

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Abstract

The objectives of this research were to examine the current states and needs on academic management of medium secondary schools under the Office of the Basic Education Commission. The samples were 452 school administrators and academic department heads from 251 schools. The questionnaire on states and needs on academic management of medium secondary schools under the Office of the Basic Education Commission comprised of 94 items within 10 aspects was used as a research instrument. The reliability value of the questionnaire were 0.91 and 0.94 respectively. The data were analyzed by using descriptive statistics and assessed the needs by Modified Priority Needs Index ($PNI_{modified}$). The research findings revealed that the needs on academic management should be developed of medium secondary schools ranked from the highest to the lowest mean scores were: Internal quality assurance system development, Education guidance, School curriculum development, Innovative media and technology for education development, Academic planning, Educational supervision, Measurement, evaluation and implementation of grade transfer, Research on educational quality development, Learning process development, and Learning resources development, respectively. The result of this study can be used as a decision-making information for administrators in order to develop and improve the standard quality on academic management of medium secondary schools under the Office of the Basic Education Commission.

Keywords : Needs Assessment, Academic Management, Medium Secondary Schools, Office of the Basic Education Commission

1. Introduction

The Constitution of the Kingdom of Thailand 2017, Section 54 states that the government is required to provide the twelve-year education, from pre-school to the completion of compulsory education with free of charge for children. Also, the government is required to take care of and develop young children according to the pre-education under paragraph one for developing the children physical, mind, discipline, emotion, society, and intelligence. The purpose of the study is

provided people with an education and various systemsas well as promoted lifelong learning and cooperated among states, local institutes, and private sectors in all level of education management. The government is responsible for supervising, encouraging and supporting education management in terms of quality with international standards. All education should develop learners to be good people, disciplined, proud of nation, specialized according to their ability, and be responsible for family, community, society and nation (Government Gazette.2017: 14).

The Office of the Education Council Secretariat, Ministry of Education has summarized the Thai education in 2016-2017 that there were both quantitative and qualitative problems as well as efficiency at all levels in the Thai education development when compared with the international. The key indicators are class attendant rate at all levels, especially secondary and tertiary levels. According to Program for International Student Assessment – PISA in 2018, there were 3 student assessments as reading, mathematics, and sciences. The result was displayed that Thailand ranked lower than many Asian countries.Comparing with neighboring countries in ASEAN, the result was shown that Thai students' scores were lower than Singapore and Vietnamese students in all aspects. As a result, Thailand have to urgently develop students' knowledge in reading comprehension, analytical thinking, problem solving and implementing, especially mathematics and sciences fields. This is because they are core creation and innovation courses for economic and industrial development of the country (Office of the Education Council Secretariat. 2018: 14).

From the above problem, the Office of the Education Council Secretariathad studied and suggested that learning and teaching should be stopped tutoring students just for the O-NET test, but bring the analytical thinking of O-NET test to be guidelines for teaching and learning as well as regular evaluation. Besides, it is important to implement the test results of O-NET, TIMSS, and PISA for analysis and improvement the educational quality of the core subjects as Mathematics, Sciences, and English. These subjects are associated with creative thinking, innovating and researching new knowledge. Thailand will not be able to overcome the middle income country to Thailand 4.0 if Thai people are weak in these subjects. It is necessary to strengthen the Institute for the Promotion of Teaching Science and Technology (IPST) in improving the quality of education in science and mathematics. IPST should take care of course, media, technology, teacher development, critical thinking learning, experiment, and practice. Further, the educational institutions must give the first priority to academic administration for raising higher educational quality and student abilities (Office of the Education Council Secretariat. 2018). This issueis consistency with the study of Janpheng (2017: 94) which found that in improving the quality of education to meet the objectives, the educational institutions must pay more attention to the guidelines for the academic management. Also, many experts and researchers provided the interesting points as follows: the study of Pintasaen (2017: 156) agreed that educational institutions

must create a model for the academic administration in order to provide education to be successful. Roonjaroen (2014: 170) described that the achievement of educational management in institutions to achieve was the institutions must have academic administration model that is consistent with the institution context. Dunning (2015: 12) explained that the institution with excellent academic management modelwill affect the quality of the learner and the satisfaction of the parents. Gorge and Kent (2015: 47) clarified thatimproving and developing the educational quality must focus on academic management as a priority.

As the problems of educational management quality and guidelines for enhancing the quality of education mentioned above, the researchers realized and foreseen the importance of how to enhance the educational quality of medium secondary schools model since it is affiliated with the researchers. Consequently, the researchers are interested in the development of medium secondary school academic management model under the Office of the Basic Education Commission. The result of the study can be used in academic management in order to increase the higher quality of learners' education. Moreover, the stakeholders might be confident and satisfied with the education provision and further meet the society expectations.

2. Research Objectives

1. To examine the current states and needs on academic management of medium secondary schools under the Office of the Basic Education Commission.

2. To evaluate the needs on academic management of medium secondary schools of medium secondary schools under the Office of the Basic Education Commission.

3. Research Methodology

This study was a descriptive research by using evaluation research as a methodology. The samples were 452 school administrators and academic department heads from 251 schools. The samples were selected by multi-stage random sampling technique and the data were collected during May – June in 2020.

Research instrument

The research instrument used was the questionnaire on states and needs on academic management of medium secondary schools under the Office of the Basic Education Commission. The researchers reviewed the relevant literature and constructed the five-point Likert's rating scale questionnaire with dual response as current states (What is) and actuality/ expectations states (What should be). The questionnaire comprised of 94 items within 10 aspects was used to assess perception of school administrators and academic department heads towards academic management as follows: Academic planning, School curriculum development, Learning processes development, Measurement, evaluation and implementation of grade transfer, Research and

development on educational quality, Innovative media and technology for education development, Learning resources development, Educational supervision, Education guidance, and Internal quality assurance system development. The questionnaire was rated from 1-5 points with 5 levels of evaluation as follows: 1.00-1.50 means the least level of current state/ expectation state academic management, 1.51-2.50 means the less level of current state/ expectation state academic management, 2.51-3.50 means the moderate level of current state/ expectation state academic management, 3.51-4.50 means the much level of current state/ expectation state academic management, and 4.51-5.00 means the most level of current state/ expectation state academic management. The questionnaire was calculated the reliability by the Cronbach's Alpha Coefficient (α-coefficient) in which the reliability value of the questionnaire were 0.91 and 0.94 respectively.

Data Collection

The researchers collected the data according to the following steps.

1. The researchers asked Buriram Rajabhat University for the official letter of cooperation in responding the questionnaire and submitted to the Directors of the Office of the Secondary Educational Service Areas where the samples worked in.

2. The researchers collected the data by herself. In case of the school is far away, the researcher submitted the questionnaire and the official letter of cooperation in responding the questionnaire with empty envelope attached with a stamp to the samples. The questionnaire was required to reply within 15 days.

3. The replied questionnaires were checked the completeness.

Data Analysis

The collected data were analyzed by mean ($\bar{x}$), standard deviation (S.D.), and Modified Priority Needs Index ($PNI_{modified}$) in order to identify the needs (Needs identification) on academic management of medium secondary schools under the Office of the Basic Education Commission by using the formula PNI modified = (I-D)/D when I represents the mean of expectation state; D represents the mean of current state. The result of data analysis was indicated level of needs by $PNI_{modified}$ in item by item. The item which is high $PNI_{modified}$ presented higher needs level than those items which are low $PNI_{modified}$. As the needs PNI modified was high level, it should be prioritized for improvement or development.

4. Results

1. The medium secondary schools under the Office of the Basic Education Commission had academic management at the moderate level ($\bar{x}$= 3.47, S.D. = 0.96), and the needs on the academic management model in school was at the much level ($\bar{x}$= 4.40, S.D. = 0.96).

2. The needs on developed academic management of medium secondary schools ranked from the highest to the lowest mean scores were: Internal quality assurance system

development, Education guidance, School curriculum development, Innovative media and technology for education development, Academic planning, Educational supervision, Measurement, evaluation and implementation of grade transfer, Research on educational quality development, Learning processes development, and Learning resources development, respectively. The details are presented in Table 1.

Table1 Mean of Operation and Needs of School Academic Management and Needs Assessment of Medium Secondary SchoolAcademic Management under the Office of the Basic Education Commission

No.	Model Principles	Mean ($\bar{X}$)		$PNI_{modified}$	Level of Needs
		current states	Needs		
1	Academic planning	3.51	4.44	0.26	4
2	School curriculum development	3.42	4.39	0.28	3
3	Learning processes development	3.58	4.41	0.23	7
4	Measurement, evaluation and implementation of grade transfer	3.54	4.38	0.24	6
5	Research and development on educational quality	3.53	4.39	0.24	6
6	Innovative media and technology for education development	3.43	4.38	0.28	3
7	Learning resources development	3.65	4.40	0.20	8
8	Educational supervision	3.52	4.41	0.25	5
9	Education guidance	3.36	4.44	0.36	2
10	Internal Quality Assurance System development	3.2	4.42	0.37	1
Total		**3.47**	**4.40**		

5. Discussion

The research results according to the objectives can be discussed followings.

Research objective no. 1 was examined the current states and needs on academic management of medium secondary schools under the Office of the Basic Education Commission. The research result was found that the medium secondary schools under the Office of the Basic Education Commission had academic management at the moderate level. This might be because the medium secondary schools under the Office of the Basic Education Commission did not have the substantial model. As a result, the operating of academic management model was at the

moderate level. However, the needs on academic management model of the medium secondary schools under the Office of the Basic Education Commission were at the much level. This might be because the school administrators and teachers recognized the importance of academic management since the good academic management could be improved the school's educational quality. This is agreed with Wongwanich (2015: 62) who pointed out that the needs assessment can be helped in analyzing the problems occurred as well as proposing the solutions in order to change the current states to expectations state. This is also consistent with the study ofThongnoi (2013: 255) which studied the current states and problems on school academic management. The finding was discovered that the schools had academic managementat the moderate level and needs on academic management model at the much level.

Research objective no. 2 evaluated the needs of medium secondary school academic management under the Office of the Basic Education Commission. The research result was shown that the needs on development of medium secondary school academic management arranging from the most to the least were: Internal quality assurance system development, Education guidance, School curriculum development, Innovative media and technology for education development, Academic planning, Educational supervision, Measurement, evaluation and implementation of grade transfer, Research on educational quality development, Learning processes development, and Learning resources development, respectively. The researcher would be discussed the most 3 needs on development of academic management as follows:

In terms of Internal quality assurance system development, this aspect was the first needs on academic management development. This is because Internal quality assurance system is normal mission of school management and implement toimprove the students' quality continuously. It is not only ensuring the confidence for educational service recipients but also preventing the poor educational management and creating education as a powerful device for developing the higher quality population. Moreover, the Internal quality assurance system is an important device in driving the continuous educational quality development, and systematically work with standard quality. The graduates who meet expected quality of parents, community and organizations/company are accepted as high standard quality although they are not equal, they are a few differences. The students who graduated from vary institutions had their knowledge, abilities, skills, and desirable characteristics as specified by the educational institution. Therefore, they are the most important persons at the institution (which means that administrators, teachers and support personnel in an educational institution) needed to considerate at all times. Regardless of any activity, the students must gain more benefits both directly and indirectly ways. In addition, the educational management requires and involves in the provision of related personnel for achieving the expected quality learning. Hence, Internal quality assurance system is a very

important implement in current educational management as well as must be operated continuously (Boonthima. 2018).

In terms of Education guidance, this aspect was the second needs on academic management development since the education guidance is essential for promoting the self-development, problem prevention and problem solving. Guidance can be helped in identifying and reducing the cause of failure, fixing the bad conditions, attending an irregular class, and eliminating those problems interrupt student progress. Also, guidance is considered a continuous process to help people to discover one's talents, find or develop oneself to balanced life with good health, solve the problems and adapt oneself to a better aspect, grow prosperity with fully developed and live with satisfaction. However, the result of this research was presented that education guidance system of the medium secondary school under the Office of the Basic Education Commission had academic management at the moderate level ($\bar{X}$= 3.36, SD = 0.69), and the needs on academic management model development were at the much level ($\bar{X}$= 4.44, SD = 0.60). This result is consistent with the study on the factors influence toward effectiveness in school guidance of the secondary school under the Secondary Educational Service Area Office 7 Sakaeo Province and the study on problems and solution guidelines on guidance administration in schools under Phranakhon Si Ayutthaya Primary Education Service Area Office 1 which revealed that the consulting services were found at the lowest average score (Mahaprab. 2014; Jindasri., Thongpang. &Rak-ngam. 2016). Due to the workload of teaching and so on, the teachers do not have much more times for students' counseling. Some schools do not have guidance teachers or the teachers do not graduate in guidance or psychology, so the teachers might be lacked of knowledge and skills in direct consultation. Furthermore, the unsystematic counseling with students who faced the problems might be unable to provide proper assistance and the guidance is not truly successful as well (Khomhom, Yaboonthong, &Puthaprasert, 2018).

In terms of School curriculum development, this aspect was the third needs on academic management development because the educational curriculum development is the heart of education at all levels. It is a tool in setting guidelines for educational management and a compass to develop learners to reach the expected results, competency, skills on improving the quality of life and society. A good educational curriculum should be appropriate and in accordance with the life and society of the learners. Curriculum development is the process of organization planning and learning activities in order to enable learner's behavior goals and objectives set. The curriculum evaluation is existing the effect results on changes in learners'achievement and goals or not. Like this, those who have the responsibility would be acknowledged and considered for further improvement as the theory Concept of world society (Wongyai. 2011).

6. Suggestions

The results of this study indicated that the needs of medium secondary school academic management developed arranging from the most to the least were: Internal quality assurance system development, Education guidance, School curriculum development, Innovative media and technology for education development, Academic planning, Educational supervision, Measurement, evaluation and implementation of grade transfer, Research on educational quality development, Learning processes development, and Learning resources development, respectively. This study is evaluated only the needs on academic management of medium secondary schools under the Office of the Basic Education Commission. The further study should be added guidelines issue on academic management of medium secondary schools under the Office of the Basic Education Commission as well as the development of academic management model so that administrators can use the research results to develop the effectiveacademic work.

7. References

Mahaprab, P. (2014). A *Study on Problems and Solution Guidelines on Guidance Administration in Schools under Phranakhon Si Ayutthaya Primary Education Service Area Office1*. Retrieved November 1, 2020, from http://rdi.aru.ac.th/journal/pdf/20141127182148.pdf

Jindasri, P., Thongpang, T. and Rak-ngam, C. (2016). *The factors influence toward effectiveness in school guidance of the secondary school under the Secondary Educational Service Area Office 7 Sakaeo Province*. Retrieved November 1, 2020, from http://digital_collect.lib.buu.ac.th/dcms/files/56970045.pdf

Khomhom, A.,Yaboonthong, Y. and Puthaprasert, C. (2018). Administration Quality Development of Guidance in Compulsory Education Schools Under the Samoeng Educational Quality Development Network Group 3 in the Chiang Mai Primary Educational Service Area Office 2. *SuanDusit Graduates School Academic Journal*.14(2) : 75-89.

Boonthima, P.(2018). *Development of Internal Quality Assurance Model in Educational Institutions at Wat Huai Ma Kong Schools by using Kaizen Concept*. Retrieved November 1, 2020, from http://www.ska2.go.th/reis/data/research/25620912_103243_7886.pdf

Saengsawang, S. (2009). *Development of an Internal Quality Assurance System for Higher Education Institutions of the Royal Thai Armed Forces*. Dissertation: Sukhothai Thammathirat Open University.

Wongwanich, S. (2007). *Needs assessment research*. 2nd ed. Bangkok: Chulalongkorn University Press.

Using Story-telling to Improve Speaking Abilities of Cambodian Grade 11 Students in Anlogvil High School, Cambodia

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Abstract

The purpose of this experimental research were to 1) investigate the efficiency of lesson plans by using story-telling technique to meet the criterion set 75/75, 2) compare pre-test and post-test mean scores of Cambodian grade 11 students after learning with story-telling technique, 3) find out students' satisfaction towards using story-telling technique to enhance their speaking ability. The sample consisted of 30 students who were from grade 11 in academic the year of 2017-2018 at Anglongvil High School. They were selected by clustering random sampling. The instruments used in this study contained four lesson plans of 20 hours, pre-test and post-test of speaking performance with one out of four topics, and satisfaction questionnaire. The collected data were analyzed by using percentage, means, standard deviation, and dependent sample t-test. The result showed that the efficiency of lesson plans by using story-telling was higher than the criterion set 75/75 and the learning achievement of students' post-test mean scores was higher than the pre-test mean scores with statically significant difference at .01 level.

Finally, the students' satisfaction towards learning by using story-telling was at more satisfaction level

Keywords : Story-telling Technique, Students' Speaking Abilities, Grade 11 Students, Anglongvil High School

1. Introduction

English is a global and practical language which used all over the world. It is the language which is used as a tool to communicate with each other. Some countries may use this language as an official language while other some just use it as foreign language. This language will remain as the language for international communication (Graddol. 2006). This language is used to exchange information, and in most of the field including education, agriculture engineering, political science, business, and so forth. Furthermore, Cambodia is one of ASEAN members; therefore, English plays vital roles in communication. According to its value and importance, not only the private institution but the government, MOYES, set up English as compulsory subject to build up English capacity for all the sectors involved, especially for all the teachers and students.

Even though Cambodian students learn English since in primary level, yet teaching English in public school in Cambodia is not an easy job to reach its goal, especially teaching speaking. It is found that Cambodian students have limited English proficiency and they specially lack of speaking skill. (Nau, 2000; Nguyan, 2002; Hong, 2009)

Anglong High School is one of public schools in Cambodia which takes English as an EFL subject. By following the standard curriculum of MoEYS, English for Cambodia text book is used for English subject. There are EFC book 1 to EFC book 6 depend on students' grade. EFC book 4, 5, and 6 has been used from grade 10 to grade 12. This EFC textbook contains 20 chapters of 60 units for one year study which is divided into two semesters and 4 hours per week and monthly tests take place at the end of each month with the score of 100. The contents share useful topics which can be applied in real life such as: shopping, traffic, future plan, travelling, relatives, and folk tales, at the airport, environmental protection, and election. This textbook aims to help students in developing four skills (reading, speaking, listening, and writing).

As a teacher who have been teaching for many years both in public and private school, it is realized that students find themselves hard to express their thought. They are afraid to talk and making mistakes then being laughed in the classroom. They prefer writhing than to speak out loud. They do not want to speak or answer even if the teacher asks. To answer to these problems, teacher decided to choose one technique to help them in developing their speaking ability and motivate them to speak.

Based on the reason, the researcher is willing to conduct a study entitled **"Using Story-telling to Improve Speaking Abilities of Cambodian Grade 11 Students"**

The reason why story-telling was chosen as a technique to teach speaking skill for students in Anlongvil High School because teacher realized that students like listening to the stories. Whenever teacher told them stories they always paid attention and curious to know what was going on.

Story-telling has great impact for teachers in promoting an enjoyable classroom. Ghosn (2002) sates that working with storytelling provides chances for a teacher to interact with the students. This is what every teacher should take into account and it is the way for teacher to see the students. Discussing with the students will also help the students to develop oral skill. Moreover, storytelling is the form of education that should be the fundamental of language teaching. It help mastering a natural form of language development that many learners find easy to acquire both when they are the listeners and the tellers. Using story-telling as a method in teaching speaking, learners will love to engage in speaking since they are interested in the topic and able to tell their stories to the other students in classroom. Storytelling does not help only in improving language development, it help make the learners active and bringing the class more fun and enjoyable. Fitria (2000) claims that telling stories is a good way to combines instruction and entertainment.

Learners love being told the stories. While listening, they develop the sense of structure that will later help them to understand the complex stories of literature. Through using storytelling, teacher able to create classroom environment in which the students can learn the language happily.

There were some studies have been conducted on using story-telling to improve students' speaking skill. For instance, Zuhriyah (2016) conducted the research entitled Storytelling to Improve Students' Speaking Ability. Herminda (2013) conducted an experimental research to investigate the effectiveness of using storytelling techniques to improve the speaking ability of second year students SMPN 1 Boyolango, Tulungagong. Another study under title of "Using Picture-Based Story-telling Technique to Improve the Speaking Skill the eleventh Graders of MAN Kisaran" by Irawan (2011). All the findings from the researcher mentioned above were positive; therefore, it could be concluded that by using story-telling as a teaching speaking technique would help to better students speaking skill and motivate them to speak more.

2. Research Questions:

This research consisted of three Questions:

2.1 What is the efficiency of lesson plans by using story-telling technique in teaching to improve students' speaking abilities of Cambodian grade 11 students?

2.2 Does the use of story-telling technique improve speaking abilities of Cambodian grade 11 students?

2.3 What is the satisfaction of Cambodian students toward using story-telling technique?

3. Research Methodology

3.1 Sample

The sample of this study were 30 students who study grade 11 in the academic year of 2017-2018 at Anglongvil High School, Sangke district, Battambang province, Cambodia. One class from 4 classes was selected by using cluster random sampling.

3.2 Research Instrument

The research instrument consisted of four story-telling lesson plans, pre-test, post-test, and satisfaction questionnaire. The statistic used to analyze the data were percentage, mean, standard deviation.

3.3 Data Collection

The study was designed as one group pre-test and post-test designed.

Group	Pre-test	Treatments	Post-test
Experiment	T1	X	T2

Source: (Sai-yot. 1995: 248-249)

T1= pre-test, X= teaching and learning with storytelling, mini-tests of lesson, T2= post-test.

The research instruments were tired out with 30 students who were not the sample of the study. The instruments were developed by the researcher then used with the sample.

For the first 3 hours students chose one out of four topic to be the pre-test speaking topic. Each students had two minutes to prepare and 3 minutes to talk. The total score were 100 points. After pre-test, the researcher orientated the samples to acknowledge the learning using storytelling technique. The teacher started teaching speaking under four selected topics counting with The Funniest Story in Life, Your Great Holiday, A Special Person, and Folk Tale; The Frog Prince. After then, students were asked to do the post-test and questionnaire.

After the treatments, the speaking performance test was scored by four teachers; a researcher, two experienced English teacher, and a native speaker. The researcher used voice recorder to record what the students said and score them later. The speaking performance of the students was score according to the adapted rubrics of Brown (2001) consisted of five main criteria: 1) pronunciation, 2) grammar, 3) Vocabulary, 4) Fluency, and 5) Comprehension.

In questionnaire session, students asked to answer the questionnaire about satisfaction toward learning through using storytelling technique. The data from questionnaire were evaluated to find Mean ($\bar{x}$) and standard deviation (S.D) with the criterion as follows:

Scale	Meaning
4.51 – 5.00	The most satisfaction
3.51 – 4.50	More satisfaction
2.51 – 3.50	Moderately satisfaction
1.51 – 2.50	Less satisfaction
1.00 – 1.50	The least satisfaction

(Srisa-ard, 2002: 103)

4. Research Result

The findings were presented according to the research questions as follows:

4.1 What is the efficiency of lesson plans by using story-telling technique to improve speaking abilities of Cambodian grade 11 students?

Table 1 The Efficiency of Lesson Plans by using Story-Telling Technique to Enhance English Speaking Ability of Cambodian Students in grade 11 (n=30)

Students No	Activities Scores of Learning trough using Story Telling				Total	Post Test
	Lesson1	Lesson2	Lesson3	Lesson4		
1	76	77	80	82	315	85
2	74	76	80	80	310	82
3	75	74	79	81	309	80
4	77	78	80	81	316	80
5	78	78	77	78	311	80
6	75	74	76	80	305	83
7	72	75	80	80	307	80
8	76	79	80	82	317	80
9	75	80	76	79	310	84
10	72	74	78	79	303	80
11	76	78	79	78	311	82
12	75	77	80	79	311	84
13	70	72	77	80	299	82
14	79	80	78	82	319	81
15	77	79	80	79	35	80
16	72	74	75	78	299	80
17	76	72	72	79	299	80
18	75	74	72	78	299	82
19	75	78	80	83	316	80
20	80	78	79	82	319	84
21	75	73	73	78	299	80
22	70	72	75	80	297	82
23	74	76	78	78	306	80
24	78	76	78	78	310	82
25	78	74	78	84	314	86
26	78	80	82	86	326	80
27	72	74	76	78	300	84
28	80	82	82	86	330	82
29	82	80	84	86	332	80
30	78	78	80	82		86
Total	**2270**	**2292**	**2344**	**2416**	**93.22**	**2451**
$\bar{x}$	**75.66**	**76.4**	**78.13**	**80.53**	**77.68**	**84.78**
SD	**2.91**	**2.78**	**2.84**	**2.51**	**3.1**	**1.96**
%	**75.66**	**76.40**	**78.13**	**80.53**	**77.68**	**84.78**

As shown in Table4.1, The efficiency of lesson plans through using story- telling to enhance English speaking ability of Cambodian students in grade 11 in Anlongvil High School, which were carried out by the researcher, was 77.68/84.78, which was higher than the criterion set at 75/75. It evinced that students who have learned English speaking through using story-telling technique have received mean score from the test of four lessons at 77.68% and the total mean score from the achievement test after learning through story-telling technique was at 84.78%.

4.2 Does the use of story-telling technique improve speaking abilities of Cambodian grade 11 students?

Table 4.2 Comparing the difference between Pre-test and Post-test mean Score

Student No	Pre Test score	Post Test score	Difference	Double Difference (D^2)
1	60	85	25	625
2	58	82	24	576
3	59	80	21	441
4	61	80	19	361
5	63	80	17	289
6	58	83	25	625
7	59	80	21	441
8	60	80	20	400
9	63	84	21	441
10	59	80	21	441
11	60	82	22	484
12	64	84	20	400
13	58	82	24	576
14	63	81	18	324
15	57	80	23	529
16	56	80	24	576
17	58	80	22	484
18	59	82	23	529
19	57	80	23	529
20	65	84	19	361
21	55	80	25	625
22	52	82	30	900
23	54	80	26	676
24	58	82	24	576
25	61	86	25	625
26	67	80	13	169
27	58	84	26	676

Table 4.2 (Continue)

Student No	Pre Test score	Post Test score	Difference	Double Difference (D^2)
28	63	82	19	361
29	65	80	15	225
30	60	86	26	676
Total	**1790**	**2451**	**661**	**14941**
$\bar{x}$	**59.66**	**84.78**	**22.03**	**498.03**

As shown in Table 4.2, it indicated that the students who learned English speaking through using story-telling technique had pre-test mean scores at 59.66 and post-test men scores at 84.78, respectively.

Table 4.2.1 Comparing the difference between Pre-test and Post-test Mean Scores

Achievement	n	Total Score	$\bar{x}$	S.D.	t	Sig
Pre Test	30	100	59.66	3.4	-33.74	.000
Post Test	30	100	84.78	1.96		

**Significant difference at .01 level

As shown in Table 4.2.1, dependent sample t-test was conducted in order to find out whether there was significant difference in using story-telling technique to improve English speaking abilities of Cambodian grade 11 students in Anlongvil High School. The result proved that there was statically significant difference between pre-test and post-test in learning English through using story-telling technique at a 0.01 level. That means 11 grade students in Anlongvil High School, Cambodia had higher learning achievement after learning speaking by using story-telling technique.

4.3 What is the satisfaction of Cambodian Anlongvil high school students toward using story-telling technique to improve speaking abilities?

Table4.3 Leaners' satisfaction toward learning by Using Story-Telling Technique of Cambodian Students in Grade 11 in Anglongvil High School

Items	Statement	$\bar{x}$	S.D.	Level
1	My speaking ability has developed after studying with story-telling techniques.	4	0.37	More Satisfaction
2	I enjoy learning with story-telling activities.	3.96	0.37	More Satisfaction
3	I enjoy working with other students during the activities.	3.96	0.55	More Satisfaction
4	I can apply what I have learned in daily life.	4.2	0.37	More satisfaction
5	Teacher encourages students to speak as much as possible.	4.2	0.48	More Satisfaction
6	Story-telling are activities that make me feel more relaxed and free to speak.	4.06	0.52	More Satisfaction
7	Story-telling are activities that make me feel comfortable to speak with other students in class.	4.2	0.55	More Satisfaction
8	Story-telling helps me to speak more fluently.	4.03	0.66	More Satisfaction
9	Story-telling helps building up team work and promote students' interaction.	4.06	0.44	More Satisfaction
10	After learning with story-telling, it makes me want to speak more.	4.13	0.68	More Satisfaction
11	Story-telling builds up confidence in speaking English.	3.93	0.58	More Satisfaction
12	Story-telling provides better understanding of speaking English in varies situation.	3.83	0.74	More Satisfaction
13	Story-telling helps better my pronunciation.	4.13	0.68	More Satisfaction
14	Story-telling promotes opportunities for students to interact with one another.	3.8	0.55	More Satisfaction
15	Story-telling is activity that helps students to be more active and build up good relationship.	4	0.52	more satisfaction
	Grand Total	**4.03**	**0.29**	**More Satisfaction**

Table 4.3 showed that students were more satisfied toward learning by using story-telling technique with the total value ($\bar{x}$= 4.03, S.D. = 0.29) at more satisfactory level. It is

concluded that students enjoy learning with storytelling. This technique motivates them to speak and interact with other students in the class.

5. Conclusion

The efficiency of the lesson plans using story-telling technique to enhance English speaking ability of Cambodian students at AVH was 77.68/84.78 which was higher than the criterion set 75/75.

The speaking ability achievement of students' post-test mean score was higher than the pre-test mean score with statically significant different at 0.1 level.

The students' satisfaction in learning by using story-telling technique to enhance English speaking ability was totally satisfied at more satisfactory level.

6. Recommendations

It is suggested that the further research should be more creative and more interesting by using media or other tools to create effective teaching and learning environment. Teacher should use different techniques which can be integrated with story-telling technique or to compare story-telling technique with other techniques with the different levels of students to see how effective those techniques can help students to improve their speaking skills.

In conclusion, the further research must be helpful to better the students' speaking ability and provide benefits to the students for daily communication.

7. References

Brown, H D. (2001). Teaching by principles: *An interactive approach to language pedagogy*. NY: Pearson Education.

Brown, Douglas. (2004). *Language Assessment Principle and Classroom Practices.* San Francisco State University: Longman

Fitria. (2000). *Improving Students' Listening Skills through Storytelling*. Unpublished Master's Thesis. Malang: State University of Malang.

Ghosn, I.K (2002). *Four good reasons to use literature in primary school ELT*. Oxford: Oxford university press. Available: ERIC through EBSCO host, viewed 16 February 2015.

Graddol, D. (1997). *The Future of English. London*: British Council.

Herminda. (2013). *The Effectiveness of Using Story Telling Techniques to Improve the Speaking ability of Second Year Students at SMPN 1 Boyolangu, Tulungagung*. Unpublished Master's Thesis. Malang: Islamic University of Malang.

Irawan, H. (2011). *Using Picture-Based Story Telling Technique toImprove the Speaking Skill of the Eleventh Graders of MAN Kisaran*. Unpublished Master's Thesis. Malang: University of Malang.

Igawa, K. (2008). *English Language and its Education in Cambodia, a Country in Transition.* Shitennoji University Bulletin. 46.

Kimchheang, H. (2009). *Effect of Media-Based Instruction in English for Junior Tour Guides on Speaking Ability of Students at Kampong Chheuteal High School*, Cambodia. M.Ed. Thesis. Chulalongkorn University.

MoEYS. (1999). *English for Cambodia (EFC): Teacher's guide book*. Cambodia.

MoEYS. (2004). *Policy for curriculum development 2005-2009*. Cambodia.

Neau, V. (2003). *Teaching of Foreign Language in Cambodia*: A Historical Perspective. Language, Culture, and Curriculum.

Nguyan, T. H. (2002). Cambodia: *Cultural Background for ESOL Teachers*.

Education

(Poster Presentation)

Improving Nursing Students' Self-Efficacy in Vaginal Birth Assisting with Newborn Safer Equipment: A Simulation Study, Randomized Trial

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Abstract

Self-efficiency is one of the key success factors in any job, particularly within the first episode where there are many risks on site. Vaginal birth that sounds easy to anyone but can be cumbersome in nursing students. This newborn safety apparatus was therefore constructed to support them. The aim of the study was to demonstrate the effect of this safety innovation on the self-efficacy of undergraduates in simulation of vaginal birth training. The focus group were nursing students who had been trained at the clinical level in 2018-2019 and had previously undergone obstetrics training. Two simulation stations were built, both conventional and intervention. The random assignment for the trial orders was given to the participants. After each station was done, participants had to form an evaluation of their self-efficacy. 40 participants were enrolled during this study. There was a statistically significant increase in their effectiveness at the newborn safety apparatus added on station ($t = -7.73$, $p < .01$). In parallel with their self-efficacy, their clinical performance ratings were improved ($t = -10.38$, $p < .01$). The authors concluded that the safety apparatus had a positive impact on self-efficacy of the students.

Keywords : Invention, Patient Safety, Nursing, Parturition, Self Efficacy

Science and Technology

(Poster Presentation)

Stable Carbon Isotopes and Water Use Efficiency among Four Thai Color Rice Cultivars

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Abstract

Positive correlations between carbon isotopic ($\delta^{13}C$) and plant water-use efficiency (WUE) have been demonstrated in many plant species. To improve WUE in agriculture under the water limited conditions, $\delta^{13}C$ in crops has been successfully exploited as a tool to select the appropriate cultivars as well as to manage the irrigation program. Knowledge about the association of $\delta^{13}C$ and WUE in Thai color rice cultivars is limited. The present study aimed to determine $\delta^{13}C$ and to assess the WUE among four cultivars of Thai color rice. $\delta^{13}C$ of Hawm Nil rice or black fragrant rice, Riceberry rice, Red Hawm rice or jasmine red cargo rice105, and Tubtim Chumphae (RD69) produced from Khon Kaen province were investigated. The $\delta^{13}C$ values revealed that the WUE of Hawm Nil rice > Riceberry rice > Red Hawm rice > Tubtim Chumphae.. Since $\delta^{13}C$ in different rice cultivars compared plant mechanism response to water stress. Hence, the observed results reflected that Hawm Nil rice was high tolerance to drought environment while Tubtim Chumphae (RD69) was the most sensitive among four cultivars. This findings indicated that $\delta^{13}C$ could be an alternative method to assess the WUE and provides effective and simple index for selection of suitable cultivars under different growing environments.

Keywords : Stable Carbon Isotopes, Water Use Efficiency, Carbon Isotope Discrimination, Thai Color Rice, Rice Cultivar

1. Introduction

Rice (*Oryza sativa* L.) is an important food crop of the world with regard to nutrition and caloric intake. Rice requires larger amount of water throughout its life cycle as compared to other crops. To produce 1 kg of grain, farmers have to supply 2-3 times more water in rice fields than other cereals (Baker, 2000; Pandey, 2015). Flower development stage in rice is very critical and severe yield losses occur under drought or high evapotranspiration. Therefore, water related stress cause severe threat to rice production. Climate change has been linked to drought incidents

which caused by erratic rainfall distribution patterns and large variations in diurnal temperatures. Under climate change, the variation of rainfall and temperature would also impact the irrigation water demand. In Thailand, climate change puts rice farmers of both irrigated and rain-fed land in a difficult situation. It was estimated that the yield of Thai rice was expected to decline about 18% in the 2020s because of alterations in temperature and rainfall cycle as the impacts of climate change. In recent years, the weather patterns that farmers are familiar with, and that guides them as to when to plant rice, is changing. The delayed and less rainfall affected rice growing, and occurred alongside strong sun, rapid water evaporation, and sudden floodwaters. This would make agricultural production systems more prone to failure. In response to the drought, the Thai government has created artificial rain to fight against the severe water shortages induced in the country. In 2020, artificial rainmaking operations are being planned to cover 25 river basins in 77 provinces. However, the artificial rain making is restricted due to the environmental factors in the area (Kawasaki, 2011).

To order to maintain sustainable water use in agriculture and ensure food security, a substantial improvement in agriculture water use efficiency (WUE) is required (Liu et al, 2017). Water use efficiency defined as the ratio of dry matter produced to total transpiration during specific growth period. For the increase of rice production using the limited water resource, the selected rice cultivars of drought tolerance with high WUE is considered. Stable carbon isotopes technique is recognized to be one of the most promising technologies in terms of understanding plant WUE (Gebrekirstos et al, 2011; Centritto, 2009; Khan et al, 2017; Kano-Nakata et al, 2014). Stable carbon isotopes is the measure of $^{13}C/^{12}C$ ratio ($\delta^{13}C$) relative to the CO_2 of atmosphere. A signniticant positive correlation has been found between $\delta^{13}C$ and WUE both theoretically and empirically. Net instantaneous WUE, the ratio of carbon assimilation to evapotranspiration, has been found to co-vary with $\delta^{13}C$ in a sense that high $\delta^{13}C$ values correspond to high WUE and vice versa (Farquhar et al, 1989a; Farquhar et al, 1982b). Zufferey et al (2017) observed an enrichment of $\delta^{13}C$ in wine grape berry sugars has been correlated to an increase in WUE during 2009-2015 investigation. They suggested that moderate water stress during ripening favored sugar accumulation in berries and caused an increment in $\delta^{13}C$. Carbon isotope composition ($\delta^{13}C$) of plant tissues is as well frequently expressed as carbon isotopic discrimination ($\Delta^{13}C$) from the source air. It has been reported that the drought increases $\delta^{13}C$ and decreases $\Delta^{13}C$ values in rice and the values vary with different genotypes. Either $\delta^{13}C$ or $\Delta^{13}C$ is an indicator of WUE in C3 plants and this parameter is used by the plant breeders as a tool for selecting plants with high WUE under drought stress [Khan et al, 2017; Kano-Nakata et al, 2014]. There were many studies on the relationship between $\delta^{13}C$ and WUE in rice, wheat, soybean, tomato, pear-jujube, including grape vine (Gebrekirstos et al, 2011; Centritto, 2009;

Khan et al, 2017; Kano-Nakata et al, 2014; Zufferey et al, 2017; Kaler et al, 2018; Wei et al, 2016; Cui et al, 2009). However, Thai color rice cultivars have not carried out yet.

2. Research objectives

The objective of this study therefore is to investigate the potential use of $\delta^{13}C$ to evaluated WUE on each of four color rice cultivars *(Oryza sativa L.)* associated with water deficit tolerance. The study determined stable carbon isotopes in 160 rice grain samples which sown and harvested in the 2018 year. Four color rice cultivars were Hawm Nil rice or black fragrant rice, Riceberry rice, Red Hawm rice or jasmine red cargo rice105, and Tubtim Chumphae (RD69) grown under open field (mild drought stress) conditions produced from Khon Kaen province.

3. Materials and method

3.1 Study area

Khon Kaen is one of the 20 provinces locates at the northeastern (NE) of Thailand. The NE region has about 6.3 million hectares of rainfed lowland rice. The average rice yield in the region is low, and fluctuates from year to year depending on the rainfall, ranging from 1.5 to 2.2 tons per hectare. Increasing irrigation areas and facilities are difficult because water resources are limited. The water crisis is threatening the sustainability of the rice production in the region (Zufferey et al, 2017).

3.2 Rice Cultivars Information (Jairin et al, 2017)

3.2.1 Hawm Nil rice or black fragrant rice

Hawm Nil rice or black rice is a fragrant dark purple colored rice variety with antioxidant properties, popular among health conscious consumers. Hawm Nil rice is a non-photoperiod sensitive cultivar and widely grown in the North-eastern of Thailand because of the suitable climate and a warm sunlight. It has tapering shape, dark purple color, 95-120 days for maturity, soften texture after cooking and also good smell.

3.2.2 Riceberry rice

Riceberry rice is an across-bred of Hawm Nil (Black fragrant) rice and jasmine (Khao Dawk Mali 105) rice. As a result, it has a long shape like that of Indica rice, and is purple and soft. Riceberry rice takes 120-135 days for maturity, can be grown throughout the year and is a non-photoperiod sensitive cultivars. However, it needs fairly special attention which must be cultivated in fertile soil in a cool climate.

3.2.3 Red Hawm rice or jasmine red cargo rice105

Red Hawm rice or jasmine red cargo rice105 is productive in sandy soil and is a photoperiod sensitive variety which takes 100-120 days for maturity. It has a long slender, grain

and remains the aroma of rice. The fragrance is. The fragrance of Red Hawm rice is generated from a volatile matter called 2-acetyl-1-pyroline, which similar to that of pandan leaves.

3.2.4 Tubtim Chumphae (RD69)

This variety is a non-photoperiod sensitive and non-glutinous rice variety with red pericarp, short statute, high yield, good grain quality, good cooking and eating qualities, high contents of anti-oxidants, phenolic and flavonoids. It is recommended to grow in both rainfed and irrigated areas with 130-135 days for maturity. However, it was susceptible to bacterial leaf blight and moderately susceptible to blast.

3.3 Sample Collection and Preparation

Rice cultivars in this study were conducted in 2018 and collected from 4 paddy fields of which was 10 plots each. The total number of observations in this study was 160 samples (4 cultivars x 4 paddy fields x 10 plots). Four rice cultivars were transplanted and harvested in the rice paddy fields with actual water regime performances regardless of the drought stress imposed. Rice grain sample was air dried at room temperature and then oven dried at 60 °C for two days until constant weight were achieved. Dried sample of approximately 300 grams was primarily ground in an Agate mortar grinder (model RM200, Retsch, Germany) to about 0.5 mm particle size and then was again dried overnight in the oven at 60 °C and further ground using Agate hand mortar to fine powder. Two milligrams ground grain material was used per sample and four technical replications were used for each sample replicate.

3.4 Stable Isotopes Analysis

An analysis of $\delta^{13}C$ in rice grains was determined by an Isotopic Carbon-Analyzer (Picarro G2121-i). The results of $\delta^{13}C$ were expressed in per mill (‰) and calculated by the Eq. (1) (Gebrekirstos et al, 2011):

$$\delta = \frac{{}^{13}C/{}^{12}C_{sample} - {}^{13}C/{}^{12}C_{standard}}{{}^{13}C/{}^{12}C_{standard}} \times 1000 \quad (1)$$

The PDB (Pee Dee Belemnite) was used as a universally accepted standard which was 0.0112372. A positive $\delta^{13}C$ occurs when the measured isotope ratio is higher than PDB whereas a negative $\delta^{13}C$ occurs when the measured isotope ratio is lower than PDB. Since PDB contains the heaviest known naturally occurring $^{13}C/^{12}C$ ratio, all measurements of the natural abundance of carbon isotopes are negative.

Then, the $\delta^{13}C$ value was transformed into the $\Delta^{13}C$ using Eq. (2) developed by Farquhar et al (1989a)

$$\Delta^{13}C\ (‰) = (\delta^{13}Ca - \delta^{13}Cp) / (1 - \delta^{13}Cp /1000) \quad (2)$$

where a and p indicate the isotopic ratios of air and plant, respectively. In Eq. (2) 8‰ was used for air.

3.5 Statistical Analysis

GraphPad Prism V.8 (GraphPad Software, Inc., California USA.) was used to perform data analysis. Data were statistically analysed by one-way ANOVA to test for $\delta^{13}C$ mean values among four color rice cultivars at the significance level of 95%. A probability of 0.05 ($p < 0.05$) was considered as significant in testing the null hypothesis of differences in $\delta^{13}C$.

4. Results and Discussion

4.1 Meteorological Data

Rainfall amount, the highest and the lowest temperature and absolute humidity data were measured with an automatic weather station at Khon Kaen (station code 381201). It was reported that mild drought condition occurred in the year of 2018 compared to 2016 and 2017 (Report Thai Meteorological Dept. 2019). Data are shown in Table 1

Table 1. Annual meteorological data of 2018 year, recorded by Khon Kaen weather station (381201).

Item	Whole year	Year of 2018											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Rainfall (mm)	1304.8	1	5.4	28	206.2	172.1	215.7	213.3	66.8	299.7	77.6	14.8	4.2
Days of Rainfall	112	1	2	3	10	17	15	23	16	17	4	2	2
Highest Rainfall (mm)	64.4	1	3.7	14.5	64.4	28.7	57.3	39.6	12.6	50.8	53.3	7.8	3.4
Highest Temp (^{0}C)	32.8	30.8	33.1	35.3	36.4	34.5	33.6	33.0	32.4	31.9	31.6	31.2	30.1
Lowest Temp (^{0}C)	21.6	16.1	18.0	21.8	23.7	24.4	24.0	23.6	23.5	23.4	23.0	22.1	16.0
Ave. Temp (^{0}C)	27.2	24.5	24.5	27.5	28.5	28.6	28.7	27.9	27.7	28.2	28.0	26.9	25.9
Absolute Humidity (%)	71.6	65	63	61	64	74	77	78	81	83	78	70	65

4.2 Stable Carbon Isotopes Composition

4.2.1 Reproducibility Test

Reproducibility test based on three reference materials (IAEA-603, USGS 40, and USGS 61) was included to determine the correction quality. Overall standard deviation for $\delta^{13}C$ values was 0.05 ‰.

4.2.2 Stable Carbon Isotopes

The four color rice cultivars in this study were accounted for their popularity among Thai people and for the stability color cultivars. Rice cultivars were transplanted in early to mid of June and harvested approximately from September to October depended on maturity day (from 100 to 135 days). The study plots were rainfed paddy fields and located in Mueang district, Khon Kaen province. Actual water regime was performed in all paddy fields regardless of drought stress. In Khon Kaen, droughts may develop any time during the growing season. Early season droughts usually occur during transplanting of seedlings and growth of direct-seeded rice. Late-season droughts occur at the end of the rainy season before crop maturation, particularly in paddy rice in a high topo-sequence position (Zufferey et al, 2017).

Results from this investigation shown that among the four rice cultivars, the average $\delta^{13}C$ was greatest in Tubtim Chumphae for all plots and environments (Table 1). The general pattern of $\delta^{13}C$ was in the order of Hawm Nil rice > Riceberry rice > Red Hawm rice > Tubtim Chumphae. As a consequence, the highest WUE was exhibited by the Hawm Nil rice followed by Riceberry rice, Red Hawm rice and Tubtim Chumphae. Statistical analyses shown that the $\delta^{13}C$ value of four color rice cultivars were significantly affected by various cultivars ($p < 0.05$).

Table 2 Values of $\delta^{13}C$ and $\Delta^{13}C$ including rice cultivars information for each cultivars in this study

Item	Hawm Nil rice	Riceberry rice	Red Hawm rice	Tubtim Chumphae
$\delta^{13}C$ (ave) ‰	-29.96	-30.25	-30.47	-30.76
$\Delta^{13}C$ (ave) ‰	22.64	22.95	23.17	23.48
No of samples	40	40	40	40
Days of maturity	95-120	120-135	100-120	130-135
Photoperiod sensitive	Non	Non	Yes	Non
Aroma	Yes	Yes	Yes	Yes

Many studies of $\delta^{13}C$ in various plant organs includes grains, seed, fruits, panicles, flag leaves, straws, culms, and roots were performed and revealed the significant correlation between

$\delta^{13}C$ and WUE (Gebrekirstos et al, 2011; Khan et al, 2017; Kano-Nakata et al, 2014; Kaler et al, 2018; Wei et al, 2016; Cui et al, 2009; Zufferey et al, 2017). Water stress increased $\delta^{13}C$ (and decreased $\Delta^{13}C$) in both leaf and grain (or fruit) and a significant positive linear correlation was found between product yield and biomass, as reported by previous studies (Kaler et al, 2018; Wei et al, 2016; Cui et al, 2009). However, studies found that non-photosynthetic tissues in C3 plants tended to be more enriched in ^{13}C than photosynthetic tissues such as leaves. The presence of a higher content of lignin in certain tissues might lead to a relative depletion in ^{13}C while the presence of higher concentrations of cellulose, sugars, and starch in certain tissues might lead to a relative enrichment in ^{13}C. Differences in the biochemical composition of leaves and non-photosynthetic tissues might explain the difference in $\delta^{13}C$ observed. The reduction in ^{13}C, under low water conditions, causes less carbon fixation, particularly ^{13}C, by the plant tissues which results in low photosynthetic assimilation along with significant variation in the ^{13}C to ^{12}C isotopic ratio. (Kaler et al, 2018; Wei et al, 2016). Because grain $\delta^{13}C$ shown strong positive correlation with $\delta^{13}C$ in other tissues and grain is normally harvested as a part of agronomic testing and breeding trials. Therefore, the utility of grain $\delta^{13}C$ as a selection tool would be greater if meaningful inferences could be made from harvested grain collected during the season. Selection of $\delta^{13}C$ in harvested grain as a proxy for WUE greatly simplifies the application of $\delta^{13}C$ selection for improvement of drought tolerance in an applied breeding program and for further studies in genetic mapping and agronomy. It has already known that any of these characteristics such as fast crop growth rate, ability to remobilize stored reserves, earlier flowering, better water extraction, stomatal insensitivity to water deficit are likely to be importance for cereals and these characteristics also link to plant water used.

In this study, a possible explanation of the differences in WUE among four cultivars were related to plant response under fluctuating light conditions and plant response to a changing CO_2 environment Good response under variable light leads to increasing the photosynthetic efficiency Since apparent photosynthesis and transpiration under water-deficit conditions were connected to WUE, Result of plants response to CO_2 variation was a change in the stomatal density as observed by Caine et al. (2019) in rice. Rice plants with fewer stomata are drought tolerant and more conservative in their water use, and they shall perform better when climate change is expected to threaten severely in the future (Hatfield and Dold, 2019).

The finding results indicates that the cultivar effects on $\delta^{13}C$ values in rice grain *(Oryza sativa* L.*)* could be an important and suitable indicator of plant water status in rice. In addition, $\delta^{13}C$ technique could be used for screening plants with higher tolerance under drought stress conditions. Further research is needed to evaluate how $\delta^{13}C$ variation in different water regimes and agricultural practices.

5. Conclusion

Drought situation has been worldwide concerned as drought impacted on consumption, agricultural and industrial purposes. In Thailand, paddy production for the main crop was forecast to fall by more than 4-12.5% in the 2019-2020 season to 24 million tonnes, from 25-27 million tonnes the previous season. Production from the second crop is forecast at 3.4-3.5 million tonnes, down 50%, from 7.75 million tonnes the previous, due to drought and inadequate water supply from dams (The Rice Dept, Thailand website, 2020). Hence, there is a need to develop a more efficient water use system in agriculture. WUE is another parameter being used as a part of water saving strategies. The $\delta^{13}C$ of four Thai color rice cultivars collected in 2018 were used for screening cultivars with higher WUE under drought stress conditions. The study plots were rainfed paddy fields and located in Mueang district, Khon Kaen province. Actual water regime was performed in all paddy fields regardless of drought stress. The $\delta^{13}C$ results shown that among the four rice cultivars, the highest water use efficiency was the Hawm Nil rice > Riceberry rice > Red Hawm rice > Tubtim Chumphae. This finding indicates that $\delta^{13}C$ technique could be used for screening plants with higher tolerance under drought stress conditions, although further research is needed to evaluate the variation of $\delta^{13}C$ values of rice grain in different water regimes.

6. Recommendations

Further studies should be investigated the effect the different agricultural practices on water use efficiency with different sticky rice cultivars.

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8. References

Baker, R, Dawe, D, Toung, T.P, Bhuiyan, S.I, & Guerra, L.C. (2000). *The outlook for water resources in the year 2020: Challenges for research on water management in rice production.* International Rice Commission Newsletter. 49, 7-21.

Caine R.S., Yin X., Sloan J., Harrison E.L., Mohammed U., Fulton T., Biswal A.K., Dionora J., Chater C.C., Coe R.A., Bandyopadhyay A. Murchie E.K., Swarup R. , Quick W.P., Gray J.E. (2019). *Rice with reduced stomatal density conserves water and has improved drought tolerance under future climate conditions.* New Phytologist (2019) 221: 371–384 Retrieved from https://doi: 10.1111/nph.15344

Centritto, M, Lauteri, M, Monteverdi, M.C, & Serraj, R. (2009). *Leaf gas exchange, carbon isotope discrimination, and grain yield in contrasting rice genotypes subjected to water deficits during the reproductive stage*. Journal of Experimental Botany. 60, 2325-2339.

Cui, N, Du, T, Kang, S, Li, F, Hu, X, Wang, M, & Li, Z. (2009). *Relationship between stable carbon isotope discrimination and water use efficiency under regulated deficit irrigation of pear-jujube tree.* Agricultural Water Management. 96 (11), 1615-1622. Retrieved from https://doi.org/10.1016/ j.agwat. 2009.06.009

Farquhar, G.D, Ehleringer, J.R, & Hubick, K.T. (1989a). *Carbon isotope discrimination and photosynthesis*. Annual Review of Plant Physiology and Plant Molecular Biology. 40, 503-537.

Farquhar, G.D, O'Leary, M.H, & Berry, J.A. (1982b). *On the relationship between carbon isotope discrimination and the intercellular carbon dioxide concentration in leaves*. Australian Journal of Plant Physiology. 9, 121-137.

Gebrekirstos, A, Noordwijk, M.V, Neufeldt, H, & Mitlohner, R. (2011) *Relationships of stable carbon isotopes, plant water potential and growth: an approach to asses water use efficiency and growth strategies of dry land agroforestry species.* Trees. 25, 95-102. Retrieved from https://doi: 10.1007 /s00468-010-0467-0

Hatfield J.L. and Dold .C (2019) *Water-Use Efficiency: Advances and Challenges in a Changing Climate.* Front. Plant Sci. 10, 103-113. Retrieved from https://doi: 10.3389/fpls.2019.00103

Huang G., Zhang X., Wang Y., Feng F., Mei X., Zhong X. (2019) *Comparisons of WUE in twelve genotypes of winter wheat and the relationship between* $\delta^{13}C$ *and WUE.* Peer J (7) Retrieved from https://doi: 10.7717/peerj.6767

Jairin, J, Chamarerk, V, Wongboon, W, Sansen, K, Kotchasatit, A, Lertna, S, Saleeto, S, Srisompan, C, Rattanapun, Y, & Kato, Y. (2017). *Farming made easy and cost effective in drought-prone rainfed lowlands in northeastern Thailand*. Climate-ready technologies: Combating poverty by raising productivity in rainfed rice environments in Asia. Retrieved from https://www.researchgate.net/publication /316786203

Kale, S, Sonmez, B, Madenoglu, S, Avag, K, Turker, U, Çayc, G, & Kutuk, A. C. (2017). *Effect of irrigation regimes on carbon isotope discrimination, yield and irrigation water productivity of wheat*, Turkish Journal of Agriculture and Forestry. 41-58.

Kaler, A.S, Bazzer, S.K, Sanz-Saez, A, Ray, J.D, Fritschi, F.B, & Purcell, L.C. (2018). *Carbon Isotope Ratio Fractionation among Plant Tissues of Soybean*. The Plant Phenome Journal. 6, 1-6. Retrieved from https:// doi:10.2135/tppj2018.04. 00021.180002

Kano-Nakata, M, Tatsumi, J, Inukai, Y, Asanuma, S, & Yamauchi, A. (2014). *Effect of various intensities of drought stress on $\delta^{13}C$ variation among plant organs in rice: comparison of two cultivars*. American Journal of Plant Sciences. 5, 1686-1693.

Kawasaki, J. & Herath, S. (2011). *Impact Assessment of Climate Change on Rice Production in Khon Kaen Province, Thailand*. Journal of the International Society for Southeast Asian Agricultural Sciences. 17(2), 14-28.

Khan, F, Upreti, P, Singh, R, Shukla, P.K, & Shirke, P.A. (2017). *Physiological performance of two contrasting rice varieties under water stress*. Physiology and Molecular Biology of Plants. 23(1), 85-97. Retrieved from https://doi: 10.1007/s12298-016-0399-2

Liu, Y, Hu, X, Zhang, Q, & Zheng, M. (2017). *Improving agricultural water use efficiency: A quantitative study of Zhangye city using the static CGE model with a CES water—land resources account*. Sustainability. 9, 308-323. Retrieved from https://doi:10.3390/su9020308

Pandey, V. & Shukla, A. (2015). *Acclimation and Tolerance Strategies of Rice under Drought Stress*. Rice Science. 22(4), 147-161. Retrieved from https://doi.org/10.1016/j.rsci.2015.04.001

Report of Thai Meteorological Department on the Annual Rainfall, Rainy-days and Relative Humidity: Selected Location by Regions 2016 - 2017 and 2018. (2020). Retrieved from https://www.weather-th.com/en/thailand/ khon-kaen-climate

The Rice Department, Ministry of Agriculture and Cooperatives, Thailand. (2020). Retrieved from https://www.thairicedb.com/rice

Wei, Z, Du, T, Zhang, J, Xu, S, Cambre, P. J, & Davies, W. J. (2016). *Carbon isotope discrimination shows a higher water use efficiency under alternate partial root-zone irrigation of field-grown tomato.* Agricultural Water Management. 165, 33-43. Retrieved from https://doi.org/10.1016/j.agwat. 2015.11.009

Zufferey, V, Spring, J. L, Verdenal, T, Dienes, A, Belcher, S, Lorenzini, F, Koestel, C, Rösti, J, Gindro, K, Spangenberg, J, & Viret, O. (2017). *Influence of water stress on plant hydraulics, gas exchange, berry composition and quality of Pinot noir wines in Switzerland*. OENO One. 51(1), 17-27.

Comparative Study of Three Purification Methods for Thorium Analysis in Soil Using Alpha Spectrometry

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Abstract

Thorium isotopes mainly of phosphate fertilizer origin were frequently reported on their contamination in agricultural soil, stream and river sediment, vegetables and water resources. Thorium accumulation in human body leads to health hazard due to alpha emission. Therefore, thorium isotopes content is essential for safety assurance. To obtain reliable and accurate results on thorium analysis, sample preparation is an important step. This presented study was to evaluate the efficiency of three purification methods using ion exchange technique. Three different ion exchange columns namely method A (AG1-X8, Cl^- form), method B (AG50W-X12, H+ form) and method C (the commercially pre-packed column) were applied after complete dissolution of the soil with mineral acids. Method A eluted thorium from resin column with 0.2 M hot hydrochloric acid while method B and C eluted with 0.05M oxalic acid. Purified thorium isotopes from each methods were electro- deposited on stainless steel discs and simultaneously measured ^{228}Th, ^{230}Th, ^{232}Th and ^{229}Th (tracer) by alpha spectrometry. Reproducibility and accuracy of the proposed methods were evaluated through replicated analysis of standard reference materials from the International Atomic Energy Agency. Method A revealed the most efficient purification method for thorium isotopes analysis in soil with radiochemical recovery ranging from 90-94% and the peak resolution (FWHM) was 25 keV.

Keywords : Thorium Isotopes, Soil, Purification Method, Ion Exchange Technique, Alpha Spectrometry

1. Introduction

Thorium is a radioactive element of the actinide series, discovered by Jons Berzelius in 1828. It is solid under normal conditions, atomic number 90, atomic weight 232.04, and chemical symbol Th. Thorium is a naturally occurring in the earth's crust and is present in all uranium ores. It is a major element found in monazite and it is present in significant amounts in the minerals

zircon, titanite, gadolinite and betafite. Thorite, uranothorite and thorianite are the minerals commonly found. The amount of thorium in earth's crust is about half as abundant as lead and is three times more abundant than uranium. Thorium exhibits an oxidation state of +4 in almost all of its compounds. The Th^{4+} ion forms many complex ions as an oxide (ThO_2), phosphate ($ThPO_4$), and silicate ($ThSiO_4$) and tend to have affinities with hydrocarbon complexes (Jia, 2017; Yusoff, 2016). Thorium properties are shown in Table 1

Table 1. Thorium element properties (Jia, 2017; Yusoff, 2016).

Thorium Element Properties	
Atomic number	90
Atomic weight	232.038
Melting point	about 1,700 °C (3,100 °F)
Boiling point	about 4,000 °C (7,200 °F)
Specific gravity	about 11.66 (17 °C)
Density	11.72 $g.cm^{-3}$ at 20°C
Oxidation state	+4
Electronic shell	$[Rn]6d^27s^2$

Thorium dioxide (ThO_2) has many industrial applications due to its refractory property. It is formerly added to glass during manufacture to increase the refractive index, producing thoriated glass for use in high-quality camera and telescope lenses. Thorium is also used to make ceramics, welding rods, fire brick, heat resistant paint and metals used in the aerospace industry, as well as in nuclear reactions. Thorium has the potential to be used as a fuel for generating nuclear energy. There is apparently more energy available from thorium than from both uranium and fossil fuels.

Thorium is found at trace levels in soil, rocks, water, plants and animals. It was reported that in Granite tile contains thorium up to 80 ppm while occurred at an average of 6 μg/g in natural soil (Jia, 2017; Yusoff, 2016). Previous studies reported that shale and phosphate rocks have relatively high thorium levels (Bajoga et al, 2019a; Bajoga et al, 2015b; Maxwell et al, 2013). The contaminations of thorium isotopes in agricultural soil were resulting from long term applications of phosphate fertilizer (Maxwell et al, 2013; Sahu et al, 2014; Chauhan & Kumar, 2015). The findings of previous studies revealed that the transfer of ^{232}Th from soil to rice grain and potato plants increased with increase in the amount of fertilizer and plantation time. Early fertilizer application to soil allows the plant to absorb more nutrients, as well as soluble radionuclides (Chauhan & Kumar, 2015; Nain et al, 2013; Alsaffar et al, 2016). ^{232}Th

concentrations in rice grains were increased as maximum by 16% (Nain et al, 2013). Thorium in soils can form soluble carbonate complexes and leach into groundwater as well as transfer to plants and farm animals. Naturally occurring thorium exists as ^{232}Th, ^{230}Th and ^{228}Th while synthetic isotope is ^{229}Th, all of which are radioactive. Thorium is therefore considered as one of the highly radiotoxic elements, due to its radioactivity as the daughter products decay of other α, β and γ ray. Inhaling thorium dust will remain in the lungs for a long period of time and will cause an increased risk of developing lung cancer. Thorium via digestion typically leaves the body through feces and urine within several days. The small amount of thorium left in the body will enter the bloodstream and be deposited in the bones where it will remain for many years and will resulting of bone cancer (Jia, 2017; Yusoff, 2016). The long term application of phosphate fertilizer is a potential source of enhanced thorium level in cultivated soil, and the resulting environmental impact should be considered carefully to ensure safety and compliance with environmental regulations (Shakhashiro et al, 2011; Bolivar et al, 2000). Therefore, the investigation of thorium isotopes in soil is imperative to achieve the data required for estimation of the hazards from ^{232}Th, ^{230}Th and ^{228}Th on agricultural soils.

There are different radiometric methods such as alpha and gamma spectrometry, neutron activation analysis (NAA) and liquid scintillation spectrometry, visible spectrophotometer, inductively coupled plasma-atomic emission spectrometry (ICP-AES), thermal ionization mass spectrometry and inductively coupled plasma-mass spectrometry (ICP-MS). However, NAA, voltammetry, and spectrophotometric techniques are used to determine the total thorium content in the samples. Whereas gamma spectrometry is a suitable method for analysis when the daughter radionuclides are in equilibrium with the parent ^{232}Th. The technique of alpha spectrometry is used to detect alpha particles and to determine their energy. In this way the technique is able to provide simultaneously quantitative information (i.e. the activity) and qualitative information (the identity) on any radionuclide that emits an alpha particle. The advantage of Alpha spectrometry compare with the other instruments mentioned above is its sensitivity and selectivity. Alpha spectrometry is the reliable method for detecting ^{228}Th, ^{230}Th, and ^{232}Th simultaneously. Considerable studies indicated that alpha spectrometry was a well-established method that could precisely measure the thorium isotopes at trace levels down to activities of 0.3 mBq as in case of vegetation, soil, and biological samples that the other instruments could not detect. (Kulsawat et al, 2019; Canbazoglu & Dogru, 2013; Choi et al, 2008; Bolca et al, 2007).

Sample preparation is usually different for each type of sample matrix. As already known, soil is the most complex and difficult medium for thorium isotopes determination in environmental samples due to refractory thorium compounds. However, all sample preparations are designed to concentrated and purified or remove impurities from the sample and convert it into a suitable form for subsequent electrodeposition process prior to counting in an alpha

spectrometry (Jia 2017; Aggarwal 2016]. Several radiochemical analytical procedures have been developed based on extraction with liquid organic solvents, ion exchange column, and ready-to-use packed column. However, the liquid-liquid extraction method is time consuming, generate high amounts of toxic waste (organic solvent) and do not always allow for high chemical recovery yields. Whereas ion exchange column technique of both cation and anion exchanger have been the best choice for purification of thorium with reproducibility and reliability, high recovery yields, and low time demands, [Olivira & F.P. Carvalho].

2. Research objectives

This presented study was to develop radiochemical method on the purification process using ion exchange technique. Reproducibility and accuracy of the developed method was evaluated using two standard reference materials from the International Atomic Energy Agency (IAEA SRM-368 and IAEA SRM-375). This proposed developed method measured thorium isotopes of ^{228}Th, ^{230}Th, and ^{232}Th by alpha spectrometry.

3. Materials and Methods

3.1 Sample Digestion

For digestion process, the blank and the standard reference material of marine sediment (IAEA368) and soil (IAEA375) were digested in Teflon beaker with a sequential of mineral acids (HNO_3, $HClO_4$, HF, and HCL). The final solution was in a media of 9 M HCl.

3.2 Thorium Purification Method

The chromatography column is prepared as the followings:

1. Method A (AG1-X8, Cl^- form, 100-200 mesh)
2. Method B (AG50W-X12, H+ form, 100-200 mesh)
3. Method C (the commercially pre-packed column)

Each column was conditioned before introduction of the sample solution using distilled water and 9 M HCL. Load the sample solution on the conditioned anion exchange column with the adjustment of the flow rate (1 drop/6 seconds) under gravity flow. Eventually, strip thorium fraction from the column by passing 50 ml 9 M HCL solution through the column. The further purification for thorium fraction was carried out.

3.3 Thorium Elution Step

After the first purification, thorium in the 9M HCl was undertaken as the following

1. Method A: thorium solution in 9 M HCl was evaporated to dryness and eventually converted into NO_3^- form by dissolved with 8M HNO_3. Then the solution was passed through the anion exchange resin column. Subsequently, thorium was eluted in 100 ml 0.2 M HCL (hot) solution from the second column.

2. Method B and C: thorium in 9 M HCl was loaded into each method column and thorium from both methods was stripped from the second column by passing 100 ml 0.05 M oxalic acid.

The solution from all methods were evaporated slowly to dryness. After dryness, 20 ml 65% HNO_3 was added, then evaporated to dryness. Repeated this step twice and evaporated to dryness. After dryness, the source of thorium was prepared by electrodeposition method.

Electrodeposition of thorium was performed on the polished surface of stainless disc with a platinum wire as anode. The electrodeposition processes and cell design was proposed by Kulsawat et al. (2019) The electrodeposition was undertaken during 2 hr with electric current of 1000 to 1200 mA. Finally, it was counted by passivated implanted silicon detector with a surface area of 450 mm^2 attached to EG&G ORTEC (Octete Plus) alpha spectrometer.

4. Results and Discussion

This study developed a new method for purification of thorium isotopes using three comparative method; namely, method A, method B, and method C. The developed purification method using ion exchange technique which method A was AG1-X8, Cl^- form resin and then eluted with 0.2 M hot hydrochloric acid. Whereas method B was AG50W-X12, H+ form resin and method C was the commercially pre-packed column. Both method B and C were eluted with 0.05 M oxalic acid. Estimations of the elution peak maximum values for each method under conditions that achieved highly-pure fraction were determined by Alpha spectrometry at Thailand Institute of Nuclear Technology (Public Organization). To evaluate the method, ^{229}Th tracer and the International Atomic Energy Agency (IAEA) standard reference materials were performed. These experiments were designed to determine the radiochemical recovery, purity, and alpha-spectral resolution that could be achieved using the method.

The IAEA standard reference materials (IAEA SRM-368 and IAEA SRM-375) were used for validated the developed method. Reproducibility was tested through five repeated analysis of the same homogeneous soil sample material. The soils were acid digested to allow leaching of thorium isotopes. The purification process of method A, method B, and method C were carried out comparatively. The obtained solution was electrodeposited on stainless steel disc and was measured using Alpha spectrometry. The performance of purification and electrodeposition steps is crucial to obtained alpha sources of good quality which usually a blue-like color taints the stainless steel surface and no dark color deposit is visible. Method A were gave a good quality of alpha source compare with method B and C. Counting time was adjusted to the activity in the sample discs to obtain a counting statistics better than 5% relative uncertainty.

The general methodology of thorium purification proposed in this work is based on the adsorption properties of thorium [Bednar et. al. 2004]. Prior to the comparative study of three ion

exchange resin types, samples of thorium solution (9M HCl) were primarily treated by loading into the first ion exchange column. In the first column of anion exchange resins (AG1-X8, Cl^- form), thorium was not adsorbed on the resins in a concentrated hydrochloric acid medium but impurities elements of uranium and its small amount of daughter products were adsorbed. The uranium was retained on the exchanger as a negative uranium chloride complex, while thorium, which did not form chloride complexes, passed through the column. Hence, thorium would remain in the eluent of 9 M HCl and ready to load into the second ion exchange column of method B and C. Except in method A, the loaded solution of thorium was converted to nitrate form using 8 M nitric acid. The exchange resin types of AG1-X8, Cl^- form (method A), AG50W-X12, H+ form (method B) and pre-packed column (method C) were reacted as follows:

1 In the second purify column containing AG1-X8, Cl^- form (method A), thorium was adsorbed and was easily eluted with hot 0.2 M HCl. The explanation is thorium isotopes were absorbed on the resins in HNO_3 medium but not adsorbed in HCl even at low concentration. On the contrary, the impurities elements were not absorbed on the resins in HNO_3 medium.

2 In the AG50W-X12, H+ form column (method B), the method began with the elution of uranium and most other matrix elements. Thorium was retained in this type of cation-exchange resin. Finally, thorium was eluted with 100 ml 0.05 M oxalic acid.

3 Method C (the commercially pre-packed column) the reaction was the same as method B. That was uranium and other impurities were eluted in 9 M HCl, following consecutive elution of thorium with 100 ml 0.05 M oxalic acid. It was worth to note that this ready to use packed column was discarded after used which generated waste materials that took a long time to completely break down.

Table 2 shows the results obtained by each method as well as the IAEA recommended concentration values. Reproducibility test indicated that results of method A were comparable to the IAEA values and shown the consistently high reproducibility (accuracy and precision) with good recovery yield and resolution. However, results obtained by method B and C revealed lower reproducibility (accuracy and precision), recovery yield and resolution than method A. Experiments demonstrated that losses for thorium with AG50W-X12, H+ form resin and commercially pre-packed column were higher than with AG1-X8, Cl^- form resin.

Table 2. Analytical results of IAEA standard reference materials revealed reproducibility (accuracy and precision), radiochemical yield, and spectral resolution.

Item	^{232}Th	^{230}Th	^{228}Th	% yield	Resolution (keV)
IAEA-368 (Marine sediment)	0.3	26.7	1		
Recommended Values Range	0.06 - 2.3	24.1 - 28	0 - 2		
Method A	0.3 ± 0.1	25.8 ± 0.3	1.3 ± 0.01	90 - 94	25
Method B	ND	31.3 ± 1.2	3.6 ± 0.2	53 - 60	31
Method C	1.9 ± 0.1	21.9 ± 1.5	2.4 ± 0.2	65 - 72	28
IAEA-375 (Soil)	21	20.5	ND		
Recommended Values Range	17 - 2.5	19.2 – 21.9	ND		
Method A	17.2 ± 0.2	20 ± 0.3	ND	90 - 94	25
Method B	18 ± 0.4	15 ± 2.1	2.8 ± 0.2	53 - 60	31
Method C	15 ± 0.4	23 ± 1.4	1.6 ± 0.2	65 - 72	28

The resulting spectrum shown natural thorium isotopes; ^{232}Th 3.9 MeV, ^{230}Th 4.6 MeV, ^{229}Th 5.4 MeV, and tracer ^{229}Th 4.8 (multiple peak) MeV with a resolution full width at half maximum (FWHM) of 25 keV (Figure 2).

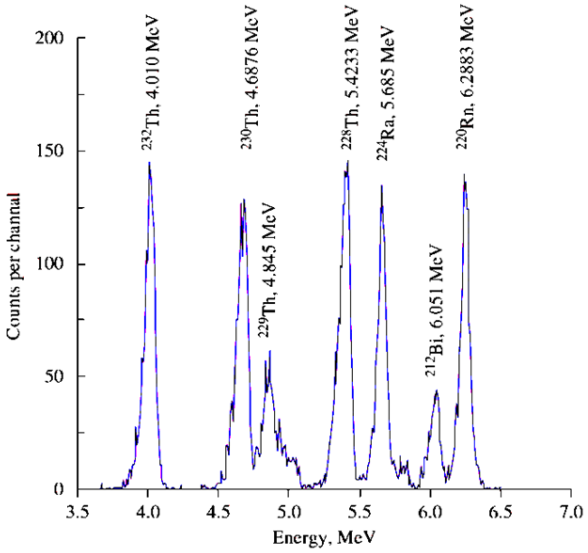

Figure 2 Alpha spectra of thorium isotopes and their daughters

The advantage of the developed purification process by using manipulated ion exchange column of AG1-X8, Cl^- form resin (method A) instead of using manipulated ion exchange column of AG50W-X12, H+ form resin (method B) or ready-to-use chromatography column (method C) were the relatively high performance with higher reproducibility, recovery yield and resolution, .less cost and generating a lower plastic column waste with the purchase of commercially pre-packed column.

5. Conclusion

Thorium in agricultural soils were found to be higher in case of phosphate fertilizers used compare with natural forest soils. This caused by the presence of thorium in the phosphate rock; raw materials used for the phosphate fertilizer production. Thorium will remain strongly sorbed to soil and its mobility will be very slow. Uptake of thorium can cause significant damage to internal organs which eventually develop cancer of the organs. Therefore, the present study has been regards as of importance to develop the purification method for thorium analysis in soil matrices with accuracy, reproducibility and high performance. The developed purification process was based on ion exchange technique. It found that the column packed with AG1-X8, Cl^- form resin and then eluted with 0.2 M hot hydrochloric acid revealed the most efficient purification method for thorium isotopes analysis in soil with radiochemical recovery ranging from 90-94% and a resolution full width at half maximum (FWHM) of 25 keV.

6. Recommendations

The purification method for thorium analysis in soil matrices by using ion exchange technique is clearly feasible. However, the proposed suggestions for further study are:

6.1 To extend the use of this method to fresh-water sediments

6.2 To try expanding the method to analyse uranium isotopes from the same sample as thorium isotopes are.

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8. References

Aggarwal, S.K. (2016). *Alpha-particle spectrometry for the determination of alpha emitting isotopes in nuclear, environmental and biological samples: past, present and future.* Analytical Methods, 8(27), 5313-5342.

Alsaffar, M.S, Suhaimi Jaafar, M, Ahmad Kabir, N. A, & Nisar, A. (2016). *Impact of fertilizers on the uptake of ^{226}Ra, ^{232}Th, and ^{40}K by pot grown rice plants.* Pollution. 2(1), 1-10. Retrieved from https://doi: 10.7508/pj.2016.01.001

Bajoga, A.D, Al-Dabbous, A.N, Abdullahi, A.S, Alazemi, N.A, Bachama, Y.D, & Alaswad, S.O. (2019a). *Evaluation of elemental concentrations of uranium, thorium and potassium in top soils from Kuwait.* Nuclear Engineering and Technology. 51 (6), 1638-1649. Retrieved from https://doi.org/10.1016/ j.net. 2019.04.021

Bajoga, A.D, Alazemi, N, Regan, P.H, & Bradley, D.A. (2015b). *Radioactive investigation of NORM samples from Southern Kuwait soil using high-resolution gamma-ray spectroscopy.* Radiation Physics and Chemistry. 116, 305-311.

Bednar A. J., Gent D. B., Gilmore J. R., Sturgis T. C., Larson S. L. (2004). *Mechanisms of thorium migration in a semiarid soil.* Journal of Environmental Quality. 33:2070–2077.

Bolca, M, Saç, M.M, Çokuysal, B, Karalı, T, & Ekdal, E. (2007). *Radioactivity in soils and various foodstuffs from the Gediz River Basin of Turkey*. Radiation Measurements. 42, 263-270.

Bolivar, J.P, Garcia-Tenorio, R, & Vaca, F. (2000). *Radio-ecological study of an estuarine system located in the south of Spain.* Water Research. 34, 2941-2950.

Canbazoglu, C. & Dogru, M. (2013). *A preliminary study on ^{226}Ra, ^{232}Th, ^{40}K and ^{137}Cs activity concentrations in vegetables and fruits frequently consumed by inhabitants of Elazig Region, Turkey*. Journal of Radioanalytical and Nuclear Chemistry. 295, 1245-1249.

Chauhan, R.P. & Kumar, A. (2015). *Soil to plant transfer of alpha activity in potato plants: impact of phosphate fertilizers.* Journal of Environmental Health Science and Engineering. 13, 45-53. Retrieved from https://doi: 10.1186/ s40201-015-0200-4

Choi, M.S, Lin, X.J, Lee, S.A, Kim, W, Kang, H.D, & Doh, S.H. (2008). *Daily intakes of naturally occurring radioisotopes in typical Korean foods.* Journal of environmental radioactivity. 99, 1319-1323.

Jia, G. (2017). *Sequential separation and determination of uranium and thorium isotopes in soil samples with Microthene-TOPO chromatographic column and alpha-spectrometry.* Journal of Radioanalytical and Nuclear Chemistry. 311, 1007-1017. Retrieved from https://doi:10.1007/s10967-016-4905-3

Kulsawat, W, Porntepkasemsan, B, & Kaewchuay, N. (2019). *Optimum conditions for electroplating of thorium in soil for alpha spectrometric determination*. Proceedings of the 7th Burapha University International Conference 2019, 27-29 Nov 2019, Chonburi, Thailand.

Maxwell, O, Wagiran, H, Ibrahim, N, Lee, S.K, & Sabri, S. (2013). *Comparison of activity concentration of ^{238}U, ^{232}Th and ^{40}K in different Layers of subsurface Structures in Dei-Dei and Kubwa, Abuja, northcentral Nigeria*. Radiation Physics and Chemistry. 91, 70-80.

Nain, M, Chauhan, R, Kumar, A, & Chauhan, P. (2013). *Effect of fertilizers on soil to plant transfer of alpha radioactivity in potato plants using SSNTD technique.* ISST Journal of Applied Physics. 5(2), 88-91.

Sahu, S.K, Ajmal, P.Y, Bhangare, R.C, Tiwari, M, & Pandit, G.G. (2014). *Natural radioactivity assessment of a phosphate fertilizer plant area.* Journal of Radiation Research and Applied Sciences. 7(1), 123-128. Retrieved from https://doi.org/10.1016/j.jrras.2014.01.001

Shakhashiro, A, Sansone, U, Wershofen, H, Bollhofer, A, Kim, C.K, & Kim, C.S. (2011). *The new IAEA reference material: IAEA-434 technologically enhanced naturally occurring radioactive materials (TENORM) in phosphogypsum*. Applied Radiation and Isotopes. 69, 231-236.

Olivira J.M. & Carvalho F.P. (2006) *Sequential extraction procedure for determination of uranium, thorium, radium, lead and polonium radionuclides by alpha spectrometryin environmental samples*, Czechoslovak Journal of Physics, 56, 545-555

Yusoff A.H. & Mohamed, C.A.R. (2016). *Mini review uranium-thorium decay series in the marine environment of the Southern South China Sea.* Journal of Geology and Geophysics. 5(3), 1-9. Retrieved from https://doi:10.4172/2381-8719.1000246.

Impacts of Problematic Social Media Use on Sleep Quality and Life Satisfaction among Undergraduates, One University, Eastern Part, Thailand; cross-section study

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Abstract

Problematic social media use (PSM) is the rising problem within our society particularly for adolescents. That has an effect not only on their physical health but also on mental health. Therefore, the authors intended to determine the prevalence of social media addiction in undergraduates and to demonstrate the relationship between addictive behaviors, sleep disorders and life satisfaction. Data was gathered under cross-section design in 1,202 out of 21,464 students from one university in the eastern part of Thailand, 2017-2018. There was a high prevalence (70%) of PSM in these students and found the negative impacts on sleep quality by T-PSQI ($t = 7.198$, $p < .01$). In PSM group also had the significant increment of Thai-ESS scores more than normal user ($t = -20.757$, $p < .01$). However, all students had their SLS scores in the good level but the PSM had SLS scale less than another group ($t = -4.027$, $p < .01$). The authors suggested to do the longitudinal study in order to make the strong recognition on impacts of PSM to sleep quality and life satisfaction.

Keywords : Social Media, Addictive, Sleep, Undergraduate, Personal Satisfaction

1. Introduction

Human beings are social creatures that need to interact with each other. There are numerous types of socialization in contemporary society, particularly in the computerized period, where correspondence can be simpler with one touch. We can't ignore correspondence innovation in our daily activities nowadays. Communication networks are constantly active, whether waking or sleeping, in our lives. You may need to hold seats for correspondence apparatuses in certain families when you sit, eat, watch films, tune in to music, travel with family, or notwithstanding when you pace to bed. These pictures are now known, specifically among young people and adolescents. In Italy, so was once a survey of 2,553 secondary school pupils and discovered five percentage points of Internet addiction and 0.79 % was a serious addiction. These addictions

brought about shortfalls of focus, ruin regarding control concerning behavior, exclusion concerning mean interests, and removal from society. (Poli & Agrimi, 2012) Some studies affirmed the high range of moderate addiction and more than half of them had the moderate health impact. (Abdel-Salam, Alrowaili, Albedaiwi, Alessa, & Alfayyadh, 2019; Sharma, Nitakumari, & Verma, 2019) Be that as it may, the prevalence of web enslavement was shift by populace and incorporation criteria, for instances, the Young Internet Addiction Test (IAT), the Young Internet Addiction Diagnostic Questionnaire (IADQ), the Chinese/Chen Internet Addiction Scale, the Problematic Internet Usage Scale (Carlisle, Carlisle, Polychronopoulos, Goodman-Scott, & Kirk-Jenkins, 2016) Bergen Social Media Addiction Scale (Lin, Broström, Nilsen, Griffiths, & Pakpour, 2017b)

What did Internet addiction impact the wellbeing of youth? Research among Chinese adolescents and young adults disclosed the unfavorable impacts of media use and dietary patterns. (Peat et al., 2015) the investigation in Japan additionally demonstrated the huge wellbeing impact of tricky web use on skirting the morning meal, late sleep time and orthostatic dysregulation side effects. (Kojima et al., 2019) The Internet dependence not only affected physical impacts but also mental health, i.e., anxiety, solitude, impaired self-esteem, trend of attention and deficit hyperactivity disorder and depression (Bozoglan, Demirer, & Sahin, 2013; Kitazawa et al., 2018; Singh & Brown, 2014)

Social networking is the most influential medium embedded in the lives of the younger generation. It is not only a strong communication tool, but also a forum where, in cyberspace, many individuals reveal their new identity. This space helps users to share their emotions, opinions and beliefs with someone who is unable to do so face to face because of certain circumstances or timing. However, some individuals have used social media overtime until their individual functions have been disrupted, for example, sleep disruptions, physical impacts and mental health disorders. A systematic study and meta-analysis in 2018 found a negative impact on well-being and psychological status among teenagers who were troublesome Facebook users. (Marino, Gini, Vieno, & Spada, 2018) Another meta-analysis research in 2019 also found signs of depression among problematic users, but the impact was minimal. (Yoon, Kleinman, Mertz, & Brannick, 2019)

Sleep quality impact is one of the physical consequences of Internet addiction, particularly in teenagers and adolescents. Data have shown that lower age was associated with poor sleep quality in undergraduates. (Bhandari et al., 2017) Another evaluation was carried among younger users of social media in the U.S.A. in 2014, a correlation was identified between the use of social media and sleep deprivation. Thirty percent of these were in the group of high-level disturbances.(Levenson, Shensa, Sidani, Colditz, & Primack, 2016) Additionally, inappropriate use of the Internet has also been linked to depression. (Bhandari, et al., 2017; Cheung & Wong, 2011; Kitazawa, et al., 2018; Kojima, et al., 2019; Morrison & Gore, 2010) People who have signs of Internet addiction were likely to have more than the general population, proportionately,

psychiatric illness. Clear evidence indicates that adequate sleep increases memory consolidation and tolerance to disruption. Insufficient sleep may therefore pose a learning risk by endangering the memory cycle. (Carskadon, 2011) Previous meta-analysis evidence have confirmed the impact of sleep quality in children and adolescents. (Dewald, Meijer, Oort, Kerkhof, & BÖgels, 2010)

From the literature review for the last decade, there was little information on the relationship between social media addiction and sleep quality among adolescents in Thailand. A recent study among high school students in Sisaket province found that the use of mobile phones before going to bed had an impact on sleep quality.(Pimpak, Yoobua, Yuenying, & Limpiteeprakan, 2018) Other studies have concentrated on mental health and Internet addiction. (Boonvisudhi & Kuladee, 2017; Hanprathet, Manwong, Khumsri, Yingyeun, & Phanasathit, 2015; Tangmunkongvorakul et al., 2019) That's why the authors needed to explore this problem, because social media connections have become the one thing in our lives that we're going to find it hard to escape as long as we remain in the social and culture.

2. Research objectives

2.1 To determine the prevalence of problematic social media use among undergraduates

2.2 To compare the quality of sleep, sleepiness and life satisfaction between problematic users and normal users

3. Research methodology

3.1 Study design, population and participants

The authors conducted a cross-sectional study of samples recruited in 2017 from 21464 undergraduate students in one of the universities in the eastern part of Thailand, through stratified randomization which divided by faculties. The total projected sample size of the Taro Yamane formula was 1,056 and added 15 % for missing data; therefore, the planned sample size was 1,214.

3.2 Study Instruments and Measurements

The authors collected the data through questionnaires divided into the following: general socio-demographic data, social media use behaviors, the scale of Internet addiction, and the effects on sleep quality. The Bergen Social Media Addiction Scale (BPSMS) consisting of six core items rated on the 5-point Likert scale was used in this study, ranging from 1-not at all to 5-always.(Lin, BrostrÖm, Nilsen, Griffiths, & Pakpour, 2017a) On this scale, there were six addiction components: salience, mood alteration, tolerance , withdrawal, conflict, and relapse. The diagnosis was based upon the full score of the exam. For addiction, the indicated BPSMS scale was over 19. BPSMS has the advantage of applying more widely than a specific platform such as the

Bergen Facebook Addiction Scale (BFAS) (Andreassen, Torsheim, Brunborg, & Pallesen, 2012), but there has been a little data on this scale of usage in Thailand.

Under the consultant of the linguistic man, informatics and technology experts, the authors translated the BPSMS items into Thai language. Then, we check the validity and Cronbach's alpha reliability of this altered BPSMS in 30 undergraduate learners who were not in the primary research sample group. The IOC was 0.78 and 0.81 was Cronbach's alpha.

To evaluate sleep quality, we used the Thai version (T-PSQI) in this study, which was modified in one study in the province of Songkla. There are nine questionnaires that belong to seven categories as follows: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The scoring system starts from 0 to 21 and the cutoff score of the poor quality section was greater than five. The sensitivity specificity and Cronbach's alpha coefficient of this tool were 89.6 %, 86.5%, and 0.83, respectively. (Tansithabudhkun, Tanchaiswad, & Samarngsri, 1999)

The sleepiness of all participants was assessed by the Thai version of the Epworth Sleepiness Score test (ESS), which consists of eight self-administered questionnaires. There were situations in each questionnaire that were ranked from 0 to 3. For the sleepiness diagnosis, the cumulative score had to be over nine.(Methipisit et al., 2016)

In addition, the authors measured their life satisfaction with the satisfaction-life-scale (SLS), which consisted of five items questionnaires and seven points scale. Then we compared the score between two grades. The performance in the 5-9 range was highly dissatisfied, while the 30-35 range was extremely satisfied. (Diener, Emmons, Larsen, & Griffin, 1985; Pavot & Diener, 2008)

3.3 Data collection

The authors used questionnaires for self-reporting of BPSMS, T-PSQI, ESS and SLS to collect objective data. The authors used the anonymous identity of the volunteers using the encoder method. Their confidentiality was protected by sealing the envelope when the data was completely filled and only the research team was allowed to reveal this information.

3.4 Data analysis

Questionnaire information were entered in the PSPP program which sponsored by the Free Software Foundation. The normality of continuous data was checked using Kolmogorov-Smirnov testing at $\alpha = 0.05$. The demographic data was analyzed by descriptive statistics such as percentages, frequencies, mean and standard deviation. The BPSMS was applied to create a decision on social media addiction and used the Chi-square test to figure out what was associated with social media addiction. The comparison of sleep disorders assessed by T-PSQI and ESS was tested at a significant level of 0.05 using an independent t-test. An independent samples t-test was also used to compare the average SLS ratings.

3.5 Ethical Considerations

The proposal for this research received the approval and authorization of the Ethical Committee for Innovation and Research of this university. Before starting to collect data, the authors informed all volunteers about the details of the project and asked for their consent to participate in the research program in accordance with the protocols set out in the proposal.

4. Results

The authors have obtained full questionnaire data from 1,202 subjects from 18 faculties. The response rate was more than 90 % because the data collectors were the students in this campus. There were 896 women and 306 men. Approximately 70% of samples were problematic social media users, and the percentage of gender-divided addiction has been slightly higher in males than females. (Table 1) The top three high proportions of PSM were in the faculties of "Engineering," "Abhaibhubejhr Thai Traditional Medicine" and "Geoinformatics." (Figure 1 and Table 2) There was no gender or faculty impact between the two groups. (Tables 1 and 2)

Table 1 Gender relationship between normal users and the social media addiction group of undergraduate students at one university in the eastern part of Thailand

Gender	Normal user	SMA	X^2	p-value
Female	280 (31.25%)	616 (68.75%)	1.842	0.175
Male	83 (27.12%)	223 (72.88%)		
Total	363	839		

Table 2 Faculty's relationship between normal users and the social media addiction group of undergraduate students at one university in the eastern part of Thailand

Faculty	Number		Total	X^2 with Yate correlation	p-value
	Normal user	SMA			
Management and Tourism	38 (41.8%)	53 (58.2%)	91 (100.0%)	7.311	0.12
Informatics	16 (30.2%)	37 (69.8%)	53 (100.0%)		
Abhaibhubejhr Thai Traditional Medicine	2 (14.3%)	12 (85.7%)	14 (100.0%)		
Science	41 (39.4%)	63 (60.6%)	104 (100.0%)		
Nursing	10 (25.6%)	29 (74.4%)	39 (100.0%)		
Sport Science	13 (22.0%)	46 (78.0%)	59 (100.0%)		
Medicine	2 (25.0%)	6 (75.0%)	8 (100.0%)		
Engineering	13 (14.1%)	79 (85.9%)	92 (100.0%)		
Geoinformatics	10 (18.9%)	43 (81.1%)	53 (100.0%)		

Table 2 (Continue)

Faculty	Number		Total	X^2 with Yate correlation	p-value
	Normal user	SMA			
Music and Performing Art	26 (29.9%)	61 (70.1%)	87 (100.0%)		
Pharmaceutical Science	10 (79.6%)	3 (23.1%)	13 (100.0%)		
Education	39 (26.7%)	107 (73.3%)	146 (100.0%)		
Humanities and Social Science	71 (36.0%)	126 (64.0%)	197 (100.0%)		
Allied Health Sciences	17 (60.7%)	11 (39.3%)	28 (100.0%)		
Political Science and Law	20 (28.6%)	50 (71.4%)	70 (100.0%)		
Public Health	9 (20.0%)	36 (80.0%)	45 (100.0%)		
Logistics	14 (28.0%)	36 (72.0%)	50 (100.0%)		
International College	12 (22.6%)	41 (77.4%)	53 (100.0%)		
Total	363 (30.2%)	839 (69.8%)	1,202 (100.0%)		

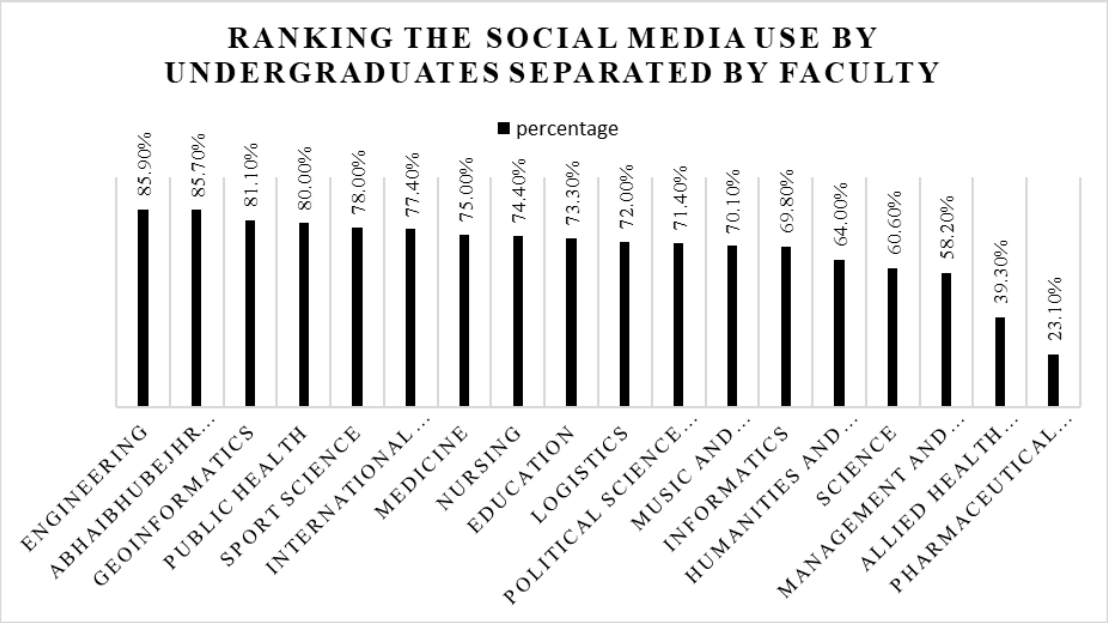

Figure 1 Social media use ranking among undergraduates divided by faculty, one university, Eastern part, Thailand

There was no different of access equipment and usage motivation between two groups, but there was statistically significant difference of social media service providers (X^2 (16, 1202) = 236.31, p< 0.01) and the purpose (X^2 (5, 1202) = 73.783, p< 0.01) between them. The top three popular in PSM were Facebook, YouTube and Line, respectively, but Facebook, Line and YouTube were orderly in the normal-user group. (Table 3) The top three purposes to use social media in PSM were entertainment, information exchange, and learning data search, respectively,

but the data from another group were information exchange, establish channels of communication with the surrounding society, and learning data search. (Table 3) The authors questioned all participants about people's reactions to their social media activities and found that the people around them responded negatively to their social media uses. There was, however, no statistically significant difference between the two groups. (Table 4)

Table 3 Factors that affected the use of social media between normal user and SMA group, separated by access equipment, forms of social media, incentives for use and purposes

Factor	Normal users	SMA	X^2	p-value
Access equipment			1.578	0.209
— Desktop Personal computer	120	220		
— Mobile phone/Tablet	350	756		
Social media service providers			236.310	0.00*
— Facebook	347	829		
— Twitter	123	429		
— Line	334	635		
— Instagram	238	289		
— Social cam	97	120		
— Google+	158	502		
— Whatsapp	127	159		
— Tango	87	145		
— Skype	151	256		
— Pantip.com	67	420		
— YouTube	276	737		
— eBay	5	17		
— Amazon	14	20		
— We chat	31	36		
— Camfrog	5	15		
— BBM	31	40		
— Other	9	28		
Motivation to use social media			2.424	0.489
- Loneliness	314	710		
- News tracking	123	291		
- Socializing	101	200		
- Social popular	34	60		

Table 3 (Continue)

Factor	Normal users	SMA	X^2	p-value
Purpose of social media use			73.783	0.00*
- Information exchange	360	774		
- Learning data search	303	677		
- Trading	16	171		
- Entertainment	280	780		
- Creating a new social media identity	10	80		
- Establish channels of communication with the surrounding society	346	663		

Alpha level = .05

Table 4 The impact of the use of social media on people between normal users and SMA group.

Impacts from around people	Normal users	SMA	X^2 With Yates correlation	p-value
			2.989	0.084
No	5	26		
Yes	358	813		
			X^2	p-value
Within Yes answer			4.744	0.191
- Parents	155	363		
- Colleagues	144	258		
- Friends	349	794		
- Others	38	90		

Sleep quality in PSM group was worse than non-addiction group according to the T-PSQI measure ($t = 7.198$, $p < 0.01$). A comparison of sleep quality items also showed that there was a statistically significant difference in all items. (Table 5 and Figure 2) There was a statistically significant difference sleepiness score between two groups. The mean score of ESS in PSM group was greater than the normal users. ($t = -20.757$, $p < .01$) (Table 6)

Table 5 Comparison of mean T-PSQI score of normal users and SMA group by independent t-test

Category	T-PSQI	Mean	SD.	SE.
	Normal users	4.97	2.88	0.151
	SMA	6.14	2.45	0.085

Normal users – SMA T-PSQI	Unpaired differences						
	Mean±SD.	SE.	95% confidence interval of differences		t	df	Sig (2- tailed)
			Lower	Upper			
	-1.17±5.63	0.163	-1.42	-0.91	9.069	1200	<0.01

Comparison by items	Normal users	SMA	95% confidence interval of difference		t	df	Sig (2-tailed)
	Mean ± SD	Mean ±SD	Lower	Upper			
Subjective sleep quality	0.90±0.71	1.37±0.66	-0.55	-0.39	11.0757	1200	<0.01
Sleep latency	0.80±0.77	1.11±0.90	-0.42	-0.20	5.7189	1200	<0.01
Sleep duration	0.87±0.75	1.20±0.98	-0.44	-0.22	5.7301	1200	<0.01
Habitual sleep efficiency	0.20±0.84	0.30±0.58	-0.18	-0.02	2.3788	1200	0.0175
Sleep disturbance	0.96±0.64	1.20±0.63	-0.32	-0.16	6.0349	1200	<0.01
Use of sleep medication	0.05±0.33	0.25±0.42	-0.25	-0.15	8.0593	1200	<0.01
Daytime dysfunction	1.52±0.96	1.89±0.74	-0.47	-0.27	7.2472	1200	<0.01

Alpha level = .05, Effect size (Cohen's) = 0.45

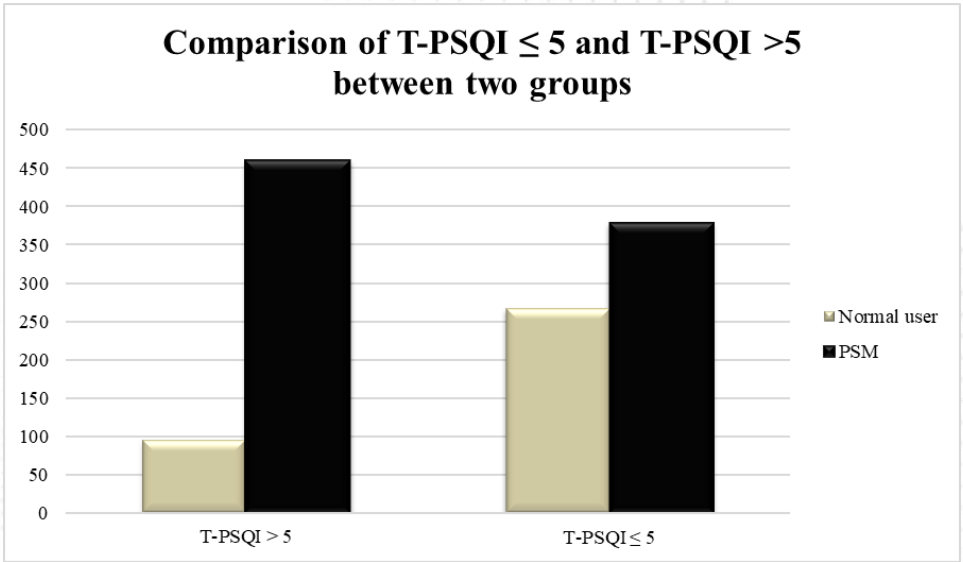

Figure 2 comparison of number of two T-PSQI category (>5 and ≤ 5) between PSM group and normal user group

Table 6 Comparison of Thai version Epworth Sleepiness scores (ESS) between normal users and SMA group by independent t-test

ESS assessment	ESS	Mean	SD.	SE.
	Normal users	8.20	3.34	0.175
	SMA	12.86	3.67	0.127

Normal user – SMA ESS	Unpaired differences							
	Mean	SD.	SE.	95% confidence interval of differences		t	df	Sig (2-tailed)
				Lower	Upper			
	-4.66	7.77	0.22	-5.10	-4.22	-20.757	1200	<0.01

Effect size by Cohen's D: 1.304

The satisfaction mean scores of non-addiction and addiction groups were 27.16 ± 3.45 and 26.21 ± 3.88, respectively. There was a statistically significant difference of SLS score between two parties ($t = -4.027$, $p < 0.01$). However, the mean scores in both groups were at the high score range (25-29) which meant that these participants were satisfied with life. (Table 7 and Figure 3)

Table 7 Comparison of satisfaction with life scale (SLS) between normal users and SMA group by independent t-test

SLS assessment	SLS	Mean	SD.	SE.
	Normal users	27.16	3.45	0.181
	SMA	26.21	3.88	0.134

Normal user – SMA SLS	Unpaired differences							
	Mean	SD.	SE.	95% confidence interval of differences		t	df	Sig (2- tailed)
				Lower	Upper			
	-0.95	0.236	0.24	-1.41	-0.49	-4.027	1200	<0.01

Pooled S.D. =3.76

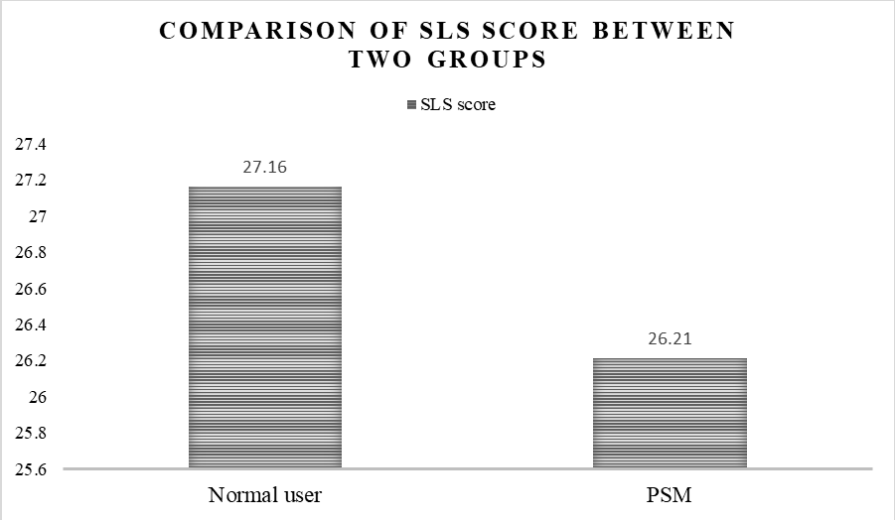

Figure 3 comparison the satisfaction with life scores (SLS) between PSM group and normal user group

5. Discussion

Today, we cannot deny that the Internet plays an important role in our lives, particularly on the condition that we have to stay or work at home and have to communicate with others. Online connection is the first priority that we are always thinking about. The recent data of percentage household Internet use in United Kingdom, Australia, and U.S.A were 90, 86, and 77, respectively. (Padmanathan et al., 2018) Internet usage trends in Thailand have also increased from 45 million to 50 million since 2017-2019. ("internet statistic," 2020) The use of the Internet is becoming more widespread, causing problems in the behavior of users. One of the problems is that of Internet addiction. This abnormal behavior has begun to be known since Young's report of the Internet addiction in 1996. (K. S. Young, 1996) Shortly thereafter, Internet addiction was grouped into a mental disorder in the Diagnostic and Statistical Manual of Mental Disorders — Fourth Edition (DSM-IV; American Psychiatric Association, 1995) (K.S. Young, 1998) DSM-V, however, accepted behavioral dependency, such as Internet addiction and shopping dependence, but due to lack of evidence to test the diagnostic criteria, social media addiction has not yet been part of the DSM-V. (Akbay, 2019; K**ö**se & Do an, 2019)

One thing that made a difference in the prevalence of social media addiction was the inclusion criteria that were still controversial. Therefore, its prevalence has varied by places, age group and definition. There was no gold standard scaling to measure this problematic behavior. The authors used BPSMS for this study because it was a good internal consistency and good reliability (Cronbach's alpha =0.88) in one study. (Monacis, de Palo, Griffiths, & Sinatra, 2017) In addition, this score was unity and strong construct validity after translation into Persian language. (Lin, et al., 2017a) Recent systematic review study found a positive linear correlation of BPSMS

and the negative well-being score. (Duradoni, Innocenti, & Guazzini, 2020)Therefore, the authors selected this tool for assessment after the validity and reliability test for Thai version.

The prevalence of PSM in this study was approximately 70%. Comparing to the previous studies, the incidence in this study was greater than others. (Bányai et al., 2017; N R, S, & Mallekavu, 2017; Ramachandran, R, T, & S, 2017; Schou Andreassen et al., 2016) This result could be due to different population, time and definition criteria. In addition, the demographic of this study was a young generation who clung to life with Internet technology, and it seemed like the use of the Internet had melted down in their lives.

The general data showed the high female proportion in this study, however; we found no relationship between gender and PSM. However, the gender might be one factor that resulted in high prevalence in this study. A study of the protective factors associated with Internet addiction found that a female factor was one of the risks of addiction. (Choi et al., 2015) A large-scale analysis by the Hungarian National Research Agency found that female teenagers were dominant consumers. BMAS and BFAS have been used as methods to classify problematic social media users. (Bányai, et al., 2017) However, the gender factor still has been the controversy issue varying by many studies. The recent study showed no gender difference in Internet addiction, but some studies did not. (Chen, Zhang, & Zhou, 2020; Dufour et al., 2016; Khan, Shabbir, & Rajput, 2017; Wang et al., 2013)

The authors found no correlation between faculty, equipment access, motivational use of social media and PSM. There was a statistically important correlation between providers of social media services, using purpose and PSM. The problematic group preferred to use Facebook, YouTube and Line, respectively, but Line was the second preference in another group. In authors' opinions, there was a little difference. It could be the beginning time of the service provider, because Line started in 2011 after Facebook and YouTube. The top three common behaviors in the PSM were entertainment, information exchange and learning, but in another group were information exchange, communication networks and learning. Such results were the same as the latest adolescent research in China. (Xin et al., 2018) The addiction group was more interested in social networking, online gaming, shopping and entertainment than the normal group. Nearly 98 % of addiction group used the social media. (Xin, et al., 2018) Another study also found the same results and revealed a relationship of social media use to mental health problem. (Sampasa-Kanyinga & Hamilton, 2015) Online gaming and social networking sites were predisposing risk factors of Internet addiction in adolescents. (Daria J. Kuss, van Rooij, Shorter, Griffiths, & van de Mheen, 2013; Leung & Lee, 2012)

The association between Internet addiction and interpersonal relationships was one of the topics of the behavioral research. There were the earlier studies revealed the abnormal interpersonal connection in the Internet addiction group and most of them had neurotic personality

and anxiety. They preferred to make the interpersonal relationships via the Internet more than facing. (Chang, Lee, & Hsieh, 2019; Nagase, Morita, Ogai, & Saito, 2016) In our research, we also found the side effects of active social media usage on people around them in both groups. Nonetheless, there was no substantial difference between the two parties. While Internet addiction has had an impact on interpersonal relationships, the negative influence of social media networking has been inconclusive. One research found the controversial negative effects of online social networking on people's contact and interaction. (Pantic, 2014) At present, social networking is diverse and the use of social media is not the same in the past. "The fear of missing out" and "Nomophobia" may be part of the addiction to social media. (D. J. Kuss & Griffiths, 2017) At present, this may be the reason for problematic use of social media.

The recent studies showed that social media overuse effected the sleep quality in adolescents. (Abu-Snieneh, Aroury, Alsharari, Al-Ghabeesh, & Esaileh, 2020; Garett, Liu, & Young, 2018; Scott, Biello, & Woods, 2019) The results of this study also showed poor sleep quality among undergraduates due to the problematic use of social media. There was a relatively shorter amount of sleep at night in the PSM group than the normal user group. In addition, there were more problems with daytime sleepiness in the social media overuse category than another group. As the findings, it might mean that PSM category undergraduates spent their time at night more than another in social networking. One study found that poorer sleep quality was correlated with college students who tweeted more often on late weekday nights. (Garett, et al., 2018) The correlation between academic success and sleep quality was also found among problematic users of social media. (Abu-Snieneh, et al., 2020) In line with these challenges, the curriculum plan should be structured to encourage adequate undergraduate sleep and inform them on the importance of sleep.

Does the increasing amount of time teenagers spend on social media negatively impact their life satisfaction? The relationship between life satisfaction and social media use in adolescent was inconclusive. There was a study created the relationship model between life satisfaction, Internet addiction and social media addiction. They found major factors caused life satisfaction were the happiness and stress. Most social media addictive users had the lower happiness and higher stress than regular Internet users. These addictive group should be analyzed and surveillance. (Longstreet & Brooks, 2017) However, according to the available evidence, a clear association between the use of social media and life satisfaction in adolescents could not be inferred. The recent study found that social media use did not the predictor of life satisfaction. There were many factors that has had an effect on their life satisfaction, such as gender, contingent on analytic methods. (Orben, Dienlin, & Przybylski, 2019) One research referred to family social capital, which should be addressed when interpreting the social media effects on adolescents' life satisfaction. (Geraee, Eslami, & Soltani, 2019)

According to the analysis, the authors found means of SLS of both groups were in the satisfied level, but there was a higher mean score in normal user group than the problematic group significantly. However, the overall, there was a little effect of social media use on SLS value. This might imply that there have had other factors that effect on the life satisfaction another than social media use.

Limitations and suggestions

This research was a cross-sectional study and an operation was performed at the end of the semester, which may have resulted from undergraduate stress. The prevalence of student use of social media and poor quality of sleep was also higher than average. These findings had a predictive drawback since both exposure and effect were measured at the same time. However, it should not be inferred to be used in generalization: it will have university positions for education policy and student affairs. As for the above reasons, in order to understand the clear correlation of exposures and effects, the authors proposed using the longitudinal study or Cohort's design for further study.

6. Conclusions

In the young generation, overuse of social media has become an issue. We cannot deny that it is an effective medium of communication at this time, but some users, particularly teenagers who have insufficient self-control, may have the negative effects of social media use when they are addictive. The findings of this study showed that more than normal users had detrimental effects on sleep quality and daytime sleepiness in the PSM party. However, this study was a cross-sectional survey that might have limited scope to draw a strong conclusion on these negative effects of problematic social media use.

7. References

Abdel-Salam, D. M., Alrowaili, H. I., Albedaiwi, H. K., Alessa, A. I., & Alfayyadh, H. A. (2019). Prevalence of Internet addiction and its associated factors among female students at Jouf University, Saudi Arabia. *Journal of the Egyptian Public Health Association, 94*(1), 12. doi: 10.1186/s42506-019-0009-6

Abu-Snieneh, H. M., Aroury, A. M. A., Alsharari, A. F., Al-Ghabeesh, S. H., & Esaileh, A. A. (2020). Relationship between sleep quality, using social media platforms, and academic performance among university students. *Perspect Psychiatr Care, 56*(2), 415-423. doi: 10.1111/ppc.12450

Akbay, S. (2019). PSMrtphone Addiction, Fear of Missing Out, and Perceived Competence as Predictors of Social Media Addiction of Adolescents. *European Journal of Educational Research, 8*, 559-566. doi: 10.12973/eu-jer.8.2.559

Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook Addiction Scale. *Psychological Reports, 110*(2), 501-517. doi: 10.2466/02.09.18.PR0.110.2.501-517

Bányai, F., Zsila, Á., Király, O., Maraz, A., Elekes, Z., Griffiths, M. D., . . . Demetrovics, Z. (2017). Problematic Social Media Use: Results from a Large-Scale Nationally Representative Adolescent Sample. *PloS one, 12*(1), e0169839-e0169839. doi: 10.1371/journal.pone.0169839

Bhandari, P. M., Neupane, D., Rijal, S., Thapa, K., Mishra, S. R., & Poudyal, A. K. (2017). Sleep quality, internet addiction and depressive symptoms among undergraduate students in Nepal. *BMC Psychiatry, 17*(1), 106. doi: 10.1186/s12888-017-1275-5

Boonvisudhi, T., & Kuladee, S. (2017). Association between Internet addiction and depression in Thai medical students at Faculty of Medicine, Ramathibodi Hospital. [Article]. *PLoS ONE, 12*(3), 1-10. doi: 10.1371/journal.pone.0174209

Bozoglan, B., Demirer, V., & Sahin, I. (2013). Loneliness, self-esteem, and life satisfaction as predictors of Internet addiction: A cross-sectional study among Turkish university students. [Article]. *Scandinavian Journal of Psychology, 54*(4), 313-319. doi: 10.1111/sjop.12049

Carlisle, K. L., Carlisle, R. M., Polychronopoulos, G. B., Goodman-Scott, E., & Kirk-Jenkins, A. (2016). Exploring Internet Addiction as a Process Addiction. [Article]. *Journal of Mental Health Counseling, 38*(2), 170-182. doi: 10.17744/mehc.38.2.07

Carskadon, M. A. (2011). Sleep's effects on cognition and learning in adolescence. *Prog Brain Res, 190*, 137-143. doi: 10.1016/b978-0-444-53817-8.00008-6

Chang, Y. H., Lee, Y. T., & Hsieh, S. (2019). Internet Interpersonal Connection Mediates the Association between Personality and Internet Addiction. *Int J Environ Res Public Health, 16*(19). doi: 10.3390/ijerph16193537

Chen, J., Zhang, Y., & Zhou, X. (2020). Effects of gender, medical school class year, and majors on sleep quality in Chinese medical students: a systematic review and meta-analysis. *Sleep Breath, 24*(1), 259-266. doi: 10.1007/s11325-019-01905-4

Cheung, L. M., & Wong, W. S. (2011). The effects of insomnia and internet addiction on depression in Hong Kong Chinese adolescents: an exploratory cross-sectional analysis. *J Sleep Res, 20*(2), 311-317. doi: 10.1111/j.1365-2869.2010.00883.x

Choi, S. W., Kim, D. J., Choi, J. S., Ahn, H., Choi, E. J., Song, W. Y., . . . Youn, H. (2015). Comparison of risk and protective factors associated with PSMrtphone addiction and Internet addiction. *J Behav Addict, 4*(4), 308-314. doi: 10.1556/2006.4.2015.043

Dewald, J. F., Meijer, A. M., Oort, F. J., Kerkhof, G. A., & Bögels, S. M. (2010). The influence of sleep quality, sleep duration and sleepiness on school performance in children and

adolescents: A meta-analytic review. *Sleep Med Rev, 14*(3), 179-189. doi: 10.1016/j.smrv.2009.10.004

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49*(1), 71-75. doi: 10.1207/s15327752jpa4901_13

Dufour, M., Brunelle, N., Tremblay, J., Leclerc, D., Cousineau, M.-M., Khazaal, Y., . . . Berbiche, D. (2016). Gender Difference in Internet Use and Internet Problems among Quebec High School Students. *Canadian journal of psychiatry. Revue canadienne de psychiatrie, 61*(10), 663-668. doi: 10.1177/0706743716640755

Duradoni, M., Innocenti, F., & Guazzini, A. (2020). Well-Being and Social Media: A Systematic Review of Bergen Addiction Scales. *Future Internet, 12*, 24. doi: 10.3390/fi12020024

Garett, R., Liu, S., & Young, S. D. (2018). The Relationship Between Social Media Use and Sleep Quality among Undergraduate Students. *Inf Commun Soc, 21*(2), 163-173. doi: 10.1080/1369118x.2016.1266374

Geraee, N., Eslami, A. A., & Soltani, R. (2019). The relationship between family social capital, social media use and life satisfaction in adolescents. *Health Promot Perspect, 9*(4), 307-313. doi: 10.15171/hpp.2019.42

Hanprathet, N., Manwong, M., Khumsri, J., Yingyeun, R., & Phanasathit, M. (2015). Facebook Addiction and Its Relationship with Mental Health among Thai High School Students. *J Med Assoc Thai, 98 Suppl 3*, S81-90.

_____. internet use in Thailand. (2020), 2019, from http://webstats.nbtc.go.th/netnbtc/HOME.php

Khan, M. A., Shabbir, F., & Rajput, T. A. (2017). Effect of Gender and Physical Activity on Internet Addiction in Medical Students. *Pakistan journal of medical sciences, 33*(1), 191-194. doi: 10.12669/pjms.331.11222

Kitazawa, M., Yoshimura, M., Murata, M., Sato-Fujimoto, Y., Hitokoto, H., Mimura, M., . . . Kishimoto, T. (2018). Associations between problematic Internet use and psychiatric symptoms among university students in Japan. [Article]. *Psychiatry & Clinical Neurosciences, 72*(7), 531-539. doi: 10.1111/pcn.12662

Kojima, R., Sato, M., Akiyama, Y., Shinohara, R., Mizorogi, S., Suzuki, K., . . . Yamagata, Z. (2019). Problematic Internet use and its associations with health-related symptoms and lifestyle habits among rural Japanese adolescents. [Article]. *Psychiatry & Clinical Neurosciences, 73*(1), 20-26. doi: 10.1111/pcn.12791

Köse, Ö., & Do an, A. (2019). *The Relationship between Social Media Addiction and Self-Esteem among Turkish University Students*.

Kuss, D. J., & Griffiths, M. D. (2017). Social Networking Sites and Addiction: Ten Lessons Learned. *Int J Environ Res Public Health, 14*(3). doi: 10.3390/ijerph14030311

Kuss, D. J., van Rooij, A. J., Shorter, G. W., Griffiths, M. D., & van de Mheen, D. (2013). Internet addiction in adolescents: Prevalence and risk factors. *Computers in Human Behavior, 29*(5), 1987-1996. doi: https://doi.org/10.1016/j.chb.2013.04.002

Leung, L., & Lee, P. S. N. (2012). Impact of Internet Literacy, Internet Addiction Symptoms, and Internet Activities on Academic Performance. *Social Science Computer Review, 30*(4), 403-418. doi: 10.1177/0894439311435217

Levenson, J. C., Shensa, A., Sidani, J. E., Colditz, J. B., & Primack, B. A. (2016). The association between social media use and sleep disturbance among young adults. *Preventive medicine, 85*, 36-41. doi: 10.1016/j.ypmed.2016.01.001

Lin, C.-Y., Broström, A., Nilsen, P., Griffiths, M. D., & Pakpour, A. H. (2017a). Psychometric validation of the Persian Bergen Social Media Addiction Scale using classic test theory and Rasch models. *Journal of behavioral addictions, 6*(4), 620-629. doi: 10.1556/2006.6.2017.071

Lin, C.-Y., Broström, A., Nilsen, P., Griffiths, M. D., & Pakpour, A. H. (2017b). Psychometric validation of the Persian Bergen Social Media Addiction Scale using classic test theory and Rasch models. *6*(4), 620. doi: 10.1556/2006.6.2017.071

Longstreet, P., & Brooks, S. (2017). Life satisfaction: A key to managing internet & social media addiction. *Technology in Society, 50*, 73-77. doi: https://doi.org/10.1016/j.techsoc.2017.05.003

Marino, C., Gini, G., Vieno, A., & Spada, M. M. (2018). The associations between problematic Facebook use, psychological distress and well-being among adolescents and young adults: A systematic review and meta-analysis. *J Affect Disord, 226*, 274-281. doi: 10.1016/j.jad.2017.10.007

Methipisit, T., Mungthin, M., Saengwanitch, S., Ruangkana, P., Chinwarun, Y., Ruangkanchanasetr, P., . . . Sithinamsuwan, P. (2016). The Development of Sleep Questionnaires Thai Version (ESS, SA-SDQ, and PSQI): Linguistic Validation, Reliability Analysis and Cut-Off Level to Determine Sleep Related Problems in Thai Population. *J Med Assoc Thai, 99*(8), 893-903.

Monacis, L., de Palo, V., Griffiths, M. D., & Sinatra, M. (2017). Social networking addiction, attachment style, and validation of the Italian version of the Bergen Social Media Addiction Scale. *Journal of behavioral addictions, 6*(2), 178-186. doi: 10.1556/2006.6.2017.023

Morrison, C. M., & Gore, H. (2010). The relationship between excessive Internet use and depression: a questionnaire-based study of 1,319 young people and adults. *Psychopathology, 43*(2), 121-126. doi: 10.1159/000277001

N R, R., S, P., & Mallekavu, P. (2017). A comparative study on social media addiction between public and private high school students of urban Bengaluru, India. *ASEAN Journal of Psychiatry, 18*, 206-215.

Nagase, S., Morita, N., Ogai, Y., & Saito, T. (2016). Evaluation of the relationship between internet addiction and interpersonal relationships in university studentsin Japan. *Nihon Arukoru Yakubutsu Igakkai Zasshi, 51*(3), 184-202.

Orben, A., Dienlin, T., & Przybylski, A. K. (2019). Social media's enduring effect on adolescent life satisfaction. *Proc Natl Acad Sci U S A, 116*(21), 10226-10228. doi: 10.1073/pnas.1902058116

Padmanathan, P., Biddle, L., Carroll, R., Derges, J., Potokar, J., & Gunnell, D. (2018). Suicide and Self-Harm Related Internet Use. *Crisis, 39*(6), 469-478. doi: 10.1027/0227-5910/a000522

Pantic, I. (2014). Online social networking and mental health. *Cyberpsychol Behav Soc Netw, 17*(10), 652-657. doi: 10.1089/cyber.2014.0070

Pavot, W., & Diener, E. (2008). The Satisfaction With Life Scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology, 3*(2), 137-152. doi: 10.1080/17439760701756946

Peat, C. M., Von Holle, A., Watson, H., Huang, L., Thornton, L. M., Zhang, B., . . . Bulik, C. M. (2015). The association between internet and television access and disordered eating in a Chinese sample. [Article]. *International Journal of Eating Disorders, 48*(6), 663-669. doi: 10.1002/eat.22359

Pimpak, T., Yoobua, C., Yuenying, P., & Limpiteeprakan, P. (2018). Sleep quality among students at a high schooin Sisaket province, Thailand. *Journal of Public Health and Development, 16*(1), 63-74. Retrieved from https://he01.tci-thaijo.org/index.php/AIHD-MU/article/download/119047/91177/

Poli, R., & Agrimi, E. (2012). Internet addiction disorder: Prevalence in an Italian student population. [Article]. *Nordic Journal of Psychiatry, 66*(1), 55-59. doi: 10.3109/08039488.2011.605169

Ramachandran, N., R, A., T, P., & S, M. (2017). Prevalence of internet addiction and effects of social media private medical college students, Pondicherry. *International Journal of Current Advanced Research, 6*(10), 6486-6490. doi: 10.24327/ijcar.2017

Sampasa-Kanyinga, H., & Hamilton, H. A. (2015). Social networking sites and mental health problems in adolescents: The mediating role of cyberbullying victimization. [Article]. *European Psychiatry, 30*(8), 1021-1027. doi: 10.1016/j.eurpsy.2015.09.011

Schou Andreassen, C., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video

games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychol Addict Behav, 30*(2), 252-262. doi: 10.1037/adb0000160

Scott, H., Biello, S. M., & Woods, H. C. (2019). Social media use and adolescent sleep patterns: cross-sectional findings from the UK millennium cohort study. *BMJ Open, 9*(9), e031161. doi: 10.1136/bmjopen-2019-031161

Sharma, D., Nitakumari, & Verma, G. (2019). An Exploratory Study to Assess the Level of Internet Addiction and its Impact on the Health of Adolescents in Selected Schools of District Mohali, Punjab. *International Journal of Nursing Education, 11*(2), 12-16. doi: 10.5958/0974-9357.2019.00031.X

Singh, K., & Brown, R. J. (2014). Health-related Internet habits and health anxiety in university students. [Article]. *Anxiety, Stress & Coping, 27*(5), 542-554. doi: 10.1080/10615806.2014.888061

Tangmunkongvorakul, A., Musumari, P. M., Thongpibul, K., Srithanaviboonchai, K., Techasrivichien, T., Suguimoto, S. P., . . . Kihara, M. (2019). Association of excessive PSMrtphone use with psychological well-being among university students in Chiang Mai, Thailand. [Article]. *PLoS ONE, 14*(01), 1-13. doi: 10.1371/journal.pone.0210294

Tansithabudhkun, K., Tanchaiswad, W., & Samarngsri, N. (1999). The comparison of level of vigilance in night-shift nurses. *44*, 344-353. Retrieved from http://www.psychiatry.or.th/JOURNAL/v4446.html

Wang, L., Luo, J., Bai, Y., Kong, J., Gao, W., & Sun, X. (2013). Internet addiction of adolescents in China: Prevalence, predictors, and association with well-being. [Article]. *Addiction Research & Theory, 21*(1), 62-69. doi: 10.3109/16066359.2012.690053

Xin, M., Xing, J., Pengfei, W., Houru, L., Mengcheng, W., & Hong, Z. (2018). Online activities, prevalence of Internet addiction and risk factors related to family and school among adolescents in China. *Addictive Behaviors Reports, 7*, 14-18. doi: https://doi.org/10.1016/j.abrep.2017.10.003

Yoon, S., Kleinman, M., Mertz, J., & Brannick, M. (2019). Is social network site usage related to depression? A meta-analysis of Facebook-depression relations. *J Affect Disord, 248*, 65-72. doi: 10.1016/j.jad.2019.01.026

Young, K. S. (1996). Psychology of computer use: XL. Addictive use of the Internet: a case that breaks the stereotype. *Psychol Rep, 79*(3 Pt 1), 899-902. doi: 10.2466/pr0.1996.79.3.899

Young, K. S. (1998). Internet Addiction: The Emergence of a New Clinical Disorder. *CyberPsychology & Behavior, 1*(3), 237-244. doi: 10.1089/cpb.1998.1.237

Preparation and Characterization of Silk Fibroin Film from White Silk Cocoons

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Abstract

This study aimed to prepare and characterize silk films from white silk fibroin (B. mori). Silk fibroin was extracted from white silk cocoons and silk fibroin films were prepared from silk fibroin aqueous solution by solvent casting technique. The concentration of the purified silk fibroin was 6.40±0.13%w/v. The effect of ethanol and glycerol on the properties of the silk films was investigated. It was found that ethanol and glycerol altered the chemical structure of the films by shifting amide I band to higher wavenumbers. Moreover, FTIR spectra confirmed the presence of H-bonding between silk fibroin and glycerol. All the films are highly transparent with high percentage of light transmittance, at 500 nm, ranging from 88 to 90%. Besides, all the films showed UV absorption character. The silk fibroin film blended with glycerol showed the lowest percentage of equilibrium swelling (1.4%) and the lowest percentage of gel fraction (67%).

Keywords : Silk Fibroin, White Silk Cocoons, Glycerol

1. Introduction

Currently, the consumption of petroleum fuel, petrochemicals and solvents in various industrial applications has driven the risk of oil spill during transportation. The oil spills and the release of harmful waste-water chemicals in the environment, arising due to the extended handling and transportation of oil/solvents, are threatening the human health and marine ecosystem (Gore and Kandasubramanian, 2018). The direct havocking impact of this oil spills needs to be addressed to save the marine ecosystem. Physical, chemical and biological systems have been developed for the oil/water separation, as well as for removal of toxic pollutants from contaminated wastewater. In physical adsorption technique, activated carbon, foam and metal fine mesh are having limited absorption capacity (Gore et al., 2016). Moreover, their non-biodegradable character after service life is one of the major environment related issue. Therefore, biodegradable materials have become good solutions for replacing non-biodegradable materials. Silk from silkworms is recognized as a biocompatible, biodegradable and mechanically strong material. It offers a wide range of properties such as environmental stability, flexibility, and can

be chemically modified to suit a wide range of biomedical applications (Vasconcelos et al., 2008). For examples, the addition of ethanol and glycerol can improved degree of crystallization (Kaewpirom and Boonsang, 2020) and flexibility (Lu et al., 2010) of silk fibroin film, respectively. Moreover, it has been reported that silk based materials can be utilized as an effective oil/solvent-water separation material (Gore et al., 2019).

In this present work, silk films were prepared from white silk fibroin (B. mori). The properties of the films were altered by the addition of glycerol and ethanol. Chemical structure of the films were confirmed by Fourier-transform infrared spectroscopy. Optical property of the films was characterized by UV-Vis spectroscopy. Swelling and gel fraction of the films were also measured.

2. Objectives

This study aimed to prepare silk films with different chemical, optical and physical properties from silk fibroin solution. Silk fibroin was extracted from white silk cocoons and silk fibroin aqueous solution was prepared. The effect of glycerol and ethanol on chemical, optical and thermal properties of the silk films were also investigated.

3. Methodology

3.1 Materials

White silk cocoons were from Udon Thani, Thailand. Dialysis membrane (Cellu-Sep T3 MWCO: 12,000-14,000) were purchased from Membrane Filtration Products. Sodium carbonate (Na_2CO_3), calcium chloride ($CaCl_2$), ethanol (C_2H_5OH) and glycerol were obtained from Ajax Finechem. All reagents were analytical grade and were utilized as received without any further refinement.

3.2 Silk extraction.

Silk fibroin (SF) was prepared as followings: Na_2CO_3 (3.6 g) was added into 1.8 L of boiling distilled water. After the solution was re-boiled, 5.0 g of silk cocoons (cut in small pieces) was added. The mixture was occasionally stirred for 30 min before draining the water. Degummed silk was obtained and washed with excess tap water for 30 min. Further washing was performed thrice with distilled water (300 mL each time) to remove impurities and finally dried at 60°C for 24 h. Then, %recovery was calculated using equation (1)

$$\%\text{Recovery} = \frac{W_{SF}}{W_S} \times 100 \qquad (1)$$

Where W_{SF} and W_S are weights (g) of recovered silk fibroin and silk cocoons, respectively.

3.3 Preparation of pure silk fibroin solution.

Silk fibroin (2.0 g) was dissolved in 10 mL of $CaCl_2/C_2H_5OH/H_2O$ solution (1:2:8 mole ratio) at 110 °C for 2 h until viscous silk slurry was obtained. Later, the silk solution was purified by dialysis against deionized water (DI) for 72 h. The DI water (1.0 L) was changed every 4-6 h for 7 times. After complete dialysis, the purified silk solution (1.00 mL) was pipetted into a PET plastic tray and dried at room temperature for 24 h, followed by drying in a vacuum oven at 50 °C for 4 h. At least 3 samples were analyzed. The concentration (%w/v) of silk fibroin solution was then calculated by equation (2)

$$\text{Concentration}(\%\,\text{w/v}) = \frac{W_F}{V} \times 100 \qquad (2)$$

Where W_F and V are weight (g) of silk film and volume of silk fibroin solution (1.00 mL), respectively.

3.4 Preparation of silk films

Silk solution, silk solution blended with glycerol and silk solution crosslinked with ethanol were poured into polyethylene terephthalate (PET) plastic trays (8.7×8.7 cm^2) before leaving to dry at room temperature for 48 h and at 50 °C in a vacuum oven for 4 h. For the preparation of silk solution blended with glycerol, 6 mL of silk fibroin solution was well mixed with 1.00 mL of 10 %w/v glycerol before pouring into PET tray. Likewise, for the preparation of silk solution crosslinked with ethanol, 6 mL of silk fibroin solution was well mixed with 2.00 mL of 10 %w/v ethanol before pouring into PET tray.

3.5 Characterization

Swelling capability in water and gel fraction of silk films were evaluated as follows. A silk film (2.54 cm ×2.54 cm) was dried at 60 °C for 24 h or until completely dried. The dried film was weighed (W_d) before immersion in deionized water for 1, 2, 3 and 24 h at room temperature. The swollen film was taken out from the water at the determined time intervals. After the excess water was blotted out by filter paper, the film was weighed (W_s). Then further drying was done at 90 °C for 3 h or until complete drying and the film was reweighed (W_{rd}). The swelling and gel fraction was calculated using the equation (3) and (4), respectively.

$$\text{Swelling}\ (\%) = \frac{W_s - W_d}{W_d} \times 100 \qquad (3)$$

$$\text{Gel Fraction}\ (\%) = \left(\frac{W_{rd}}{W_d}\right) \times 100 \qquad (4)$$

Functional groups of silk films were investigated using a Perkin Elmer, (System 2000) Fourier transform infrared spectroscopy, FTIR. For each measurement, 12 scans were coded at a resolution of 4 cm^{-1}, with the wavenumbers ranging from 400 to 4000 cm^{-1}.

Silk films was measured for theirs transmittance over the visible-to-near-infrared region, wavelengths from 200 nm to 900 nm using a Shimadzu Scientific, (UV-2600) UV-VIS spectrophotometer.

4. Results and discussion

4.1 The extraction silk from the cocoons

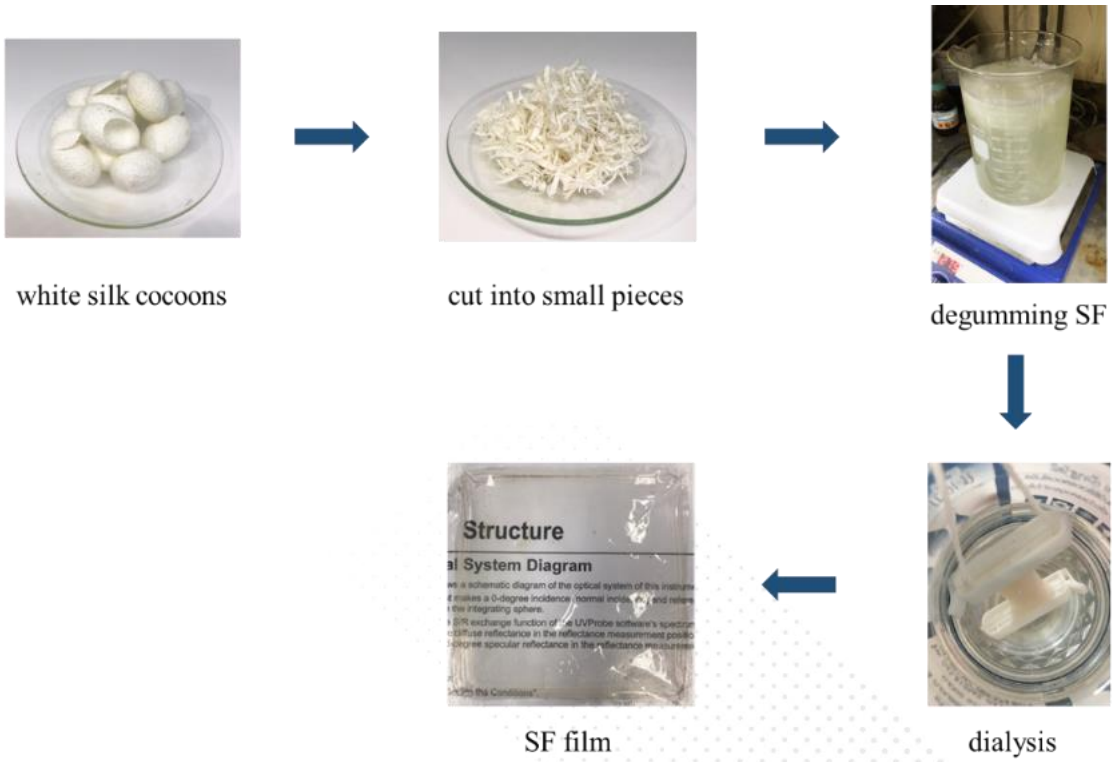
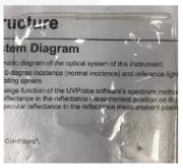
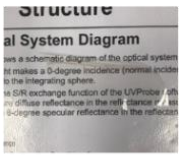
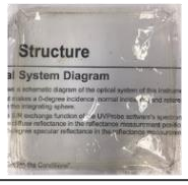


Figure 1. Sequence steps in preparation of silk fibroin film.

Silk fibroin extraction from white silk cocoons were carried out via dissolving off sericin gum using sodium bicarbonate aqueous solution at high temperature (Figure 1). The recovery of white silk fibroin was 54%w/w. This means that the content of silk gum in white silk cocoons was 46%w/w. The experimental results also showed that the concentration of purified silk fibroin solution was 6.40±0.13%w/v. This value is slightly lower than that proposed by Wasapinyokul et al. (2017).

Table 1. The thickness, %transmission at 500 nm and physical appearance of white silk films, namely WSF, WSFE and WSFG.

Sample	Thickener (mm)	%Transmission at 500 nm	Silk film sample pictures
WSF	0.050	88.28	
WSFE	0.019	90.37	
WSFG	0.035	89.64	

It can be seen from Table 1 that all the films showed smooth and transparent appearance with high light transmittance at 500 nm (88-90%). However, the thickness of the films varied from 0.019 to 0.05 mm. This may be because ethanol and glycerol affected the rearrangement of the silk fibroin chains in different ways during film forming and drying process.

4.2 Swelling and gel fraction

In order to evaluate the water resistance of the silk fibroin films, the percentage of swelling and gel fraction of WSF, WSFE and WSFG were studied and the results are presented in Figure 2.

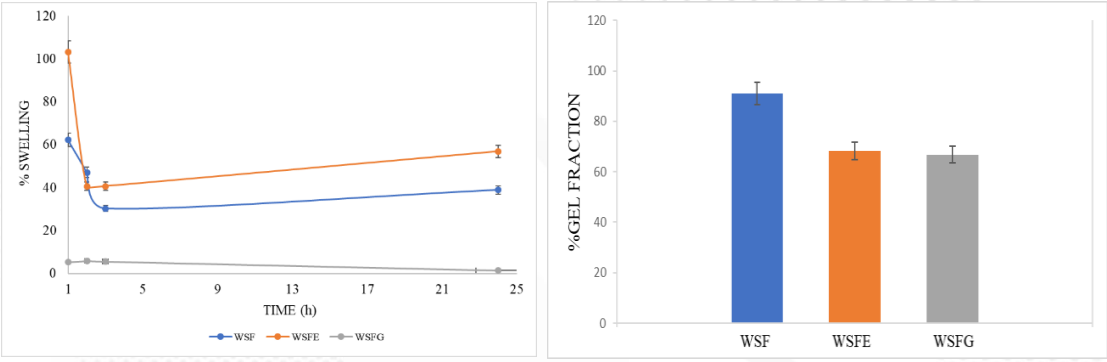


Figure 2. Swelling and gel fraction of WSF, WSFE and WSFG.

As immersion time increased, all the films showed the decreased in swelling. This may be due to the partial dissolution of silk in water. WSF, WSFE and WSFG exhibited equilibrium swelling at 24 h of 39.0%, 57.0% and 1.40%, respectively. Besides, WSF, WSFE and WSFG showed the gel fraction of 91%, 68% and 67%, respectively. It was proposed by Lu et al. (2010) that mechanistically, glycerol appears to replace water in silk fibroin chain hydration, resulting in the initial stabilization of helical structures in the films. Therefore, WSFG showed the lowest water swelling at equilibrium. Besides, by adding ethanol the polarity of the alcohol caused some degree of conformational transition of silk fibroin solution from a random coil to β-sheet crystallization. (Kaewpirom and Boonsang, 2020). The resulting crystallization produced physical crosslinks in the silk structure and the silk fibroin gel formed. Hence, WSFE showed high equilibrium swelling of 57%.

4.3 FT-IR analysis

The infrared spectra of WSF, WSFE and WSFG shows important peaks at 3276-3280 cm^{-1} (O-H stretching), at 1610-1645 cm^{-1} (Amide I), at 1512-1533 cm^{-1} (Amide II) and at 1231-1237 cm^{-1} (Amide III). Theses corresponded with the results reported by Srivastava et al. (2015) that the characteristic of silk II structure (β-sheet) was found at 1610-1640 cm^{-1} (amide I), 1510-1520 cm^{-1} (amide II) and 1220-1240 cm^{-1}(amide III), while the absorptions at 1648-1654 cm^{-1} (amide I), 1545-1560 cm^{-1} (amide II) and 1240-1260 cm^{-1} (amide III) are indicative of silk I structure (random coil/α-helix).

With the addition of ethanol, the amide I and amide III bands shifted to higher wavenumbers, while amide II band was not shifted. This may be due to the formation of β-sheet induced by ethanol. The absorption bands of amide I, II and III significantly shifted to higher values when glycerol was added to SF. The band at 1040 cm^{-1} was correlated to C—O stretching of glycerol (Brown et al., 2016). Moreover, the broad absorption band found at 3200–3600 cm^{-1} was due to inter- and intra-hydrogen bonding between glycerol and SF.

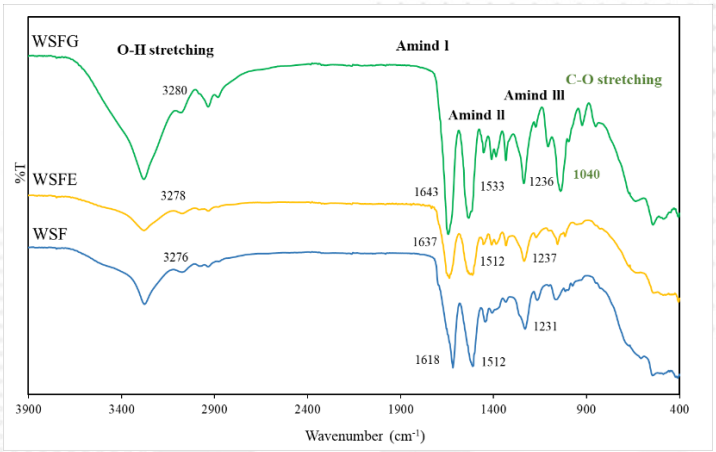


Figure 3. Infrared spectra of silk fibroin films

4.4 UV-Vis transmission analysis

Figure 4 shows the transmission spectra of WSF, WSFE and WSFG films in the region 200– 900 nm. In the visible region (400-800 nm) all the silk films exhibited high transmission profiles. At 500 nm, WSF, WSFE and WSFG showed transmittance percentage of 88.28%, 90.37% and 89.64% respectively. These high values are in good agreement with the light transmittance of silk fibroin reported by Shivananda et al. (2016). Besides, at wavelength between 250-300 nm, all the film showed UV absorption character. The UV absorption capability of the films from the highest to the lowest are in orders: WSF > WSFE > WSFG.

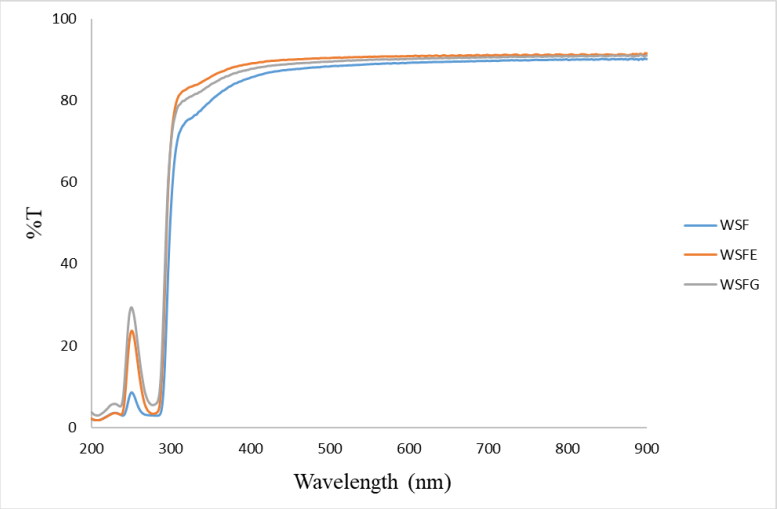


Figure 4. The transmission spectra of WSF, WSFE and WSFG films in the visible-to-near-infrared region (200-900 nm).

5. Conclusions

Silk films with different chemical, optical and physical properties were successfully prepared from silk fibroin solution by the addition of glycerol and ethanol. The intermolecular interactions between SF film and ethanol or SF film and glycerol were evidenced by FTIR. The absorption bands of amide I and amide III as well as the absorption band corresponded with H-bonding formation significantly shifted to higher values. The flexibility of SF film was improved by the addition of glycerol. All the films showed high values of light transmittance. Additionally, the results of swelling and gel fraction confirmed that WSFG has the lowest percentage of equilibrium swelling and the lowest percentage of gel fraction.

6. Acknowledgment

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7. References

Brown, J. E., Davidowski, S. K., Xu, D., Cebe, P., Onofrei, D., Holland, G. P., & Kaplan, D. L. (2016). Thermal and Structural Properties of Silk Biomaterials Plasticized by Glycerol. *Biomacromolecules*, 17(12): 3911–3921. doi:10.1021/acs.biomac.6b01260

Gore, P.M., Dhanshetty, M., & Kandasubramanian, B. (2016). Bionic creation of nano-engineered Janus fabric for selective oil/organic solvent absorption. *RSC Advances*, 6(112): 111250-111260. https://doi.org/10.1039/C6RA24106A

Gore, P. M. & Kandasubramanian, B. (2018). Heterogeneous Wettable Cotton Based Superhydrophobic Janus Biofabric Engineered with PLA/Functionalized-Organoclay Microfibers for Efficient Oil-Water Separation. *Journal of Materials Chemistry A*, 6(17): 7457–7479. https://doi.org/10.1039/C7TA11260B

Gore, P. M., Naebe, M., Wang, X., & Kandasubramanian, B. (2019). Progress in silk materials for integrated water treatments: Fabrication, modification and applications. *Chemical Engineering Journal*, 374: 437–470. doi:10.1016/j.cej.2019.05.163

Kaewpirom, S. & Boonsang, S. (2020). Influence of alcohol treatments on properties of silk-fibroin-based films for highly optically transparent coating applications. *RSC Advances*, 10: 15913–15923. https://doi.org/10.1039/D0RA02634D

Lu, S., Wang, X., Lu, Q., Zhang, X., Kluge, J.A., Uppal, N., Omenetto, F., & Kaplan, D.L. (2010). Insoluble and flexible silk films containing glycerol. *Biomacromolecules*, 11(1): 143–150. https://doi.org/10.1021/bm900993n

Shivananda, C.S., Asha, S., Madhukumar, R., Satish, S., Narayana, B., Byrappa, K., Wang, Y., & Sangappa, Y. (2016). Biosynthesis of colloidal silver nanoparticles: Their characterization and potential antibacterial activity. *Macromolecular Research*, 24(8): 684-690. https://doi.org/10.1007/s13233-016-4086-5

Srivastava, C.M., Purwar, R., Kannaujia, R., & Sharma, D. (2015). Flexible Silk Fibroin Films for Wound Dressing. *Fibers and Polymers*, 16(5): 1020-1030. https://doi.org/10.1007/s12221-015-1020-y

Vasconcelos, A., Freddi, G., & Cavaco-Paulo, A. (2008). Biodegradable Materials Based on Silk Fibroin and Keratin. *Biomacromolecules*, 9(4): 1299–1305. doi:10.1021/bm7012789

Wasapinyokul, K., Kaewpirom, S., Chuwongin, S., & Boonsang, S. (2017). Highly-transparent multi-layered spincoated silk fibroin film. *Proceedings of SPIE*, 10460: 104600S. https://doi.org/10.1117/12.2284186

Preparation of Activated Carbon from Cassava Root by NaOH Activation for Methylene Blue Removal

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Abstract

The removal of dyes from wastewater is essential due to their high toxicity and impact on human health. In the present study, the preparation of activated carbon from cassava roots by chemical activation was studied. The prepared activated carbon were used for the removal of methylene blue as a model wastewater. Batch adsorption experiments were carried out to examine the removal process. The effects of carbonized and activated temperature and chemical activation with base sodium hydroxide were studied. Carbonization at 400°C for an hour gave a higher adsorption capacity than other temperature. It was found that the appropriate temperature for calcination is 400°C. The production of activated carbon from cassava roots were activated with 0.25M NaOH and activated temperatures at 400°C. Further increase in temperature and time of activation was detrimental because it led to highly reduced yield with little increase in adsorption capacity of the activated carbon.

Keywords : Activated Carbon, Cassava Roots, Sodium Hydroxide, Methylene Blue

1. Introduction

The textile dyeing industry consumes large quantities of water at its different steps of dyeing, finishing etc. processes. Generally, the wastewater from printing and dyeing units in a textile plant contain residue of dyes and chemicals (Marrakchi et al., 2017). Without proper treatment, the release of the colored wastewaters damages the environment and can threaten human health. Methylene blue (MB) is widely used in several industries such as textile, paint, cosmetic, food, and plastic, with the textile industry being the largest consumer. Methylene blue is used as a nootropic, redox indicator, and peroxide generator, and is also used in sulfide analysis, water testing, biology, and medicine (Feng et al., 2012). Like many other dyes, aqueous MB causes serious aesthetic pollution and might have carcinogenic and mutagenic properties towards aquatic organisms and thus cause risk to human life and to the eco-environment. Many treatment methods have been used to remove the dyes from wastewater. These can be divided

into physical, chemical, and biological methods. Methods of MB removal include: adsorption, co-precipitation, Fenton and photo Fenton oxidation, electrochemical, photochemical and photoelectrochemical degradation, oxidation via a dielectric barrier discharges plasma, and biodegradation. Among the various methods, adsorption on activated carbon (AC) is widely employed for removal of colors and organic pollutants due to its extended surface area, microporus structure, high adsorption capacity and high degree of surface reactivity (Marrakchi et al, 2017, Li et al, 2017, Azharul et al, 2017). It is now recognized as an effective and economical method for the removal of both organic and inorganic pollutants from wastewaters.

Activated carbon (AC) is a carbonaceous material which is predominantly amorphous in nature and in which a high degree of porosity is developed by the process of manufacturing and treatment. Every activated carbon has a memory which largely depends on the source and the preparation conditions. AC is usually prepared from using one of the two basic activation methods; physical and chemical (Edidiong et al, 2016). Activated carbon can be manufacture from virtually all carbonaceous materials. However agricultural wastes offer the most available and cheapest of all the known raw materials. A number of studies have also been performed using AC prepared from agricultural or industrial wastes for dyes removal from aqueous solution. The waste materials include fish scales, coconut shell, oil palm fiber, palm kernel shell, corncob (Abechi et al, 2013). Cassava is an important crop in tropical regions. While a small amount of cassava residue is used as animal feed, the majority is wasted, contributing to environmental pollution. The main components of cassava residue are cellulose, lignin, starch, and hemicellulose. The total carbon content is 40– 60%. The large amount of carbon in cassava residue makes it a good precursor for AC. In this study, cassava root which is a by-product of processing cassava for starch was evaluated as AC precursor.

2. Research Objectives

The objective of the present work is to optimize operational conditions for activated carbon production from cassava roots for methylene blue (MB) removal as a model contaminant.

3. Research Methodology

3.1 Materials

Cassava roots was obtained from Maha Sarakham Province, Thailand. Cassava roots was washed and chopped in small pieces before dried in an electrical oven at 105°C for 24 h, and then ground to yield powders smaller than 80 mesh size. Methylene blue, sodium hydroxide and hydrochloric acid were purchased from the Carlo Erba. All the reagents were used as received. Deionized water was used throughout the experiments.

3.2 Procedure

3.2.1 Preparation of Activated Carbons (AC)

AC was prepared from cassava roots using a chemical activation with sodium hydroxide (NaOH). The carbonization and the activation were accomplished in a furnace. Grounded-cassava roots were carbonized in a furnace from room temperature to the desired temperature (300, 400, 500, 600 and 700°C) for an hour. After that, the carbonized sample was activated by thermal activation and chemical activation. Thermal activation was conducted in range of 300-500°C. For chemical activation, char was mixed with a NaOH solution at different concentration and impregnated times (0-24 h). The mixed samples were heated at 400°C. The samples were washed sequentially with water, a dilute HCl solution, and then water until the filtrate was pH 7. The desired AC was obtained after drying at 105°C for 24 h. Table I lists the conditions of the char and the AC preparation. All adsorption capacity of AC for methylene blue removal were monitored using a UV-Vis spectrophotometer (Perkin Elmer) at 664 nm.

Table 1 The Chemical activation conditions of the char and the AC preparation.

Adsorbent Types	NaOH Concentration (M)	Impregnated time (hour)	Calcined Temperature (°C)
C (char)	-	0	400
CB1	0.25	2	400
CB2	0.50	2	400
CB3	1.00	2	400
CB4	2.50	2	400
CB5	5.00	2	400
CB6	0.25	24	400
CB7	0.50	24	400
CB8	1.00	24	400
CB9	2.50	24	400
CB10	5.00	24	400

4. Research Results

The effect of change in activation time and temperature, which most significantly influence the physicochemical characteristics including; surface area, and yield of the adsorbent were studied and discussed. Raw cassava roots was first carbonized to obtain char. The effects of carbonization temperature on methylene blue removal were studied. The remaining char was activated with NaOH to prepare high surface area AC. The effect of activation temperature,

NaOH concentration and activation time on the surface area, porous structure, and methylene blue removal were evaluated.

4.1 Effect of carbonized temperature

The effect of carbonized temperature (300, 400, 500, 600 and 700°C) for was summarized (Table 2). In order to obtain the char with high adsorption capacity, 400°C were chosen as the optimal conditions for carbonization of the cassava roots.

Table 2 Effect of carbonized temperature on adsorption capacity.

Carbonized Temperature (°C)	Adsorption capacity (mg/g)
300	76.80
400	92.00
500	78.20
600	65.80
700	88.86

4.2 Effect of calcined temperature

A high yield is required for a feasible economic production of activated Carbon (AC). The yield of the prepared AC varied widely with the temperature of activation. Figure 1 showed that AC activated at 500°C have the least percentage yield. The percentage yield decreased from 83.07 to 17.98 as the temperature of activation increased from 300°C to 500°C, respectively. This is because increase of temperature of activation resulted in more volatile component being lost, and hence a decreasing percentage yield. However, the highest observable percentage of methylene blue removal was obtained at an experimental condition of 400°C for a time of 1 hour. It is also clear that the influence of temperature of activation was more pronounced at 400°C (Figure 1). The effect of activation temperature is therefore most felt at the highest experimental temperature of 500°C.

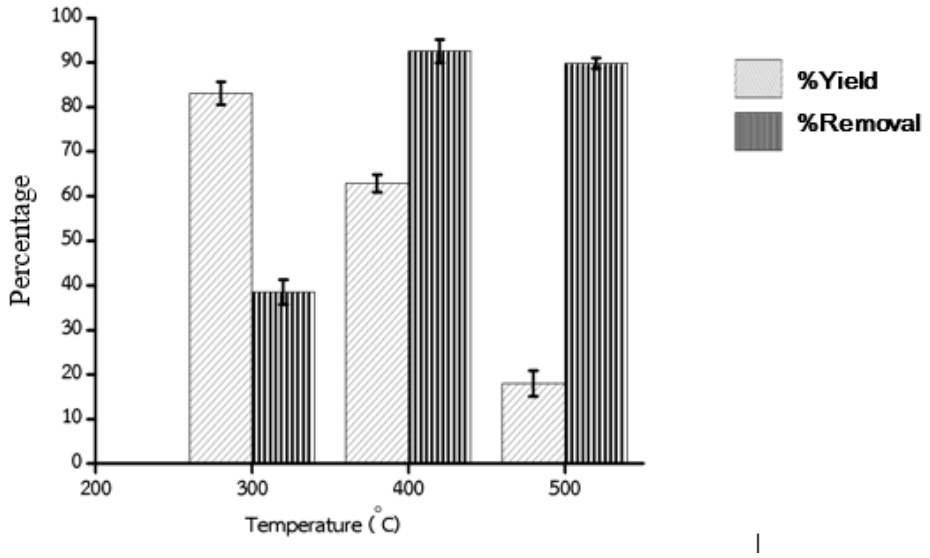

Figure 1 Effect of calcined temperature on yield and adsorption capacity of AC for methylene blue removal.

4.3 Effect of NaOH concentration and impregnated time

The influence of NaOH concentration and impregnated times on adsorption capacity of obtained AC was evaluated. Table 3 shows the %yield and %removal of AC prepared under different conditions. An increase in percentage of methylene blue removal was associated with increased NaOH concentration from 0.25 to 5.0 M. This is because the sodium ions attached onto the carbon surface act as catalyst to accelerate direct reaction between the carbon and NaOH. The maximum percentage of methylene blue removal, 98.85%, was found with a NaOH concentration of 5M. This was slightly higher than that obtained with other NaOH concentration. The influence of impregnated time is much less significant than that of concentration. As the results, CB1 (activated with NaOH at 0.5 M and impregnated time of 2 hours) was chosen for methylene blue removal.

Table 3 Effect of NaOH concentration and impregnated time on yield and adsorption capacity of AC for methylene blue removal.

Adsorbents	Yield (%)	Removal (%)
C	62.85±1.95	66.16±0.87
CB1	61.52±1.87	96.79±0.27
CB2	59.38±2.45	97.33±0.51
CB3	58.48±2.31	97.12±0.60

Table 3 (Continue)

Adsorbents	Yield (%)	Removal (%)
CB4	54.07±2.03	98.70±0.15
CB5	46.63±2.87	98.85±0.42
CB6	59.92±2.55	78.28±2.31
CB7	55.14±2.76	94.85±0.45
CB8	48.32±2.30	96.53±0.80
CB9	37.37±2.09	97.22±2.31
CB10	29.66±2.46	98.43±0.03

4.4. Characterization of Pore Structure

Surface area and pore structure were determined using N_2 adsorption isotherms at 77 K on a BEL JAPAN, INC; model Belsorp-mini. The results were shown in Table 3. The total pore volume ranged from 0.03656 to 0.04664 cm^3/g (Table 3). Most isotherms have been shown to conform to one of the five types of IUPAC classification. Table 3 showed that, C and CB1 were meso-pores with pores dimensions in range of 2-50 nm.

Table 3 BET Analysis of C (char) and CB1

Adsorbent type	BET surface area (m^2/g)	Pore volume (cm^3/g)	Pore size (nm)
C	119.11	0.03656	7.52
CB1	123.04	0.04664	8.96

5. Discussion

Activated carbon prepared with low NaOH concentration and at low temperature (CB1, CB2, CB3) had yields and percentage of methylene blue removal in the range of 61.52 to 58.48 and 96.79 to 97.12, respectively. Char, was obtained from the previous carbonization during two step activation. The cassava roots released most of the volatile compounds during pyrolysis and carbonization, and retained its graphite-like carbon structure. During activation, the activation agent NaOH reacted with charcoal. Some organic substances were released due to the reaction between carbon and NaOH and decomposition of cellulose. High NaOH concentration ensured adequate activation and decomposition of the cellulose, resulting in a relatively constant yield. The surface area of the activated carbon was related to the degree of decomposition of cellulose and NaOH activation. NaOH amount and temperature had a significant influence on surface area formed.

6. Conclusion

Activated carbons (AC) were successfully prepared from cassava roots using thermal activation and NaOH as activating agent. Among the prepared carbons, CB1 has the highest surface area and the yield was 61.52%. When compare with CB4, CB1 gave lower in percentage of methylene blue removal but in slightly percentage. It is therefore recommended that the optimum condition for the preparation of activated carbon for adsorption from cassava roots using 0.25 M NaOH as activating agent and calcined temperature at 400°C for an hour, taking into cognizance the feasibility of scaling up production. It also has the advantage of being prepared at lower NaOH concentration than CB4 and therefore more feasible to produce on industrial scale. This meets up with the needed requirement of lower temperature of production, high % yield that are key factors in large scale production and usage. The temperature and NaOH concentration were critical factors affecting activation. The pore size distribution and surface area was 8.96 nm and 123.04 m2/g, respectively. Both pore structure and surface chemistry affected adsorption capacity.

7. Recommendation

All of the ten activated carbons should be characterized by standard methods, including SEM examinations and FTIR analysis to gain more information about the surface morphology and to analyze the functional groups on the prepared carbons surface respectively.

References

Abechi, S.E., Gimba, C.E, Uzairu, A. and Dallatu, Y.A. (2013). Preparation and characterization of activated carbon from Palm Kernel shell by chemical activation. *Research Journal of Chemical Sciences* Vol. 3(7), 54-61.

Azharul, I., Ahmed, I., Khanday, M.J., Asif, W.A. M. and Hameed, B.H. (2017). Mesoporous activated carbon prepared from NaOH activation of rattan (Lacosperma secundiflorum) hydrochar for methylene blue removal. *Ecotoxicology and Environmental Safety* 138, 279–285.

Deshuai, S., Xiaodong, Z., Yude, W. and Xin, L. (2010). Adsorption of anionic dyes from aqueous solution on fly ash. *Journal of Hazardous Materials*, 181, 335–342.

Edidiong, D. Asuquo, A. and Martin, D. (2016). Sorption of cadmium (II) ion from aqueous solution onto sweet potato (Ipomoea batatas L.) peel adsorbent: characterisation, kinetic and isotherm studies. *Journal of Environmental Chemical Engineering*, 4, 4207–4228.

Feng, N.C., Guo, X. (2012).Characterization of adsorptive capacity and mechanisms on adsorption of copper, lead and zinc by modified orange peel. *Transactions of Nonferrous Metals Society of China*. Volume 22, Issue 5, 1224-1231.

Hassan, A.F., Abdel-Mohsen, A.M. and Elhadidy, H. (2014). Adsorption of arsenic by activated carbon, calcium alginate and their composite beads. *International Journal of Biological Macromolecules,* 68, 125–130.

Li, Z., Qunyan, Y., Ying, C., Fei, X., Wenjiang, L., Yongwei, L. and Minfang, C. (2017). Adsorption properties of activated carbon from reed with a high adsorption capacity. *Ecological Engineering*, 102, 443–450.

Marrakchi, F., Auta M. b, Khanday, W.A. and Hameeda, B.H. (2017). High-surface- area and nitrogen-rich mesoporous carbon material from fishery waste for effective adsorption of methylene blue. *Powder Technology*, 321, 428–434.

Marrakchi, F., Ahmed, M.J., Khanday, W.A., Asif, M. and Hameed, B.H. (2017). Mesoporous-activated carbon prepared from chitosan flakes via single-step sodium hydroxide activation for the adsorption of methylene blue. *International Journal of Biological Macromolecules,* 98, 233–239.

Wang, X., Wang, S., Yin, X., Chen, J., and Zhu, L. (2014). Activated Carbon Preparation from Cassava Residue Using a Two-Step KOH Activation: Preparation, Micropore Structure and Adsorption Capacity. *Journal of Biobased Materials and Bioenergy* Vol. 8, 1–8.

Investigation of Chemical, Physical and Optical Properties of Biodegradable Film from Yellow Thai Silk Cocoons

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Abstract

In this study, silk fibroin (SF) was extracted from yellow Thai silk cocoons and biodegradable silk films were prepared from SF solution. The influence of ethanol and glycerol on the film properties e.g. chemical structure, UV-Vis transmission, swelling and gel fraction of SF was presented. The yellow silk film (YSF), yellow silk film crosslinked with ethanol (YSFE) and yellow silk film blended with glycerol (YSFG) were characterized using UV-Vis spectroscopy and Fourier transform infrared spectrometry (FTIR-ATR). Swelling and insoluble gel fraction of the SF films were also investigated. All the films exhibited exceptional optical transparency (87-90%) with UV-shield property. Ethanol and glycerol altered chemical structure, swelling and gel fraction of the films through the formation of physical cross-linking via beta-sheet and hydrogen bonding, respectively.

Keywords : Biodegradable Film, Thai Silk, Silk Cocoon

1. Introduction

The global occurrence of oil spills and discharge of industrial oily wastewater have created great risk to the environment as well as human health (Lin et al, 2019). To protect the limited water resources and recover of the oil, various materials with special wettability have been developed for removal of oil from the oily wastewater due to their high efficiency and good selectivity. Although numerous efforts have been devoted to construct superhydrophilic and underwater superoleophobic materials for oil/water separation, most of them are originated from non-renewable resources and are non-biodegradable. This will bring secondary pollution to the environment since they are usually discarded or burnt directly after the service life (Doppalapudi et al., 2014; Gu et al., 2017). Therefore, it will be useful to explore biodegradable and underwater superoleophobic materials from renewable resources (Ao et al., 2020).

Silk is a biopolymer with perfect biocompatibility, biodegradability and tunable properties due to its unique protein compositions and structures (Liu et al., 2018) Silk fibroin (SF)

can be selected as a good choice to replace or reduce of non-renewable materials (Chen et al., 2006). Lu et al., (2010) reported that silk fibroin could be exploited as a versatile protein biomaterial for the formation of films, fibers, microspheres, and porous scaffolds for various biomedical applications. Usually, regenerated silk-based materials are normally stabilized by the induction of β-sheet formation through the use of solvents or by physical stretching. Hence, mechanical properties of SF can be altered by the addition of alcohol and glycerol plasticizer.

In this present work, biodegradable SF films were synthesized from Thai yellow silk cocoons. The SF films were crosslinked by ethanol and plasticized by glycerol. The chemical structure and UV-Vis transmission were investigated using Fourier transform infrared (FTIR-ATR) and UV-Vis spectroscopy, respectively. Besides, swelling and gel fraction of the SF films were also investigated.

2. Objectives

The objectives of the study were to extract SF from yellow Thai silk cocoons and to prepare silk films from SF solution. The effects of cross-linking with ethanol and plasticizing with glycerol on the properties e.g. chemical, physical and optical properties of the silk films were explored.

3. Methodology

3.1 Materials

Yellow Thai silk was from the Northeast of Thailand. Sodium carbonate (Na_2CO_3), calcium chloride ($CaCl_2$) and ethanol (C_2H_5OH) were from Ajax Finechem. Dialysis membrane (Cellu-Sep T3 MWCO : 12,000-14,000) was from Membrane Filtration Products and glycerol were obtained from Ajax Finechem. All reagents were of analytical grade and were utilized as received without any further refinement.

3.2 Preparation of silk film

3.2.1 Silk extraction from cocoons

Firstly, 1.8 L of distilled water was brought to a boil. Sodium carbonate of 3.6 g was added to the boiling water. Silk cocoons (5.0 g) were cut into small pieces and added into the sodium carbonate solution. The solution was stirred at 10-min time intervals for 30 minutes. The water was poured out and the degummed SF was washed with clean water for 30 minutes, followed by washing with distilled water at a volume of 300 ml for 3 times. Subsequently, the degummed SF was dried in the hot air oven at 60 °C for 24 h or until constant weight. Dried degummed SF was weighed and the percent recovery (% recovery) of the separated silk fibroin was calculated using equation (1).

$$\%Recovery = \frac{W_{SF}}{W_s} \times 100 \qquad (1)$$

Where W_{SF} is degummed silk weight and W_S is silk cocoon weight.

3.2.2 Preparation of pure silk fibroin solution

3.2.2.1 Firstly, 2.0 g of degummed SF was dissolved in 10 ml of $CaCl_2/C_2H_5OH/H_2O$ solution (mole ratio = 1:2:8) at 110 ℃ for 2 h. Then the obtained viscous solution was dialyzed against deionized water (DI) for 72 h by changing the water every 4-6 h. A volume of 1.00 L DI water was used each time for 7 times in total. After complete dialysis, the aqueous SF solution was centrifuged with a spin rate of 2,000 rpm for 20 min to remove impurities.

3.2.2.2 SF solution (1.00 ml) was poured into polyethylene terephthalate (PET) mold and leave to dry at room temperature for 1 day. After that, it was dried in a vacuum oven at 50 ℃ for 4 h or until constant weight. The concentration of SF solution was calculated using equation (2).

$$concentration\ \left(\%\frac{w}{v}\right) = \frac{W_F}{V} \times 100 \qquad (2)$$

Where W_F is weight of dry silk film (g) and V is volume of silk fibroin solution (1.00 ml).

3.2.3 Preparation of silk film

Silk solution, silk solution blended with glycerol and with ethanol were prepared as following. In brief, ethanol (10%w/v, 2 ml) or glycerol solution (10%w/v, 1 ml) with volume ratios of silk fibroin solution: ethanol and silk fibroin solution: glycerol solution equals 6:2 and 6:1, respectively, were mixed homogeneously. Then, the silk solution, silk solution blended with glycerol or with ethanol (7.50 ml each) was poured into a PET tray (8.7×8.7 cm^2) and leave to dry at room temperature for 2 days. After that, it was dried in a vacuum oven at 50 ℃ for 4 h.

3.2.4 Swelling and insoluble gel fraction

Swelling capacity and gel fraction of the silk films were measured as following: a dry silk film (2.54×2.54 cm^2) was weighed (W_d) and immersed in DI water at room temperature. The swollen film was taken out from the water. After the excess water was blotted out by filter paper, the film was weighed (W_s). This procedure was performed every 1 h for 3 h and the final measurement was carried out after 24 h of immersion. After weighing, the film was dried in a hot air oven at 60 ℃ for 3 h and reweighed (W_{rd}). Degree of swelling and gel fraction were calculated using equation (3) and (4), respectively.

$$Swelling\ (\%) = \frac{W_s - W_d}{W_d} \times 100 \quad (3)$$

$$Gel\ fraction\ (\%) = \frac{W_{rd}}{W_d} \times 100 \quad (4)$$

3.2.5. Characterization

Fourier transform infrared spectrophotometer (FTIR-ATR) measurements were performed for chemical structure analysis through function group analysis of silk films. For each measurement 12 scans were coded at a resolution of 4 cm^{-1} with wavenumbers ranging from 400 to 4,000 cm^{-1}.

A light quantity and intensity analysis of silk films were measured in wavelengths range 200 to 900 nm using a Shimadzu Scientific model 2600 UV-Vis spectrophotometer (double beam) for solid.

4. Results and discussion

SF was extracted from Yellow Thai silk cocoons by degumming process using sodium carbonate solution (Figure 1). By this process, the adhesive called sericin was removed. By gravimetric method, the recovered silk fibroin and silk gum were 58% and 42%, respectively. After dialysis, the concentration of silk fibroin solution was 4.75 ± 0.16 %w/v. This value was in good accordance with the result proposed by Li et al. (2018).

The physical appearance, thickness and light transmittance at 500 nm of SF film (YSF), SF film crosslinked with ethanol (YSFE) and SF film blended with glycerol (YSFG) are displayed in Table 1. The films showed high transparency and yellowish color with the thickness in the range 16-35 μm. YSF showed the highest light transmission at 500 nm of 90.06%, follows by YSFG (87.96%) and YSFE (87.58%), respectively. This high light transmission is typical for biodegradable film synthesized from silk fibroin.

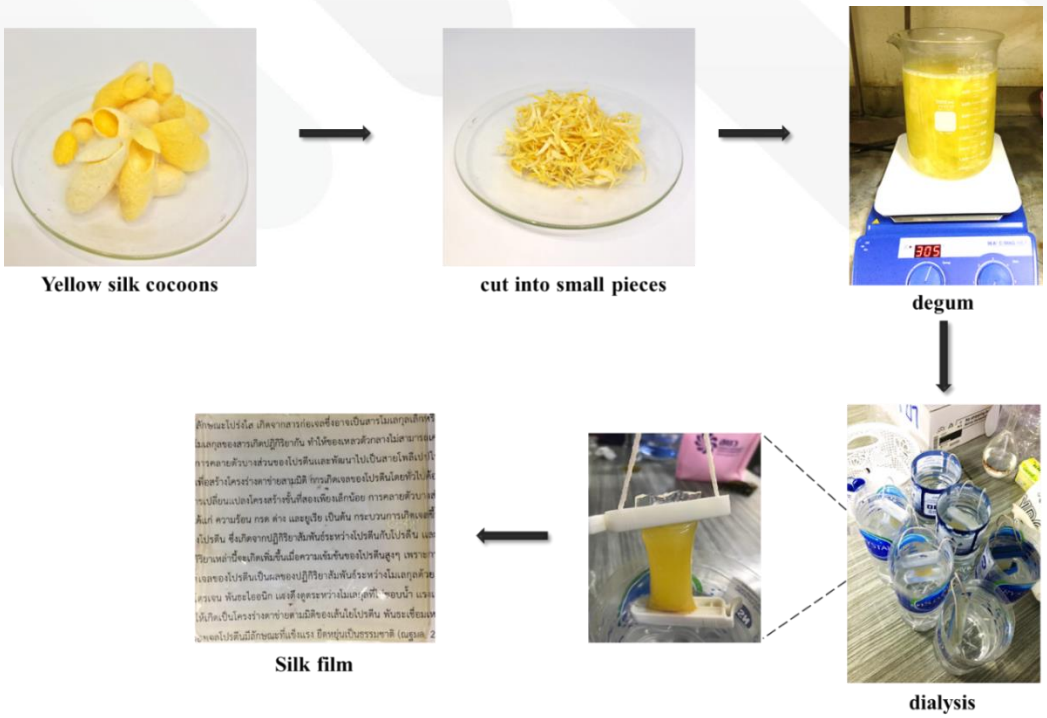
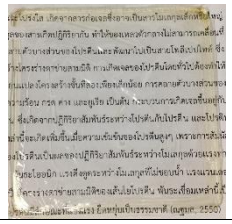
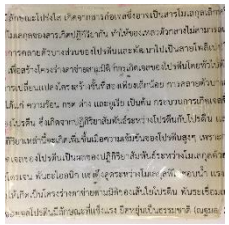
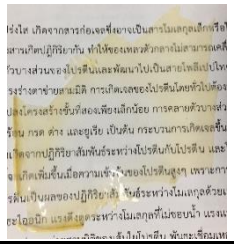


Figure 1. The extraction of SF from Yellow Thai silk cocoons and the preparation of SF film from silk fibroin solution.

4.1 FTIR analysis

The functional groups of YSF, YSFE and YSFG are shown in Figure 2. All the films showed absorption bands characteristics of SF at similar values of wavenumbers. YSF shows the bands at 3283 cm^{-1} (O-H stretching), 1625 cm^{-1} (C=O stretching with molecular bond δ of amide I), 1517 cm^{-1} (C=O connected carbon chain stretching of amide II) and 1236 cm^{-1} (C–N stretching of amide III,) (Ji et al., 2020). YSFE showed the bands at 3287 cm^{-1} (O-H stretching), 1641 cm^{-1} (amide I), 1513 cm^{-1} (amid II) and 1239 cm^{-1} (amide III). YSFG also showed the bands at 3285 cm^{-1} (O-H stretching), 1643 cm^{-1} (amide I), 1535 cm^{-1} (amid II), 1238 cm^{-1} and (amide III). These results are consistent with the results reported by Song et al., (2018). The positions of the peaks of amide I and amide II were shifted to higher values when glycerol was added. This was because the addition of glycerol altered the structure of the β-sheet leading to the formation of uniform and elastic structures. The broad absorption band found at 3200–3600 cm^{-1} was due to inter- and intra-hydrogen bonding between O-H groups of glycerol and both –OH and –NH groups of silk. Another characteristic peak of glycerol was also found at 1040 cm^{-1} (C-O stretching) (Shivananda et al., 2016).

Table 1 The details of yellow silk film (YSF), yellow silk film crosslinked with ethanol (YSFE) and yellow silk film blended with glycerol (YSFG) in silk fibroin solution.

Sample	Thickener (mm)	% Transmission (500 nm)	Image of silk film
YSF	0.035	90.06	
YSFE	0.016	87.58	
YSFG	0.034	87.96	

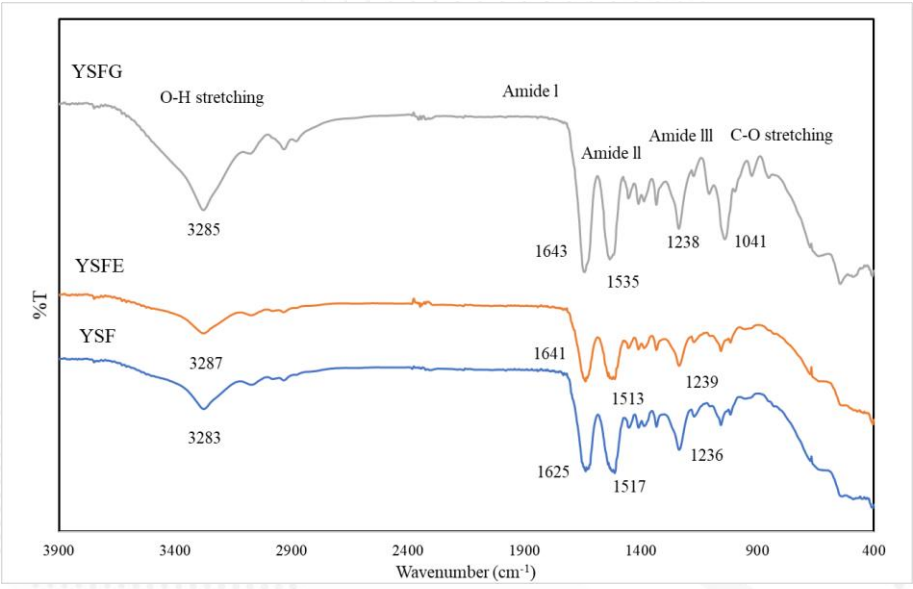


Figure 2. ATR-FTIR spectra of yellow silk film (YSF), yellow silk film crosslink with ethanol (YSFE) and yellow silk film blended with glycerol (YSFG).

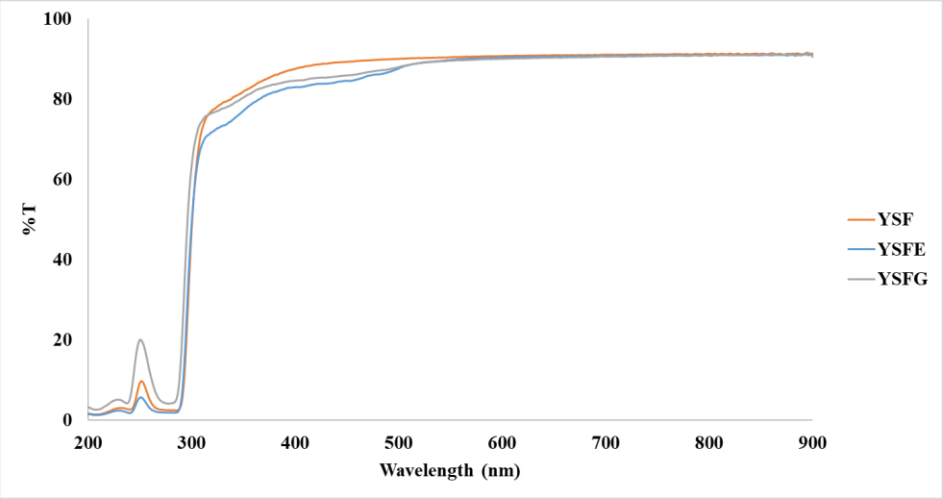


Figure 3. Transmittance of light for yellow silk film (YSF), yellow silk film crosslink with ethanol (YSFE) and yellow silk film blended with glycerol (YSFG).

4.2 UV-Vis analysis

Figure 3 shows UV-Vis transmission spectra (400–900 nm) of YSF, YSFE and YSFG. It can be seen that the films exhibited UV shield property at 250 nm together with high transparency of nearly 90% at 550-900 nm. YSFG exhibited the highest UV shielding among the three samples. This may be due to the hydrogen bonding between glycerol and SF. It was also found in Figure 3 that YSF had the percent transmittance of 90.06%. When crosslinked with ethanol, the percent transmittance of YSFE slightly decreased to 87.58% due to the formation of β-sheet structure. The percent transmittance was also decreased to 87.96% with the addition of glycerol for YSFG. The optical properties of the films confirmed that the films can be used to make transparent film with UV-absorption property (Shivananda et al., 2016).

4.3 Swelling and gel fraction

Swelling reflects the ability of SF films to absorb water within their structures. Figure 4 shows swelling property and gel fraction of SF films. As seen in Figure 4, swelling percentage of YSF and YSFG decreased with time during 1-3 h, while that of YSFE increased significantly. After reaching the equilibrium (24 h), YSF, YSFE and YSFG showed the equilibrium swelling of 11±3%, 41±12% and 11±1%, respectively. This maybe because the strong physical cross-links in the YSFE silk structure that retard the dissolution of SF in water. After water immersion for 24 h, YSF, YSFE and YSFG showed the gel fraction of 87%, 83% and 51%, respectively. It was believed that the polarity of the alcohol initiated some degree of beta-sheet crystallization that physically cross-linked the silk structure, resulting in high gel formation. The relatively lower value of gel fraction

for YSFEG when compared with YSF and YSFE may be due to the H-bonding between glycerol and SF was destroyed by water.

5. Conclusions

In summary, we present a detailed study on characteristics and properties of the yellow silk film (YSF), yellow silk film crosslink with ethanol (YSFE) and yellow silk film blended with glycerol (YSFG). The structural characterization by analyzing the FTIR spectra confirmed the alteration in chemical structure of SF caused by both alcohol and glycerol. Ethanol improved the hydrophobicity of the films through forming beta sheet structure. Glycerol improved the flexibility and H-bonding within the structure of SF films. The UV-Vis transmittance spectra confirmed high transparency and UV shield properties of the films. Moreover, YSFG showed high values of both swelling and gel content.

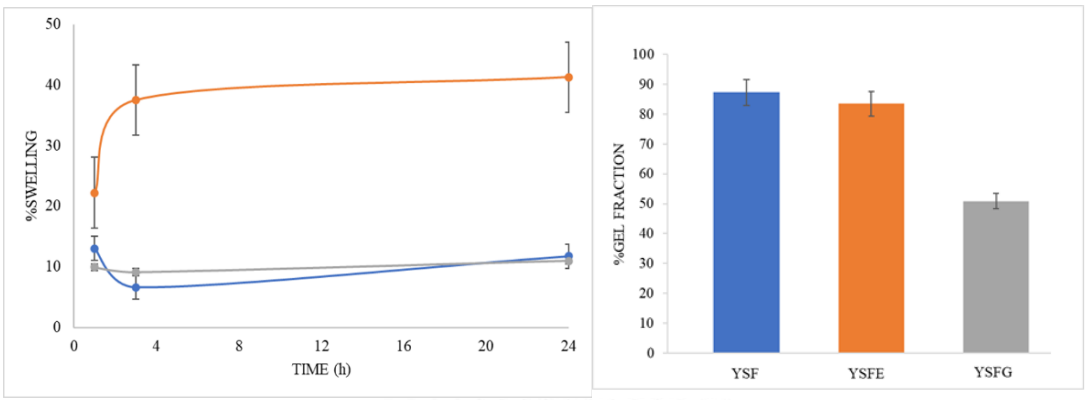


Figure 4. Swelling and Gel fraction of yellow silk film (YSF), yellow silk film crosslink with ethanol (YSFE) and yellow silk film blended with glycerol (YSFG).

6. Acknowledgments

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7. References

Ao, C., Zhao, J., Li, Q., Zhang, J., Huang, B., Wang, Q., ... Lu, C. (2020). Biodegradable All-Cellulose Composite Membranes for Simultaneous Oil/Water Separation and Dye Removal from Water. *Carbohydrate Polymers,* 250: 116872. https://doi.org/10.1016/j.carbpol.2020.116872

Chen, C., Chuanbao, C., Xilan, M., Yin, T., & Hesun, Z. (2006). Preparation of non-woven mats from all-aqueous silk fibroin solution with electrospinning method. *Polymer,* 47(18): 6322–6327. doi:10.1016/j.polymer.2006.07.009

Doppalapudi, S., Jain, A., Khan, W., & Domb, A. J. (2014). Biodegradable polymers-an overview. *Polymers for Advanced Technologies*, 25(5): 427–435. doi:10.1002/pat.3305

Gu, J., Xiao, P., Chen, P., Zhang, L., Wang, H., Dai, L., ... Chen, T. (2017). Functionalization of Biodegradable PLA Nonwoven Fabric as Superoleophilic and Superhydrophobic Material for Efficient Oil Absorption and Oil/Water Separation. *ACS Applied Materials & Interfaces*, 9(7): 5968–5973. doi:10.1021/acsami.6b13547

Ji, Y., Yang, X., Ji, Z., Zhu, L., Ma, N., Chen, D., Jia, X., Tang, J. & Cao, Y. (2020). DFT-Calculated IR Spectrum Amide I, II, and III Band Contributions of N-Methylacetamide Fine Components. *ACS Omega*, 5(15): 8572–8578. https://doi.org/10.1021/acsomega.9b04421

Li, X., Zhang, H., He, L., Chen, Z., Tan, Z., You, R., & Wang, D. (2018). Flexible nanofibers-reinforced silk fibroin films plasticized by glycerol. *Composites Part B: Engineering*, 152: 305–310. doi:10.1016/j.compositesb.2018.08.136

Lin, L., Zhongzheng, X., Wen, S., Jia, C., Caili, D., Bin, Y., Hongbo, Z., (2019). Bio-inspired membrane with adaptable wettability for smart oil/water separation. *Journal of Membrane Science*, 598: 117661. https://doi.org/10.1016/j.memsci.2019.117661.

Liu, Q., Wang, F., Gu, Z., Ma, Q., & Hu, X. (2018). Exploring the Structural Transformation Mechanism of Chinese and Thailand Silk Fibroin Fibers and Formic-Acid Fabricated Silk Films. *International Journal of Molecular Sciences*, 19(11): 3309. doi:10.3390/ijms19113309

Lu, Q., Hu, X., Wang, X., Kluge, J. A., Lu, S., Cebe, P., & Kaplan, D. L. (2010). Water-insoluble silk films with silk I structure. *Acta Biomaterialia*, 6(4): 1380–1387. doi:10.1016/j.actbio.2009.10.041

Shivananda, C.S., Madhu Kumar, R., Narayana, B., Byrappa, K., Renu, P., Wang, Y. & Sangappa, Y., (2016). Preparation and characterisation of silk fibroin–silver nanoparticles (SF–AgNPs) composite films. *Materials Research Innovations*, 21 : 210-214 http://dx.doi.org/10.1080/14328917.2016.1200844

Song, J.E., Sim, B.R., Jeon, Y.S., Kim, H.S., Shin, E.Y., Carlomagno, C. & Khang, G. (2018). Characterization of surface modified glycerol/silk fibroin film for application to corneal endothelial cell regeneration. *Journal of Biomaterials Science, Polymer Edition*, 30: 263-275. https://doi.org/10.1080/09205063.2018.1535819

Utilization of Yeast Fermented Coconut Meal as Feedstuff for Leung Hang Kwarw Indigenour Chickens

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Abstract

This research aimed to study the effect of replacing the broken rice by yeast fermented coconut meal in ration on productive performance and carcass percentage of Leung hang kwarw indigenous chickens. This research was divided into 2 parts; part I was to study the chemical composition of yeast fermented coconut meal, and part II was to study the effect of replacing the broken rice by yeast fermented coconut meal in ration on productive performance and carcass percentage of Leung hang kwarw indigenous chickens. The experiment design was Completely Randomized Design (CRD). Eighty mixed sex Leung hang kwarw chickens 21 days-old were used in this study by divided into 4 treatments, each treatment consisted of 4 replications and each replication consisted of 5 chickens. The chickens received experimental diet as; T1: control group (no yeast fermented coconut meal), T2: diet replaced broken rice by yeast fermented coconut meal at 5%, T3: diet replaced broken rice by yeast fermented coconut meal at 10%, and T4: diet replaced broken rice by yeast fermented coconut meal at 15%. The experiment was conducted for 70 days. The data of weight gain, average daily gain, feed conversion ratio and carcass percentage were collected for analysis of variance (ANOVA) and compared the differences by Duncan's new multiple range test (DMRT). The result has shown that the chemical composition of yeast fermented coconut meal was higher than fresh coconut meal as 8.43 VS 0.89 % CP and the crude fat was 10.06 VS 7.54 %. The weight gain of chickens received all treatment diet has no significant different ($P>0.05$) by the chickens received dietary replaced broken rice with yeast fermented coconut meal T4, T2, T3, and T1 were 1,165.50, 1,107.00, 975.25 and 910.00 grams per chick respectively. Feed intake of chickens received dietary replaced broken rice by yeast fermented coconut meal in T4, T3, T2, and T1 was significantly different ($P<0.05$) as 19.13, 18.84, 18.82 and 16.66 gram/chicken/day respectively. Feed conversion ratio of the chickens received dietary replaced broken rice by yeast fermented coconut meal in T1, T4, T2, and T3 were 4.00, 3.10, 3.05, and 3.00 respectively with no significantly different ($P>0.05$). Growth rate of the chickens received dietary supplemented with yeast-fermented coconut meal in T4, T2, T3, and T1 were 16.89, 16.04, 14.14, and 13.19 gram/chick respectively

(P>0.05). Carcass percentage of the chickens received dietary supplemented with yeast-fermented coconut meal in T4, T1, T2, and T3 were 76.48, 74.76, 74.29, and 72.77 percent (P>0.05). In conclusion, Leung hang kwarw indigenous chickens that received dietary supplemented with yeast fermented coconut meal at 15% showed the better result of productive performance when compared with the other groups. This was an alternative way in utilization of coconut wasted as indigenous chicken feed by increasing the nutritive value by yeast fermentation and this product could replace broken rice which was energy source feedstuff in the ration.

Keywords : Leung Hang Kwarw Indigenous Chickens, Yeast Fermented Coconut Meal, Productive Performance, Carcass Traits

1. Introduction

Coconut *(Cocos nucifera)*, *Nucifera* means "nut-bearing" which is plant are grown in many countries around the world. It is called coco, meaning "monkey face," by early Spanish explorer (Abdul Aziz et al. 2014). Coconut is used as their source of meat, juice, milk, and oil. Coconut is highly nutritious and is full of fiber, vitamins, and minerals. Coconut meal is one of waste from oil or coconut milk industry. In local market in Thailand, this waste can be found that are abundantly. Coconut waste has considered as alternative feedstuff for fish, duck, chicken or cattle (Somkuna, 2012). In addition, Sangkharak et al. (2020) reported that coconut meal from coconut milk processing contained oil in the range of 10-20 percent weight (wt). However, coconut waste has some limitation in using as non-ruminant animals, because it contains high in crude fiber but low in crude protein. Crude fiber is a component of the feedstuff which is difficult to be digested by simple stomach animals. The utilization of coconut meal as animal feed has been reported by many researchers such as the study of Somkuna (2008) reported that the broilers that received dried coconut meal 15 percent plus exogenous enzyme showed better productive performance when compare with control, 5 and 10 percent in ration. The improvement of the nutritional content of coconut waste can be done by yeast fermentation technology. The potential of this technology has been reported by many researchers (Somkuna, 2012; Somkuna et al., 2013; Syahri, 2016; Mozin et al., 2019; Sundu et al., 2019; Hafsah et al., 2020). Fermentation is one of method to cultivate coconut waste into useful feed ingredients. The fermentation process, a chemical change in the process either aerobically or anaerobically microorganisms can produce the products. The quality of fermentation depends on the type of microbes used. Microbes that used for the fermentation process is from yeast *(Saccharomyces cereviceae*, *Aspegillus niger)* that contains microorganism such as mold and bacteria as fermentative starter, which is also rich in protein (around 40 percent). In addition, these organisms can break cellulose down to simple sugar that easily to digest with the aid of enzyme synthesized by microorganisms (Farizaldi et al.,

2017). The reaction occurs complex compound is converted into simpler substances by freeing up water molecules (Syahri, 2016). By the concept of this technology was based on the bio convert organic and inorganic minerals that might be toxic for non-ruminant animals into digestible organic substances.

Thai indigenous chicken is popular among Thai people. There are many breed of indigenous chickens. Leung hang kwarw indigenous chicken is one of those indigenous chickens that are raised in rural area. It can easily grow with minimum feed and management. Moreover, their growth rate and feed efficiency are very poor. However, if the farmer raises the indigenous chicken with proper quality ration, it will grow better than backyard raising.

As mention above, most research had done with broilers but there was no any report about utilization of coconut meal in indigenous chicken. Therefore, this research was conducted to determine the effect of replacing the broken rice by yeast fermented coconut meal in ration on productive performance and carcass percentage of Leung hang kwarw indigenous chickens.

2. Objective

To study the effect of replacing the broken rice by yeast fermented coconut meal in ration on productive performance and carcass percentage of Leung hang kwarw indigenous chickens.

3. Materials and Methods

The research was divided into 2 experiments. Experiment I was to study the chemical composition of yeast fermented coconut meal. Experiment II was to study the effect of dietary supplementation of yeast fermented coconut meal as Leung hang kwarw indigenous chicken feed. The detail of each experiment as follow:

Experiment I: Chemical composition of yeast fermented coconut meal.

In this study, the coconut meal was fermented by yeast fermentation processes and ammonium sulfate (21-0-0) according to Somkuna et al. (2014) with some modifications as follow:

1. Prepared 2 plastic tanks of 100 liters dissolved the 1 kilogram of brown sugar, 2 kilograms of molasses and 20 liters of water properly then added 100 grams of ammonium sulfate and stirred until mixed well and leaved it about 10-15 minutes. Subsequently, added 100 grams of baker yeast into the tank and stirred continuously about 1 hour. The oxygen was added to the tank when the mixture was stirring.

2. After 1 hour, the yeast mixture was added to a 100 kilogram of coconut milk residue in the plastic sink and then mixed all together.

3. Put the mixed coconut milk residue and yeast mixture in a plastic bag about 1 kilogram and made it a vacuum, and then tied it with rubber band. Leaved the yeast fermented coconut milk residue for 10 days.

4. At 10th day of fermentation, three replicates of yeast fermented coconut milk residue was sampling to analyze for the chemical composition by Proximate analysis according to AOAC (1990).

Experiment II: Effect of replacing the broken rice by yeast fermented coconut meal in ration on productive performance and carcass percentage of Leung hang kwarw indigenous chickens.

The experimental design was completely randomized design. Eighty Leung hang kwarw indigenous chickens at 21 days-old (mixed sex) at average weight 518±100.45 gram per bird were used in this study. The chickens were 4 received treatment diets with 4 replications and each replication was consisted of 5 birds. The experimental diets were control diet Tl; without replacing of yeast fermented coconut milk residue. T2 was dietary replacing of yeast fermented coconut milk residue of broken rice at 5 percent, T3 was dietary replacing of yeast fermented coconut milk residue of broken rice at 10 percent, and T4 was dietary replacing of yeast fermented coconut milk residue of broken rice at 15 percent. For basal feed, the chickens received the experimental diet consisted of 18% CP and 3,100 Kcal/kg ME as shown in Table 1. Drinking water was available all the time and vaccination program was done. The experiment was conducted for 10 weeks.

Data analysis

Data of feed intake, average daily gain (ADG), Feed conversion ratio (FCR), carcass percentage, live ability, and productive index were collected for data analysis by using ANOVA and compared the average by Duncan's New Multiple Range test (DMRT) (Steel and Torries, 1991).

4. Results and Discussion

Chemical composition of dried coconut meal and yeast fermented coconut meal

Chemical composition of dried coconut meal and yeast fermented coconut meal (at 10th day of fermentation) as shown in Table 2

Table 1 Feed ingredients of experimental diets for 7-13 weeks old of indigenous chickens

Feed ingredients	Amount of ingredient (Kilograms)			
	Control diet (T1)	Experimental diets (T2)	Experimental diets (T3)	Experimental diets (T4)
Broken rice (8 % CP)	51.90	49.31	46.71	44.12
Fermented coconut milk residual (8.43 % CP)	0.00	5.00	10.00	15.00
Rice bran (12 % CP)	17.60	17.60	17.60	17.60
Soybean meal (44 % CP)	15.46	15.46	15.46	15.46
Fish meal (55 % CP)	9.00	9.00	9.00	9.00
Dicalcium phosphate	1.14	1.14	1.14	1.14
Salt	0.25	0.25	0.25	0.25
Premix*	0.50	0.50	0.50	0.50
Beef tallow	3.15	3.15	3.15	3.15
Total	**100**	**100**	**100**	**100**
Crude protein (%)	**18.10**	**18.12**	**18.14**	**18.16**
Energy (Kcal/kg)		**3,179.91**		

***Provided (per kilogram of diet):** Vitamin A, 15,000 IU; Vitamin D_3, 3]000 IU; Vitamin E, 25 IU; Vitamin K_3, 5 mg; Vitamin B_1, 2.5 mg; Vitamin B_2, 7 mg; Vitamin B_6, 4.5 mg, Vitamin B_{12}, 25 μg; Pantothenic acid, 35 mg; Folic acid, 0.5 mg; Biotin, 25 μg; Nicotinic acid, 35 mg; Choline chloride, 250 mg; Mn, 60 mg; Zn, 45 mg; Fe, 80 mg; Cu, 1.6 mg; I, 0.4 mg; Se, 0.15 mg; Ca, and P as 0.94 and 0.56%

Table 2 Chemical composition of dried coconut meal and yeast fermented coconut milk meal

Chemical composition	Dried coconut meal	Yeast fermented coconut meal
Moisture (%)	7.72	8.39
Crude protein (%)	0.89	8.43
Crude fiber (%)	70.41	71.95
Crude fat (%)	7.54	10.06

It was found that crude protein content of yeast fermented coconut meal was higher than dried coconut meal (8.43 VS 0.89 % CP). This was due to the positive effect of fermentation on nutrient content of coconut meal. It is noteworthy that the crude protein content of yeast fermented coconut meal was lower than the study of Somkuna et al. (2014) reported that crude protein content of yeast fermented coconut meal plus urea (46-0-0) at day 10th of fermentation was 34.40 percent. This was due to the different type of substrate in fermentation process. In this study we used ammonium sulfate (21-0-0) as a nitrogen source for microbes which has lower

content of nitrogen when compared with urea. The quality of fermentation depends on the type of microbial fermentation and a solid medium used (Syahri, 2016). However, crude protein content of yeast fermented coconut meal was equaled as found in broken rice, so that yeast fermented coconut meal could be replaced broken rice in chicken ration. While crude fiber and crude fat content were not much different. Therefore, yeast fermented coconut meal could be used to replace broken rice in the experimental diets.

Effect of replacing the broken rice by yeast fermented coconut meal in ration on productive performance and carcass percentage of Leung hang kwarw indigenous chickens

The results have shown that the chickens that received the diet which replaced the broken rice by yeast fermented coconut meal at the 15 percent had highest final weight as 1,705.50 gram per bird when compared with the other groups. While weight gain, FCR, and carcass percentage were not significantly different among groups (P>0.05) as seen in Table 3.

This is consistent with the results reported by many other researchers (Collin et al., 2003; Swennen et al., 2004). Because protein is one of the most important macronutrients for animals, and it is a component of cells, plays an important role in the process of life. Growth rate and feed efficiency of chicken improves with the increase in dietary protein (Liu et al. 2015)

Table 3 Effect of utilization of yeast fermented coconut milk residual as Leung hang kwarw indigenous chicken feed on productive performance and carcass percentage

Productive performance	Level of yeast fermented coconut meal						
	0%	5%	10%	15%	P-value	SEM	CV
Initial weight (gram/bird)	535.00	465.00	535.00	540.00			
Final weight (gram/bird)	1,445.00	1,572.00	1,510.25	1,705.50			
Feed consumption (gram/bird)	37.32	37.68	37.64	38.26	.06	0.64	2.137
Weight gain (gram/bird)	910.00	1,107.00	975.25	1,165.50	.15	0.58	1.559
ADG (gram/bird/day)	13.19	16.04	14.14	16.89	.12	0.48	4.96
FCR	4.00	3.05	3.00	3.10	.06	0.07	2.233
Carcass percentage (%)	74.76	74.29	72.77	76.48	.12	0.93	0.552

5. Conclusion

Yeast fermented coconut meal that contained crude protein as 8.43 percent could be utilized as feedstuff replacing broken rice at 15 percent in ration by Leung hang kwarw indigenous chickens showed the better result of productive performance when compared with the other groups.

This was an alternative way in utilization of coconut wasted as indigenous chicken feed by increasing the nutritive value by yeast fermentation and this product could replace broken rice which was energy source feedstuff in the ration.

6. References

Abdul Aziz et al. (2014). Development of coconut milk residue and jackfruit seed. Internat. *J. Agric. Engg.*, 11(2) : 373-378, DOI:

AOAC. (1990). *Association of Official Analytical Chemist Official Methods of Analyses*. Third Edition. AOAC. Washington DC.

Collin A, Malheiros RD, Moraes VMB, Van As P, Darras VM, Taouis M, Decuypere E, Buyse J. (2003). Effects of dietary macronutrient content on energy metabolism and uncoupling protein mRNA expression in broiler chickens. *British Journal Nutrition*; 90:261-270.

Farizaldi J., Jafrinur N. and Marlida Y. (2017). The effect of fermented coconut wste to the growth of catfish (*Clarias* Sp.). *International Journal of Agricultural Sciences*. 1(1): 21-27.

Hafsah, H.B., Damry, U., and Sundu, B. (2020). Fermented coconut dregs quality and their effects on the performance of broiler chickens. *Tropical Animal Science Journal*. 43(3): 219-226.

Hatta, U., Sjofjan, O., Subagiyo, I., and Sundu, B. (2014). Effects of fermentation by *Trichoderma viride* on nutritive value of copra meal, cellulase activity and performance of broiler chickens. *Livestock Research for Rural Development. Volume 26, Article #61*. Retrieved November 26, 2020, from http://www.lrrd.org/lrrd26/4/hatt26061.htm

Liu, S.K., Niu, Z.Y., Min, Y.N., Wang, Z.P., Zhang, J., He, Z.F., Li, H.L., Sun, T.T., Liu, F.Z. (2015). Effects of Dietary Crude Protein on the Growth Performance, Carcass Characteristics and Serum Biochemical indexes of Lueyang Black-boned Chickens from Seven to Twelve Weeks of Age. *Brazilian Journal of Poultry Science*. 17(1): 103-108.

Sangkharak, K., Chookhun, K., Numreung, J., and Prasertsan, P. (2020). Utilization of coconut meal, a waste product of milk processing, as a novel substrate for biodiesel and bioethanol production. *Biomass conversion and Biorefinery*. 10: 651-662.

Somkuna, N. (2008). *Effects of dried coconut meal in the diet on growth performance of broilers.* In: Proceeding 5th Symposium in Animal Science, January 31, 2008. Department of Animal Science, Faculty of Agriculture, Khon Kaen University. Page 284-287.

Somkuna, N. (2012). *Utilization of Dried Coconut Meal and Supplementation Exogenous Enzyme on Productive performance of Broilers*. In Proceedings in The 15th AAAP (The Asian-Australasian Association of Animal Production Societies) Animal Science Congress. 26-30 November, 2012. Thammasart University, Rangsit Campus., Thailand. Page. 381-384.

Somkuna, N., Sawangtap, J., Pum-umpha, N., Nonsaena, Y. (2013). Increasing protein level of coconut meal and cassava by urea-yeast fermentation process. *Agricultural Sci. J.* 44: 1 (Suppl.) : 267-270.

Somkuna, N., Sawangtap, J., Rodjarkken, J., and Uttarawichian, S. (2014). Study of increasing protein level of dry and fresh coconut meal by urea-yeast fermentation process. *KHON KAEN AGR. J.* 42 SUPPL. 1: (2014). 290-294.

Steel, R. G. D. and Torrie, J. H. (1991). *Principle and Procedure Statistics 2nd Edition*. McGraw-Hill Book Co, Inc, Singapore.

Sundu, B., Hatta, U., Mozin, S. and Adjis, A. (2019). The effect of fermented coconut dregs with the addition of inorganic selenium on feed digestibility, growth performance and carcass traits of broiler chickens. *Livestock Research for Rural Development. Volume 31, Article #176.* Retrieved November 26, 2020, from http://www.lrrd.org/lrrd31/11/b_sun31176.html

Swennen Q, Janssens GP, Decuypere E, Buyse J. (2004). Effects of substitution between fat and protein on feed intake and its regulatory mechanisms in broiler chickens: energy and protein metabolism and diet-induced thermogenesis. *Poultry Science*. 83: 1997-2004.

Syahri, Y.F. (2016). Potency of dregs coconut fermentation (*Cocos nucifera*) as an alternative feed for fish and poultry "PA-BIO". *Agrotech Journal ATJ.* 1(1): 45-49.

Evaluation of Chemical Composition of Fermented Coconut Meal by Yeast Fermentation Process

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Abstract

The study was conducted to evaluate the chemical composition and physical characteristics of fermented coconut meal by yeast fermentation processes under anaerobic condition. The baker's yeast (*Saccharomyces cerevisiae*) and instant yeast plus urea (46-0-0) or ammonium sulfate (21-0-0) were as substrates in the fermentation process were compared. The experimental design was 4 X 5 factorial in Completely Randomized Design with 4 replications. Factor A; Treatments were divided into 4 treatments which were; T1 was fermentation of coconut milk residues with baker yeast and urea fertilizer (46-0-0), T2 was fermentation of coconut milk residues with baker yeast and fertilizer (21-0-0), T3 was fermentation of coconut milk residues with instant yeast with urea fertilizer (46-0-0), and T4 was fermentation of coconut milk residues with instant yeast with fertilizer (21-0-0). Factor B; Fermentation period was divided into 5 periods which were 0, 7, 14, 21 and 28 days. The chemical composition of moisture, dry matter, crude protein, crude fat, and crude fiber were collected by Proximate Analysis method. Data of variance (ANOVA) was analyzed and compared by Duncan's new multiple range test (DMRT). It was found the significantly different effect of fermentation period on chemical composition of fermented coconut milk residues ($P<0.05$) when considered the crude protein level in T1 at 28 days of fermentation had highest values as 11.22 percent, T2 showed highest crude protein level at 21 days of fermentation as 8.16 percent, T3 showed highest crude protein level at 28 days of fermentation as 9.27 percent, and T4 showed highest crude protein level at 14 days of fermentation as 9.60 percent. When compared the protein level of each fermentation formula, it was found significantly different among treatments ($P<0.05$). This study indicates that fermentation of coconut meal with baker's yeast *Saccharomyces cerevisiae* and urea (46-0-0) at 28 days showed highest crude protein level. Yeast fermented coconut meal in this study could be considered as an alternative feedstuffs for animal but the urea content in this products should be further tested especially for non-ruminant animals.

Keywords: Coconut Milk Residue, Yeast, Urea Fertilizer, Fermentation Process

1. Introduction

Coconut (*Cocos nucifera*), it is called coco by early Spanish explorer (Abdul Aziz et al. 2014). Coconut was an economic plant that found in many countries around the world. The kernel or meat is the most valuable part of this nut, being 28 percent of the coconut. Coconut is used as their source of meat, juice, milk, and oil. Coconut is highly nutritious and is full of fiber, vitamins, and minerals. Coconut meal or copra meal is one of waste from oil extraction or coconut milk industry. In local market in Thailand, this waste can be found abundantly. Coconut waste from coconut oil industry or coconut milk processing had been utilized in animal diets such as fish, duck, chicken or cattle (Khuwijitjaru et al., 2012; Somkuna, 2012). In addition, Sangkharak et al. (2020) reported that coconut meal from coconut milk processing contained oil in the range of 10-20 percent weight (wt) but the crude protein was very low while the crude fiber was very high. When it was used as animal diet, productive performance results showed negatively affected the feeding value of the broiler diets due to the presence of mannose-based polysaccharides. To improve its nutritive value, physical and enzymatical methods were used to treat these by-products (Sundu et al., 2019).

Yeast and yeast fermentation process have been used to improve the nutritive value of coconut waste for many years as presented by many reports (Somkuna, 2008; Somkuna et al., 2012; Somkuna et al., 2013; Syahri, 2016; Mozin et al., 2019; Sundu et al., 2019; Hafsah et al., 2020). The role of yeast microbes is very important for the host and analyzing the effect of yeast in animal's digestive tract. Most research was used baker's yeast *Saccharomyces cerevisiae* which is a unicellular cell, is one of the eukaryotic microorganisms. It has been used commercially and also has the excellent adsorbents properties and rich in crude protein content. Besides, baker's yeast is also help to produce vitamin B complex, digestive enzyme, and also enhances the immunity against toxins that could harm the animals (Nabila et al. 2017).

Fermentation is one of method to cultivate coconut waste into useful feed ingredients. The fermentation process, a chemical change in the process either aerobically or anaerobically microorganisms can produce the products. The application of solid state fermentation (SSF) as an enzyme production method could offer environmental, economical and nutritional benefits over conventional method (submerged liquid fermentation) (Yazid et al., 2017). Microbes in the class of fungi are commonly used to produce many different type of enzymes including cellulases (Sundu et al., 2019). Cellulolytic enzymes produced from filamentous fungi, such as *Trichoderma sp*, have gained increasing attention due to the fact that fungi could not only secrete cellulase in large amount but also had a potential to fully hydrolyze crystalline cellulose. Among *Trichoderma sp*, *Trichoderma viridae* is one of the cellulolytic fungi that could produce cellulase with high efficacy to break down cellulose (Hutta et al. 2014). In addition, coconut milk residue is rich source of mannose polysaccharides with can be hydrolyzed into manno-oligosaccharides by

various microorganisms including yeast, fungi, and bacteria. Moreover, manno-oligosaccharides possessed good nutritional and biological activities, especially due to its prebiotic properties (Mohd Nor et al., 2017)

Moreover, the quality of fermentation depends on the type of microbes used. Microbes that used for the fermentation process is from baker's yeast (*Saccharomyces cerevisiae* or *Aspegillus niger*) that contains microorganism such as mold and bacteria as fermentative starter, which is also rich in protein (around 40 percent). In addition, these organisms can break cellulose down to simple sugar that easily to digest with the aid of enzyme synthesized by microorganisms (Farizaldi et al., 2017). The reaction occurs complex compound is converted into simpler substances by freeing up water molecules (Syahri, 2016). By the concept of this technology was based on the bio convert organic and inorganic minerals that might be toxic for non-ruminant animals into digestible organic substances. Therefore, this study aimed to evaluate the chemical composition and physical characteristics of fermented coconut meal by yeast fermentation processes. The baker's yeast (*S. cerevisiae*) and instant yeast plus urea (46-0-0) or ammonium sulfates (21-0-0) as substrates in the fermentation process under anaerobic condition were compared the nutritive value. The expected results could be information for improvement of coconut waste as an alternative feedstuff for animal.

2. Objective

To evaluate the chemical composition and physical characteristics of fermented coconut meal by yeast fermentation processes.

3. Materials and Methods

This research was divided into 2 studies which were:

1. Study of chemical composition of fermented coconut milk residues by yeast fermentation processes.

The experimental design was 4 × 5 factorial in CRD consisted of 2 factors; Factor A were four formula of yeast fermentation processes, and Factor B was period of fermentation (0, 7, 14, 21, and 28 days)

Treatment 1 : fermented coconut meal by baker's yeast and urea (46-0-0)

Treatment 2 : fermented coconut meal by baker's yeast and ammonium sulfate (21-0-0)

Treatment 3 : fermented coconut meal by instant yeast sprouts and urea (46-0-0)

Treatment 4 : fermented coconut meal by instant yeast sprouts and ammonium sulfate (21-0-0)

2. Study of physical characteristics of fermented coconut milk residues by yeast fermentation processes

Fermented coconut meal by yeast fermentation processes from each treatment were detected physical characteristics by sensory evaluation according to quality assessment criteria of fermented forages by Department of Livestock (2004)

Table 1 Ingredient of fermented coconut milk residue by yeast fermentation processes

Ingredients	Treatment 1	Treatment 2	Treatment 3	Treatment 4
Coconut meal (Kg)	25	25	25	25
Baker yeast (Kg)*	0.125	0.125	-	-
Instant yeast (Kg)**	-	-	0.075	0.075
Urea (46-0-0) (Kg)	0.5	-	0.325	-
Ammonium sulfate (21-0-0) (Kg)	-	0.5	-	0.325
Molasses (Kg)	1.25	1.25	0.75	0.75
Brown sugar (Kg)	0.25	0.25	-	-
Water (Kg)	2.5	2.5	2.5	2.5
Price/kilogram (bath/kg. mixed ingredient)	8.14	8.04	7.3	8.02

*Baker's yeast was added to T1 and T2 according to Somkuna et al. (2014).

** Instant yeast was added to T3 and T4 according to the direction of the product.

Yeast fermentation method

In this study the coconut meal by yeast fermentation processes and urea or ammonium sulfate was done according to Somkuna et al. (2014) with some modifications as follow:

1. Prepared 2 plastic tanks of 100 liters dissolved the brown sugar and water properly then added urea or ammonium sulfate and stirred until mixed well and leaved it about 10-15 minutes. Subsequently, added yeast into the tank and stirred continuously about 1 hour. The oxygen was added to the tank when the mixture was stirring.

2. After 1 hour, the yeast mixture was added to the coconut meal in the plastic sink and then mixed all together.

3. Put the mixed coconut meal and yeast mixture in a plastic bag about 1 kilogram and made it a vacuum and then tied it with rubber band. Leaved the yeast fermented coconut milk residue at 0, 7, 14, 21, and 28 days.

4. At each time of fermentation, yeast fermented coconut meal were sampling to test the chemical composition and physical characteristics.

5. The chemical composition of yeast fermented coconut meal was done by Proximate analysis according to AOAC (1990)

Data analysis

Data of chemical composition were data analysis by using ANOVA and compared the average by Duncan's New Multiple Range test (DMRT) (Steel and Torries, 1991)

4. Results

Chemical composition of fermented coconut meal by yeast fermentation processes.

It was found that moisture content of all treatment was range from 3.41-3.73 percent. Ash content of moisture content of all treatments was range 2.23-2.74 percent. Crude fat content of all treatment was range from 17.55-21.22 percent by T2 was highest. Crude fiber content of all treatment was range from 50.48-56.56 percent by T1 was lowest. Crude protein of all treatment was range from 6.41-9.18 percent by T1 was highest while T2 was lowest as shown in Table 2. This was due to the positive effect of baker's yeast *Saccharomyces cerevisiae* fermentation on nutrient content of coconut meal. This finding was different from Somkuna et al. (2014) reported that crude protein content of yeast fermented coconut meal plus urea (46-0-0) at day 10^{th} of fermentation was 34.40. It could be described that the different type of substrate in fermentation process and the quality of fermentation depends on the type of microbial fermentation and a solid medium used (Syahri, 2016). When considered the crude protein content in T2 that used ammonium sulfate as substrate in fermentation process, the ammonium sulfate contains nitrogen as 21 percent when compared with urea as 46 percent. In the process of yeast medium preparation, the yeast cells were activated to grow in the medium mixture that contained sugar as a carbon source and urea or ammonium sulfate as nitrogen source. These two sources were as energy source for baker's yeast to grow and generated their population. In addition, Hagman and Piškur (2015) described that baker's yeast (*S. cerevisiae)* rapidly converts sugars to ethanol and carbon dioxide at both anaerobic and aerobic conditions. When oxygen is absent, acetaldehyde is the final electron acceptor and gets converted into ethanol under purely fermentative growth. Under aerobic conditions, respiration is possible with oxygen as the final electron acceptor, but *S. cerevisiae* still exhibits alcoholic fermentation until the sugar/glucose is depleted from the medium. However, increasing of crude protein content in all treatment when the time of fermentation was increased could be affected by substrates in the fermentation process. In addition, the crude fiber content of coconut meal in T1 and T2 were lower when compared with the others. This was due to the cellulolytic enzymes produced from filamentous fungi, such as *Trichoderma sp*, have gained increasing attention due to the fact that these fungi could not only secrete cellulase in large amount but also had a potential to fully hydrolyze crystalline cellulose. Among *Trichoderma sp*, *Trichoderma viride* is one of the cellulolytic fungi that could produce cellulase with high efficacy

to break down cellulose (Hutta et al. 2014). So that, the yeast fermented coconut meal from these fermentation process could be used as animal feedstuff but the urea content in this product should be further tested.

Physical characteristics of yeast fermented coconut meal

Physical characteristics of yeast fermented coconut meal of each treatment in this study were similar to the aspects of silage characteristic that reported by Department of Livestock (2004). The texture of T1 and T3 were slightly bulkiness at the first 7 days of fermentation and it turned to be high bulkiness when the time of fermentation increased while the texture of T2 and T4 were slightly bulkiness from first day until 28 days of fermentation. Color of all treatments was yellow, and the odor smelled like fermented fruit accept T2 and T4 had strong smell like fermented fruit or ammonia as shown in Table 3.

Table 2 Chemical composition of fermented coconut meal by yeast fermentation processes

Chemical composition	Treatment	Fermentation period (days)					Average	P-value	CV	SEM
		0	7	14	21	28				
Moisture	1	5.86	4.18	2.94	3.20	1.98	3.63^{bc}	0.001	0.38	1.34
	2	5.96	4.48	2.17	2.38	2.05	3.41^{a}			
	3	5.66	3.49	2.11	3.02	3.11	3.48^{b}			
	4	5.47	4.58	2.33	2.86	3.43	3.73^{c}			
Ash	1	1.84	2.44	2.34	2.44	2.10	2.23^{a}	0.000	0.23	0.56
	2	2.32	2.61	2.58	2.49	3.01	2.60^{b}			
	3	2.36	2.03	2.92	2.10	2.07	2.30^{a}			
	4	1.72	2.61	2.82	2.65	3.90	2.74^{b}			
Crude fat	1	5.86	23.80	17.29	20.17	20.65	17.55^{a}	0.000	0.24	4.52
	2	14.37	24.50	22.13	21.73	23.40	21.22^{d}			
	3	13.95	16.67	20.92	22.18	16.21	17.98^{b}			
	4	24.10	19.28	17.89	16.64	17.25	19.03^{bc}			
Crude fiber	1	63.69	45.50	43.99	45.22	53.98	50.48^{a}	0.000	0.22	8.71
	2	55.13	41.46	41.93	55.37	62.51	51.28^{a}			
	3	55.67	49.19	49.87	62.58	65.48	56.56^{b}			
	4	60.21	56.75	47.79	57.35	56.49	55.72^{b}			
Crude Protein	1	7.28	8.07	8.65	10.71	11.22	9.18^{c}	0.000	0.22	1.72
	2	5.13	6.86	5.55	8.16	6.62	6.41^{a}			
	3	7.10	7.26	8.53	6.87	9.27	7.81^{b}			
	4	5.82	8.72	9.60	6.20	7.58	7.58^{b}			

^{abcd} Mean with different letters significantly differ (P<0.05)

Table 3 Physical characteristics of yeast fermented coconut meal

Physical characteristics	Treatment	Fermentation Period (days)				
		0	7	14	21	28
Texture	1	Slightly bulkiness	High bulkiness	High bulkiness	High bulkiness	High bulkiness
Color		Yellow	Yellow	Yellow	Yellow	Yellow
Odor		Smell like coconut milk	Smell like fermented fruit	Smell like fermented fruit	Smell like fermented fruit	Smell like fermented fruit
Texture	2	Slightly bulkiness	Slightly bulkiness	Slightly bulkiness	Slightly bulkiness	Slightly bulkiness
Color		Yellow	Yellow	Yellow	Yellow	Yellow
Odor		Smell like coconut milk	Smell like fermented fruit	Smell like fermented fruit	Strong Smell like fermented fruit or ammonia	Strong Smell like fermented fruit or ammonia
Texture	3	Slightly bulkiness	High bulkiness	High bulkiness	High bulkiness	High bulkiness
Color		Slightly Yellow	Slightly Yellow	Slightly Yellow	Slightly Yellow	Slightly Yellow
Odor		Smell like coconut milk	Smell like fermented fruit	Smell like fermented fruit	Smell like fermented fruit	Smell like fermented fruit
Texture	4	Slightly bulkiness	Slightly bulkiness	Slightly bulkiness	Slightly bulkiness	Slightly bulkiness
Color		Yellow	Yellow	Yellow	Yellow	Yellow
Odor		Smell like coconut milk	Smell like fermented fruit	Smell like fermented fruit	Strong Smell like fermented fruit or ammonia	Strong Smell like fermented fruit or ammonia

5. Conclusion

Fermentation of coconut meal with baker's yeast *Saccharomyces cerevisiae* and urea (46-0-0) at 28 days showed highest crude protein level. Yeast fermented coconut meal in this study could be considered as an alternative feedstuffs for animal but the urea content in this products should be further tested especially for non-ruminant animals.

6. References

Abdul Aziz, Azila, Aziz, R., Sarmidi, M.R., Suan, C.L., Annuar, N.A.S., Noor, N.M., and Nor, A. N. (2014). *Fermented coconut milk and coconut oil*. Retrieved from https://www.reserchgate.net/publication/262692553.

AOAC. (1990). *Association of Official Analytical Chemist Official Methods of Analyses*. Third Edition. AOAC. Washington DC.

Department of Livestock. (2004). *The Standard of good quality silage*. The Agricultural Co-operative Federation of Thailand., LTD. Printing House.

Farizaldi, J., Jafrinur, N., and Marlida, Y. (2017). The effect of fermented coconut wste to the growth of catfish (*Clarias* Sp.). *International Journal of Agricultural Sciences*. 1(1): 21-27.

Hafsah, H.B., Damry, U., and Sundu, B. (2020). Fermented coconut dregs quality and their effects on the performance of broiler chickens. *Tropical Animal Science Journal*. 43(3): 219-226.

Hagman, A., Piškur, J. (2015). A Study on the Fundamental Mechanism and the Evolutionary Driving Forces behind Aerobic Fermentation in Yeast. *PLoS ONE* 10(1): e0116942. doi:10.1371/journal. pone.0116942.

Hatta, U., Sjofjan, O., Subagiyo, I., and Sundu, B. (2014). Effects of fermentation by *Trichoderma viride* on nutritive value of copra meal, cellulase activity and performance of broiler chickens. *Livestock Research for Rural Development. Volume 26, Article #61*. Retrieved November 26, 2020, from http://www.lrrd.org/lrrd26/4/hatt26061.htm

Khuwijitjaru, P., Watsanit, K., and Adachi, S.. (2012). Carbohydrate content and composition of product from supcritical water treatment of coconut meal. *Journal of Industrial and Engineering Chemistry*. 18: 225-229.

Mohd Nor, N., Abbasiliasi, S., Marikkar, M. N., Ariff, A., Amid, M., Lamasudin, D. U., Abdul Manap, M. Y., & Mustafa, S. (2017). Defatted coconut residue crude polysaccharides as potential prebiotics: study of their effects on proliferation and acidifying activity of probiotics in vitro. *Journal of food science and technology*. 54(1): 164–173. https://doi.org/10.1007/s13197-016-2448-9

Mozin, S., hatta, U., Sarjuni, S., Gobel, M., and Sundu, B. (2019). Growth performance, feed digestibility and meat selenium of broiler fed fungi-fermented rice bran with addition of inorganic selenium. *International Journal of Poultry Science*. 18: 438-444.

Nabila, M., Yaakub, H., Alimon, A.R., and Samsudin, A.A. (2017). Effects of baker's yeast as a growth promoter supplemented at different levels on growth performance, gut morphology, and carcass characteristics of broiler chickens. *Mal. J. Anim.Sci.* 20(2): 83-93.

Sangkharak, K., Chookhun, K., Numreung, J., and Prasertsan, P. (2020). Utilization of coconut meal, a waste product of milk processing, as a novel substrate for biodiesel and bioethanol production. *Biomass conversion and Biorefinery*. 10: 651-662.

Somkuna, N. (2008). *Effects of dried coconut meal in the diet on growth performance of broilers*. In: Proceeding 5th Symposium in Animal Science, January 31, 2008. Department of Animal Science, Faculty of Agriculture, Khon Kaen University. Page 284-287.

Somkuna, N. (2012). *Utilization of Dried Coconut Meal and Supplementation Exogenous Enzyme on Productive performance of Broilers*. In Proceedings in The 15th AAAP (The Asian-Australasian Association of Animal Production Societies) Animal Science Congress. 26-30 November, 2012. Thammasart University, Rangsit Campus., Thailand. Page. 381-384.

Somkuna, N., Sawangtap, J., Pum-umpha, N., Nonsaena, Y. (2013). Increasing protein level of coconut meal and cassava by urea-yeast fermentation process. *Agricultural Sci. J.* 44 : 1 (Suppl.) : 267-270.

Somkuna, N., Sawangtap, J., Rodjarkken, J., and Uttarawichian, S. (2014). Study of increasing protein level of dry and fresh coconut meal by urea-yeast fermentation process. *KHON KAEN AGR. J. 42 SUPPL.* 1: (2014). 290-294.

Steel, R. G. D. and Torrie, J. H. (1991). *Principle and Procedure Statistics 2nd Edition.* McGraw-Hill Book Co, Inc, Singapore.

Sundu, B., Hatta, U., Mozin, S. and Adjis, A. (2019). The effect of fermented coconut dregs with the addition of inorganic selenium on feed digestibility, growth performance and carcass traits of broiler chickens. *Livestock Research for Rural Development. Volume 31, Article #176.* Retrieved November 26, 2020, from http://www.lrrd.org/lrrd31/11/b_sun31176.html

Syahri, Y.F. (2016). Potency of dregs coconut fermentation (*Cocos nucifera*) as an alternative feed for fish and poultry "PA-BIO". *Agrotech Journal ATJ.* 1(1): 45-49.

Yazid, N.A., Barrena, R., Komilis, D., and Sánchez, A. (2017). *Solid-State Fermentation as a Novel Paradigm for Organic Waste Valorization: A Review*. Sustainability. 9 : 224; doi:10.3390/su9020224.

Ethanol Production from Bagasse Waste by Chemical Pretreatments Followed by Bioreactor using *Saccharomyces Cerevisiae*

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Abstract

This work studied the optimization of dilute H_2SO_4 hydrolysis of acid chlorite followed by sodium hydroxide pretreated bagasse (cellulose sample) to obtain the hydrolysate containing highly reducing sugar concentrations for use as a source for producing lignocellulosic ethanol. The effect of the H_2SO_4 concentration, ratio of acid volume to sample and hydrolysis time on reducing sugar yield were investigated. The maximum reducing sugar yield of 62.17% could be reached at H_2SO_4 concentration of 0.20 M, ratio of acid volume to sample of 18.95 mL/g and hydrolysis time of 90 min at 90 °C. Glucose was detected as the major sugar product in the acid hydrolysate of cellulose under optimum conditions, with yields up to 60.30 g/100 g cellulose. Conversely, fermentation inhibitors including furfural, 5-hydroxymethyl furfural, acetic acid and phenolic compounds were detected at very low concentrations. The fermentation of the hydrolysate using *Saccharomyces cerevisiae* TISTR 5048 resulted in an ethanol yield of 21.52 g/100 g cellulose or 13.20 g/100 g raw bagasse. The results demonstrate that the hydrolysate under optimum conditions containing highly fermentable sugar and inhibitor concentrations is a promising source for high yield lignocellulosic ethanol production.

Keywords : Ethanol, Bagasse Waste, Biofuel

1. Introduction

High worldwide demand for energy, uncertainty of petroleum resources and concern about global climatic changes has led to a resurgence in the development of alternative liquid fuels. Bioethanol has been considered as an optimal choice, as it reduces the dependence on crude oil and promises cleaner combustion, leading to a reduction of particulate and greenhouse

gas emission. However, it is not sustainable to produce ethanol from food crops, especially in Thailand and many other countries. Therefore, ethanol production from non-food crop feedstock, especially lignocellulosic biomass, has become a research focus in many countries (Zhao et al., 2009). Lignocellulosic biomass from forestry, agricultural and agro-industrial residues has an estimated annual worldwide production of 100-500 million dry tons, accounting for about half of the global biomass yield (Ibraheem and Ndimba, 2013). Therefore, the production of ethanol from lignocellulosic biomass (lignocellulosic ethanol) seems very attractive and sustainable because of its availability in enormous quantities at low cost, its richness in lignocellulose and its lack of competition with food crops (Cardona and Sánchez et al., 2007). Thailand is the world's third largest producer and exporter of sugar following the lead by Brazil. Approximately 20-25 million tons of surgar cane are harvested each year from over 1 million hectares (2.50 million acres) of planting area in 48 provinces in the country, 75% of which are processed for export (Kaewphan and Gheewala, 2013). The byproduct of sugar cane is bagasse . The abundance of bagasse causes lignocellulosic biomass residues in the field and the owner will get rid of them by burning or plowing them back into the earth. It has been estimated that the quantity of destroyed stems is 4 million tons per year (Sovorawet et al., 2012). Thus, a large quantity of residues, rich in lignocellulose, low-cost feed stock is still currently discarded as waste (Han et al., 2010). Fully utilizing bagasse residues to produce lignocellulosic ethanol biofuel would be a highly attractive option. The main problem of ethanol production from lignocellulosic biomass is the low conversion of these materials to fermentable sugars, which is the result of a complex matrix of lignin and hemicellulose affecting the digestibility of cellulose (Mosier et al., 2005). Various physical (mechanical comminution, microwave irradiation), chemical (acid, alkali, acid-chlorite, oxidizing agent, wet oxidation, ozonolysis), physicochemical (liquid hot water, steam-explosion, ammonia fiber explosion, carbon dioxide explosion) and biological pretreatment methods have been used to make cellulose more accessible to enzymes or acids for conversion into fermentable sugars. Sun and Cheng (2002) have provided good reviews on these pretreatment methods.

Enzymatic hydrolysis is believed to be the most promising technology for conversion of lignocellulosic biomass into fermentable sugars under mild conditions (typically 40-50 °C, and pH 4.5-5). It is also more specific and does not produce by-products (Wen et al., 2004). However, at present the enzymatic hydrolysis process is not economically viable because this bioconversion process is very expensive, reacts slowly, and requires high enzyme loading to realize reasonable rates and yields (Eklund et al., 1995; Hari Krishna and Chowdary, 2000; Linde et al., 2007). Therefore, a chemical process still provides an alternative means to hydrolyze lignocellulosic biomass. Because of environmental and corrosion problems, dilute acid hydrolysis has been prioritized instead of concentrated acid. This method can be performed under low concentration conditions, which gives rise to two advantages of the process: low utility cost since there are low

corrosion problems and low toxicity of the hydrolysate. Moreover, this chemical process is a faster acting reaction that requires much less residence time in the reactor and is cheaper than enzymatic hydrolysis. Dilute acid hydrolysis of lignocellulosic biomass produces not only fermentable sugars but also significant quantities of inhibitor compounds such as furfural, hydroxymethylfurfural, acetic acid and phenolic compounds that can inhibit both growth and sugar utilization of microorganisms during the fermentation process (Aguilar et al., 2002; Lavarack et al., 2002; Gray et al., 2006). Inhibitor compounds removal from the hydrolysate improves fermentation yield, it simultaneously increases the production cost (Cao et al., 2009). Therefore, appropriate control of the hydrolysis stage to maximize sugars production and minimize inhibitor compounds formation is essential for effective ethanol production.

2. Research Objectives

2.1 To study the efficacy of two-stage pretreatment for obtaining a bagasse with high cellulose content prior to acid hydrolysis.

2.2 To determine the content of chemical constituents of both raw and all pretreated bagasse.

2.3 To ferment the hydrolysate of cellulose under optimum hydrolysis conditions using S. *cerevisiae* and to estimate ethanol yield including ethanol productivity in the fermented broths.

3. Research Methodology

3.1 Materials

Ethanol, sulfuric acid, nitric acid, acetic acid, toluene, phenol, sodium hydroxide, sodium sulphite anhydrous, sodium chloride, calcium chloride, glucose, potassium sodium tartrate, potassium dichromate, sodium thiosulfate, potassium iodide, starch, urea, hydrated magnesium sulphate, were obtained from Carlo Erba (Italy). 3, 5-dinitrosalicylic acid (DNS), anthrone, yeast extract, and *S. cerevisiae* were bought from Himedia (India). All chemicals used were analytical grade.

3.2 Procedures

3.2.1 Sample preparation of bagasse

Bagasse were thoroughly washed with tap water to remove adhering dirt, chopped into small pieces and dried under sunlight. They were then crushed into powder, sieved to select the fraction of particles with a size 500 μm (35 mesh) and dried at 105 °C in a hot-air oven for 24 h. The dried bagasse powder was stored in a sealed container until further use.

Chemical pretreatment of bagasse

The acid chlorite pretreatment followed by NaOH pretreatment was performed for removing of lignin and hemicellulose. After this, both the raw and all chemically pretreated bagasse were characterized using a FT-IR spectrometer (Tensor 27, Bruker Optics, Ettlingen, Germany).

Delignification using acid-chlorite pretreatment

Bagasse was delignified according to a modification of the method outlined by Kumar et al. (2013). Briefly, the dried bagasse powder was placed in an erlenmeyer flask and allowed to soak in tap water (16 mL/g biomass). Afterward, $NaClO_2$ (1.50 g/g biomass) was added and CH_3COOH (5 μL/g biomass) was slowly incorporated under stirring. With the top of the neck flask covered with aluminum foil, the mixture was heated to 70 °C and the same dose of $NaClO_2$ and CH_3COOH was added to the reaction every 1 h for 3 h. After the end of reaction, the solid residues (white solids) were rewashed with tap water until neutral pH, placed in a hot-air oven at 105 °C for 24 h. The oven-dried sample was called "holocellulose" (comprised of cellulose and hemicellulose). Holocellulose was stored for further NaOH pretreatment in the next stage.

Removal of hemicellulose using NaOH pretreatment

Holocellulose was pretreated to remove hemicellulose by soaking in 0.25 M NaOH (20% w/v) for 24 h and then heated at 80 °C for 1 h in a water bath (modified from Zhang and Cai, 2008). The solids were separated by filtration and thoroughly washed with tap water to neutral pH, dried in a hot-air oven and weighed. Cellulose obtained was subsequently used as a substrate for lignocellulosic ethanol production.

3.2.2 Chemical composition analysis

The chemical composition (hemicellulose, cellulose and lignin) of raw and pretreated samples were analyzed using a TGA/DTG/DTA analyzer (Pyris Diamond, USA). 5 mg (0.5) of each sample was loaded into a Pt pan, scanned over the range of 50-900 °C with a heating rate of 10 °C/min under N_2 atmosphere and the corresponding weight loss was recorded.

3.2.3 Dilute H_2SO_4 acid hydrolysis

Dilute H_2SO_4 hydrolysis was conducted in a 250 mL reagent bottle containing 10 g of cellulose. The reaction was performed in 90 min at 90 °C. The H_2SO_4 concentration, ratio of acid volume to sample and hydrolysis time were performed in the range of 0.10-0.30 M, 10-20 mL/g, respectively. After hydrolysis, the solid residue was separated by filtration. Then, the pH of the supernatant was adjusted to $\approx$ 5.5 using 2 M NaOH, and the resulting precipitate was removed by re-filtration. The final supernatant of hydrolysate obtained from the various conditions was estimated for reducing sugars yield. After acid hydrolysis under optimum conditions, the hydrolyste was characterized and quantified for each reducing sugar (such as glucose, xylose, mannose, arabinose and galactose) by a GC-FID.

3.2.4 Fermentation medium and conditions

The acid hydrolysate of the cellulose under the appropriate conditions was adjusted to pH ≈ 5.5 using 2 M NaOH, supplemented with following additional nutrients (per L): 1 g yeast extract, 1 g $MgSO_4.7H_2O$, 2 g $(NH_4)_2SO_4$ and 5 g KH_2PO_4 (Akaracharanya et al., 2010) and then used as an ethanol production medium. This medium with a working volume of 100 mL was transferred into a 250 mL erlernmeyer flask and sterilized by autoclaving at 121 °C, 15 psi for 30 min.Then, an inoculums suspension of *S. cerevisiae* cells was loaded into the sterilized medium (10% v/v). The fermentation was operated at 30 °C under static conditions for 72 h. The fermented broth was collected at 6-h time intervals for analysis of cellular growth, residual glucose and ethanol concentration.

4. Research Results

Figure. 1 shows images of bagasse before and after each pretreatment. It can be observed that the raw bagasse (a) became whiter after acid-chlorite pretreatment, which can be attributed to the removal of lignin. It was called "holocellulose" (b). Holocellulose was subsequently removed of hemicellulose using NaOH pretreatment. Cellulose obtained had swollen surface (c) because NaOH solution caused an increase the internal surface of substrate (Taherzadeh and Karimi, 2008).

The FT-IR spectra of raw and all pretreated bagasse samples are compared and illustrated in **Figure 2**. All spectra reveal a board and intense peak near 3330 cm^{-1} region suggesting hydrogen-bonded O-H stretching of absorbed water to the wood cell wall polymers. FT-IR analyses also reveal removal of lignin and hemicellulose in acid chlorite and two-stage pretreated bagasse, respectively. According to Yang et al. (2007), the characteristic bands of C=C stretching aromatic skeletal mode of lignin, observed in raw bagasse (**Figure 2 a**) around 1595 cm^{-1}, are not present after acid-chlorite pretreatment (**Figure 2 b**), indicating that lignin was removed after pretreatment process. The band at 1737 cm^{-1} is related to C=O stretching of carbonyl and acetyl groups attributed mainly to a presence of hemicellulose, and the disappearance of this band in acid chlorite followed by NaOH pretreated bagasse (**Figure 2 c**) results from the removal of those hemicellulose. After two-stage pretreatment, the absorption band of cellulose (C-O-C pyranose ring skeletal vibration at 1161 cm^{-1} and OH association of C-OH at 1104 cm^{-1}) became sharper as compared with the untreated bagasse, corresponding well to the increase in cellulose content after pretreatment.

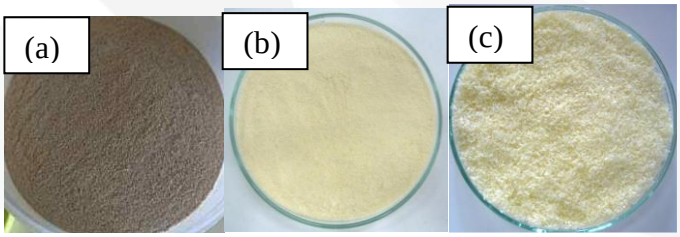

Figure 1 The images of raw bagasse (a), holocellulose (b) and cellulose (c)

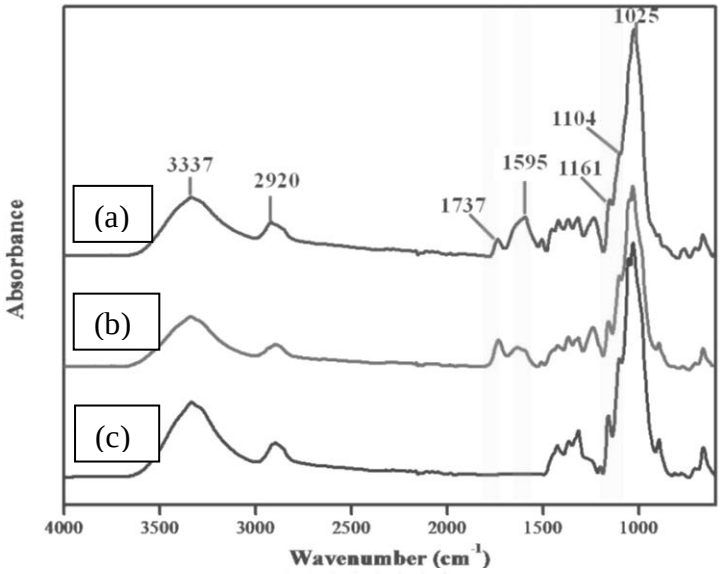

Figure 2. FTIR spectra of raw baggasse (a), holocellulose (b) and cellulose (c)

The chemical compositions of raw bagasse and cellulose obtained from TGA and DTA curves were compared and presented in **Figure 3**. Clearly, raw bagasse and cellulose sample differed in cellulose, hemicellulose and lignin contents. Raw bagasse stem was composed of 42.1% cellulose, 4.2% hemicellulose and 35.6% lignin, and others. After two-stage pretreatment, the contents of hemicellulose and lignin decreased to 1.2%, 3.1%, indicating that 71.4 % of hemicellulose and 91.3% of lignin of untreated material could be removed after this pretreatment. In addition, two-stage pretreatment increased cellulose content by 81.9%, suggesting that cellulose is readily hydrolyzed into fermentable sugars.

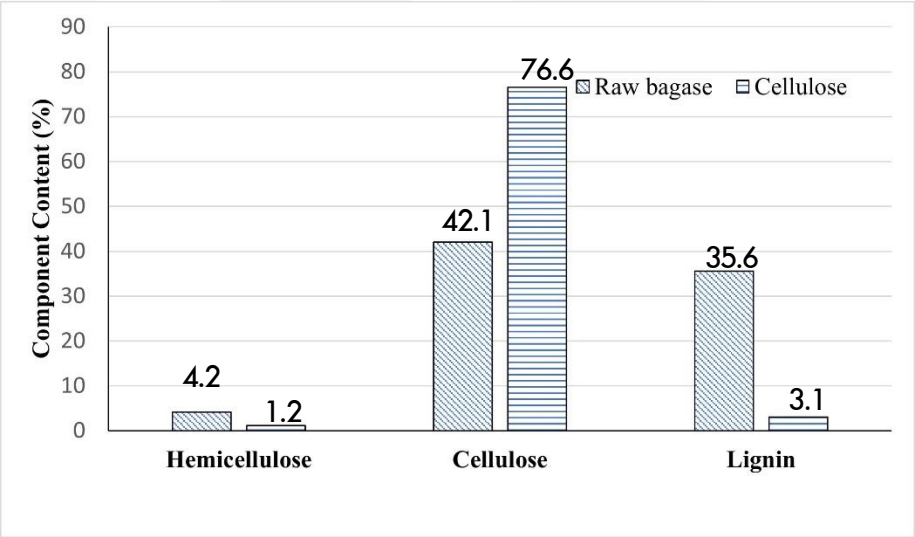

Figure 3 Chemical compositions of raw bagasse and cellulose.

The ethanol productivity was estimated as the amount of ethanol produced per unit of substrate in one unit of time (typically determined at a time when the ethanol yield is at its maximum), according to

$$Qp = P/t$$

where Qp is the ethanol productivity (g/100 g/h), P is the ethanol yield (g/100 g substrate) and t is the fermentation time (h).

The conversion efficiency of glucose to ethanol or theoretical ethanol yield is calculated assuming that 1 g of glucose present in the hydrolysate would theoretically give 0.51 g of ethanol. Theoretical ethanol yield was calculated according to

$$Ty = P \times 100\ G \times 0.51$$

where Ty is the theoretical ethanol yield (%), P is the ethanol yield (g/100 g substrate), G is the glucose utilized (g/100 g substrate) and 0.51 is the theoretical conversion factor for ethanol from glucose by *S. Cerevisiae* TISTR 5048.

Ethanol yield and productivity obtained by fermentation of the hydrolysate are presented in **Table 1.**

Table 1 Ethanol yield and productivity obtained by fermentation of the cellulose hydrolysate

Initial glucose concentration (g/100 g substrate)	Optimum fermentation time (h)	Maximum ethanol yield (g/100 g substrate)	Ethanol productivity (g/100 g/h)	Ethanol yield (%)
55.30	30	21.52	0.75	84.41

5. Conclusion

This study used acid-chlorite followed by NaOH pretreatment of bagasse for removal of lignin and hemicellulose to achieve a substrate with high cellulose content. These pretreatments are effective for the removal of non-cellulosic components, resulting in high cellulose content in the substrate, which facilitated the subsequent acid hydrolysis to obtain high reducing sugar yields. Glucose was detected as the main sugar products in the acid hydrolysate, while xylose, galactose and mannose were detected as the minor sugars with a low concentration. The results demonstrate that the hydrolysate of cellulose under the appropriate conditions is a promising source for producing lignocellulosic ethanol by *S. Cerevisiae* TISTR 5048. The fermentation of the hydrolysate of cellulose under the appropriate conditions using *S. Cerevisiae* TISTR 5048 resulted in an ethanol yield of 21.52 g/100 g substrate (13.20 g/100 g raw bagasse). Based on these findings, it would elucidate the feasibility to utilize agricultural residues as a potential resource for renewable energy and value-added biochemical.

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7. References

Aguilar R, Ramírez JA, Garrote G, Vázquez M. (2002). Kinetic study of acid hydrolysis of sugarcane bagasse. *Journal of Food Engineering*, 55, 309-318.

Akaracharanya A, Kesornsit J, Leepipatpiboon N, Srinorakutara T, Kitpreechavanich V.(2010). *Evaluation of the waste from cassava starch production as a substrate for ethanol fermentation by Saccharomyces cerevisiae*. Annals of Microbiology, 61, 431-436.

Cao G, Ren N, Wang A, Lee D, Guo W, Liu B, Feng Y, Zhao Q. (2009). Acid hydrolysis of corn stover for biohydrogen production using Thermoanaerobacterium thermosaccharolyticum W16. *International Journal of Hydrogen Energy*. 34, 7182-7188.

Cardona CA, Sánchez OJ.(2007). *Fuel ethanol production: process design trends and integration opportunities*. Bioresource Technology, 98(12), 2415-2457.

Eklund R, Galbe M, Zacchi G. (1995).*The influence of SO_2 and H_2SO_4 impregnation of willow prior to steam pretreatment.* Bioresource Technology, 52(3), 225-229.

Gray KA, Zhao L, Emtage M. (2006). *Bioethanol.* Current Opinion in Chemical Biology, 10, 1-6.

Han M, Kim Y, Kim Y, Chung B, Choi GW. (2011). Bioethanol production from optimized pretreatment cassava stem. *Korean Journal of Chemical Engineering*, 28(1),119-125.

Hari Krishna S, Chondary GV. (2000). Optimization of simultaneous saccharification and fermentation for the production of ethanol from lignocellulosic biomass. *Journal of Agricultural and Food Chemistry*, 48(5), 1971-1976.

Ibraheem O, Ndimba BK. (2013). Molecular mechanisms employed by ethanologenic bacteria in response to lignocellulose-derived inhibitory compounds. *International Journal of Biological Sciences*, 9(6), 598-612.

Kaewphan N, Gheewala SH. (2013). Greenhouse gas evaluation and market opportunity of bioplastic bag from cassava in Thailand. *Journal of Sustainable Energy & Environment* , 4,15-19.

Kumar R, Hu F, Hubbell CA, Ragauskas AJ, Wyman CE. (2013) *Comparison of laboratory delignification methods, their selectivity, and impacts on physiochemical characteristics of cellulose biomass.* Bioresource Technology, 130, 372-381.

Lavarack BP, Griffin GJ, Rodman D. (2002). *The acid hydrolysis of sugarcane bagasse hemicellulose to produce xylose, arabinose, glucose and other products.* Biomass and Bioenergy, 23, 367-380.

Linde M, Galbe M, Zacchi G. (2007). *Simultaneous saccharification and fermentation of steam-pretreated barely straw at low enzyme loading and low yeast concentration.* Enzyme and Microbial Technology, 40(5), 1100-1107.

Moiser N, Wyamn C, Dale B, Elander R, Lee YY, Holtzapple M, Ladisch M. (2005). *Features of promising technologies for pretreatment of lignocellulosic biomass.* Bioresource Technology, 96, 673-686.

Sovorawet B, Kongkiattikajorn J. (2012). Bioproduction of ethanol in SHF and SSF from cassava stalks. *KKU Research Journal*, 17(4), 565-572.

Sun Y, Cheng JY. (2002). *Hydrolysis of lignocellulosic materials for ethanol production: a review.* Bioresource Technology, 83(1),1-11.

Taherzadeh MJ, Karimi K. (2007). *Acid-based hydrolysis processes for ethanol from lignocellulosic materials: a review.* BioResources, 2, 472-499.

Wen Z, Liao W, Chen S. (2004). *Hydrolysis of animal manure lignocellulosics for reducing sugar production.* Bioresource Technology, 91, 31-39.

Yang H, Yan R, Chen H, Lee DH, Zheng C. (2007) *Characteristics of hemicellulose, cellulose and lignin pyrolysis*. Fuel, 86,1781-1788.

Yang Y, Sharma-shivappa RR, Burns JC, Cheng J. (2009). *Saccharification and fermentation of dilute-acid-pretreated freeze-dried switch grass*. Energy&Fuels, 23, 5626-5635.

Zhang Q, Cai W. (2008). *Enzymatic hydrolysis of alkali-pretreated rice straw by Trichoderma reesei ZM4-F3*. Biomass and Bioenergy,32, 1130-1135.

Zhao X, Cheng K, Liu D. (2009). *Organosolv pretreatment of lignocellulosic biomass for enzymatic hydrolysis*. Applied Microbiology and Biotechnology, 82, 815-827.

Infection of Dengue Virus Serotype-2 Triggers Albumin Reduction and Inflammation in Human Hepatocyte-Like Cells (hHLCs)

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Abstract

Dengue virus (DENV) infection has a diverse clinical presentation ranging from a mild febrile illness to a fatal complication called severe dengue, characterized by plasma leakage and organ impairment. The Human liver is a major target site of DENV infection and replication, which is occasionally associated with acute liver failure (ALF). It is thought that hepatic dysfunction is a result of the dysregulated inflammatory response to the virus by NF-κB induction. To study the mechanism of the hepatic response to DENV in an *in vitro* environment mimicking *in vivo* situation, we here employed differentiated human hepatocyte-like cells (hHLCs) derived from human induced pluripotent stem cells (hiPSCs) as a model for DENV infection, and investigated host response via immunofluorescence assay. The results clearly showed that DENV serotype 2 efficiently infected and replicated in hHLCs, and infection induced NF-κB activation through upregulation of protein expression and nuclear localization. We also found that DENV significantly reduced the albumin level in hHLCs, whereas another hepatic marker of HNF4a was not altered. Reduction of albumin levels in serum was previously reported in dengue patients. Therefore, this work provided a useful *in vitro* tool to study host responses to DENV and disease mechanisms in patients.

Keywords : Dengue Virus (DENV), Human Hepatocyte-like Cell (hHLC), Host Response, Nuclear Factor-kappa B (NF-κB), Albumin

1. Introduction

Dengue infection is a worldwide health problem, especially in tropical and subtropical nations, with estimated 400 million individuals infected every year (75% are Asian). The diseases

are caused by dengue virus (DENV), which is a single-stranded, positive-sense RNA virus belonging to the genus flavivirus within the family *Flaviviridae*. DENV has 4 related but antigenically distinct serotypes, DENV-1–4, which are circulated by *Aedes* mosquitoes (Wilder-Smith, Ooi, Horstick & Wills, 2019). Symptoms of the diseases vary from asymptomatic to dengue fever (DF) that occasionally develops into life-threatening, severe forms, namely dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). During infection, human liver represents a major target organ for DENV, and plasma leakage leading to acute liver failure (ALF) is observed in patients with the severe form of DSS (Dalugama & Gawarammana, 2017). Further, it was reported that patients with dengue often have a low level of albumin or hypoalbuminemia (Tramontini Gomes de Sousa Cardozo et al., 2017).

Albumin is a water-soluble protein that is produced by the liver and secreted into the bloodstream (RN, N & M, 2020). It is the main protein in plasma and helps fluid go through the whole body by maintaining colloid osmotic pressure. Very low albumin levels can cause plasma leakage and increase the risk of death (Hankins, 2007). Hypoalbuminemia also reflects hepatic integrity in case of liver failure.

Another cause of plasma leakage is thought to be the cytokine storm. DENV infection induces strong inflammation through an activation of the NF-κB (nuclear factor kappa-light-chain-enhancer of activated B cells) pathway that plays crucial roles in the regulation of pro-inflammatory cytokines against pathogens, which leads to an increase vascular permeability and the development of plasma leakage (Brasier, 2006, Srikiatkhachorn, 2009).

To better understand the molecular mechanisms of ALF and plasma leakage in severe dengue patients, in this study, we generated human hepatocyte-like cells (hHLCs) differentiated from human induced pluripotent stem cells (hiPSCs), and used as a target model for DENV infection (Samanta, 2015). hiPSCs are reprogrammed from human somatic cells and have characteristics of embryonic stem (ES) cells able to differentiate into all three primary germ layers. Moreover, it was recently reported that hHLC showed different immune responses to DENV infection from immortalized cancer cell lines that possess either genetic abnormality or distinct immune response from normal cells (Lang, 2016). Therefore, hHLCs may be more suitable *in vitro* model for DENV infection to investigate host response in human liver in infected individuals.

2. Research Objectives

2.1 To establish human hepatocyte-like cells (hHLCs) from induced pluripotent stem (iPS) cells.

2.2 To infect hHLCs with DENV and investigate albumin production and NF-κB activity.

3. Research Methodology

3.1 Cell Culture and Differentiation

Induced pluripotent stem (iPS) cells were used in this study for differentiation into hepatocyte-like cells (HLCs). The Essential 8 (E8) medium (Wongkummool et al., 2017) was used to maintain the colonies of iPS cells in 4% O2 before induction into definitive endoderm, using RPMI medium supplemented with B27 and a cytokine, Activin A, at 20% O2. Thereafter, specified hepatic and immature hepatocyte phases were induced by cytokines, bone morphogenetic protein 4 (BMP-4), and basic fibroblast growth factor (FGF-2), and hepatocyte growth factor (HGF), respectively, at 4% O2. The final stage of differentiation is mature hepatocyte (HLCs), which was induced using hepatocyte culture medium supplemented at 20% O2. Each stage of differentiation takes 5 days (Si-tayeb et al., 2010) (Fig. 1A).

3.2 DENV Infection

Cells were incubated with DENV serotype 2 (DENV-2) strain 16681 at MOI 2 for 6 hours before changing the media to the hepatocyte culture medium. Cells were harvested at 72 hours post infection (hpi).

3.3 Immunofluorescence (IF)

Cells were fixed with 4% paraformaldehyde in PBS for 30 minutes at room temperature and permeabilized with 0.1% Triton X-100 in PBS for 15 minutes, followed by an incubation with the Odyssey® Blocking Buffer for 1 hour to prevent unspecific binding of the antibodies. Then, cells were incubated with diluted primary antibodies listed in Table 1 for overnight at 4 ℃. After extensive washes with PBS, target proteins were visualized by a 3-hour incubation with secondary antibodies conjugated with Alexa Fluor 488 or 647 (Invitrogen). Cell nuclei were stained with DAPI for 30 minutes before imaging with the Eclipse Ti2-E inverted microscope from Nikon.

Table 1 Primary antibodies used in this experiment.

Antigen	Host	Cat#	Supplier
Oct4	Mouse	ab184665	Abeam
GATA-4	Mouse	SC-25310	Santa cruz
SOX17	Mouse	ab84990	Abeam
HNF4a	Rabbit	ab92378	Abeam
AFP	Mouse	ab3980	Abeam
Albumin	Mouse	ab 10241	Abeam
NF-kB (p65)	Rabbit	ab194726	Abeam
dsRNA	Mouse	10010200	Scicons

3.4 RT-PCR

Total RNAs were extracted from cells using TRIzol reagent and subjected to first-strand cDNA synthesis with iScript™ cDNA synthesis kit. Gene expression was examined by qPCR with specific primers to produce amplicons size of approximately 100-350 bps. Primer sequences used are listed in Table 2

Table 2 Specific primer sequences for RT-qPCR.

Primer	Sequences	Size (bp)	Amplicon size (bp)
OCT4_FWD	GCTGGAGCAAAACCCGGAGG	20	114
OCT4_REV	TCGGCCTGTGTATATCCCAGGGTG	24	
GATA4_FWD	TCCCTCTTCCCTCCTCAAAT	20	194
GATA4_REV	TCAGCGTGTAAAGGCATCTG	20	
SOX17_FWD	GAGCCAAGGGCGAGTCCCGTA	21	141
SOX17_REV	CCTTCCACGACTTGCCCAGCAT	22	
FOXA2_FWD	TATGCTGGGAGCGGTG	16	131
FOXA2_REV	TGTACGTGTTCATGCCGTTCA	21	
HNF4a_FWD	GGCAATGTGTCAGGGAGGAA	20	136
HNF4a_REV	CAGGGATTTCAGGGGCACTT	20	
AFP_FWD	TGCAGCCAAAGTGAAGAGGGAAGA	24	217
AFP_REV	CATAGCGAGCAGCCCAAAGAAGAA	24	
ALB_FWD	AGACAAATTATGCACAGTTG	20	357
ALB_REV	TTCCCTTCATCCCGAAGTTC	20	

Note: OCT4_FWD/REV, GATA4_FWD/REV, SOX17_FWD/REV, and HNF4a_FWD/REV (Irie et al., 2015); FOXA2_FWD/REV (Aguila et al., 2014); AFP_FWD/REV (Kamiyama et al., 2006); ALB_FWD/REV (Cerec et al., 2007)

4. Research Results

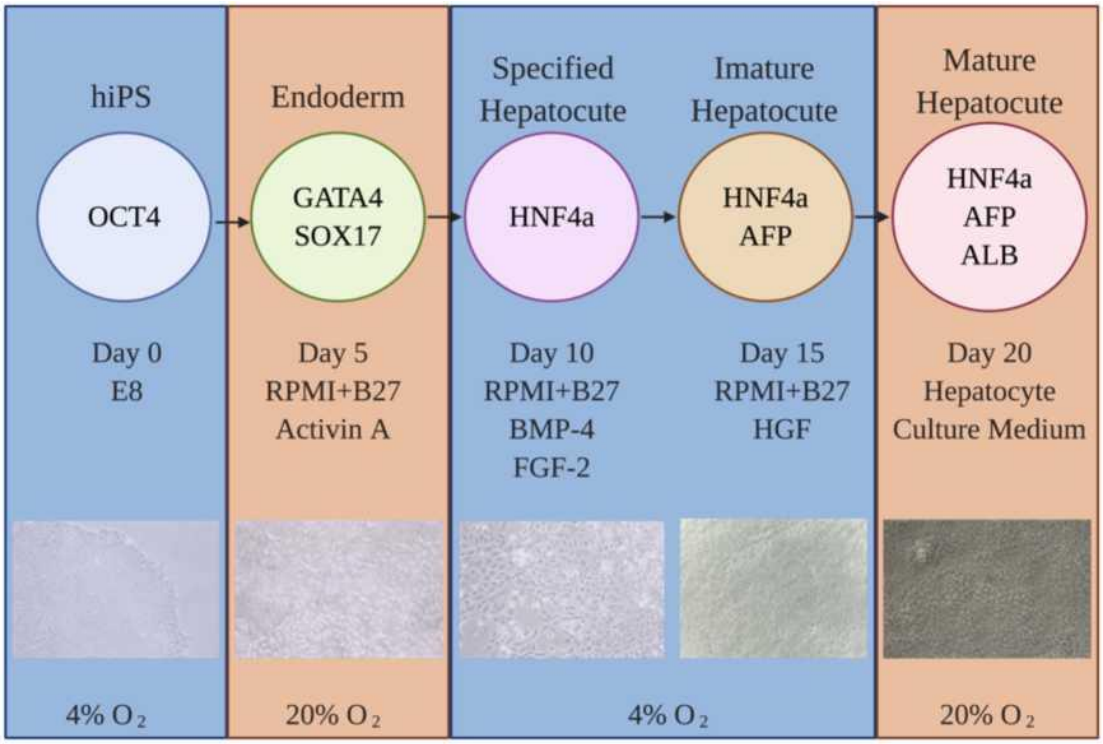
Initially, we successfully cultured iPS cells that have the morphology of a high nucleus to cytoplasm ratio, prominent nucleoli, and formation of compact colonies. After seeding iPS cells and induction into the endoderm stage, cells showed 'petal and cobblestone' morphology which is characteristic of endoderm cells. After the endoderm stage, cells in specified hepatocyte and immature hepatocyte phases became mixed population depending on environmental signals the cells received. The final stage was mature hepatocyte (HLCs), the featured morphology of this phase is a large cytoplasmic-to-nuclear ratio, numerous vacuoles and vesicles, and prominent nucleoli. Several HLCs were found to be binucleated (Fig. 1A)

Next, we verified each stage of differentiated cells via immunofluorescence assay (IF). As expected, hiPSCs expressed pluripotency marker, octamer-binding transcription factor 4

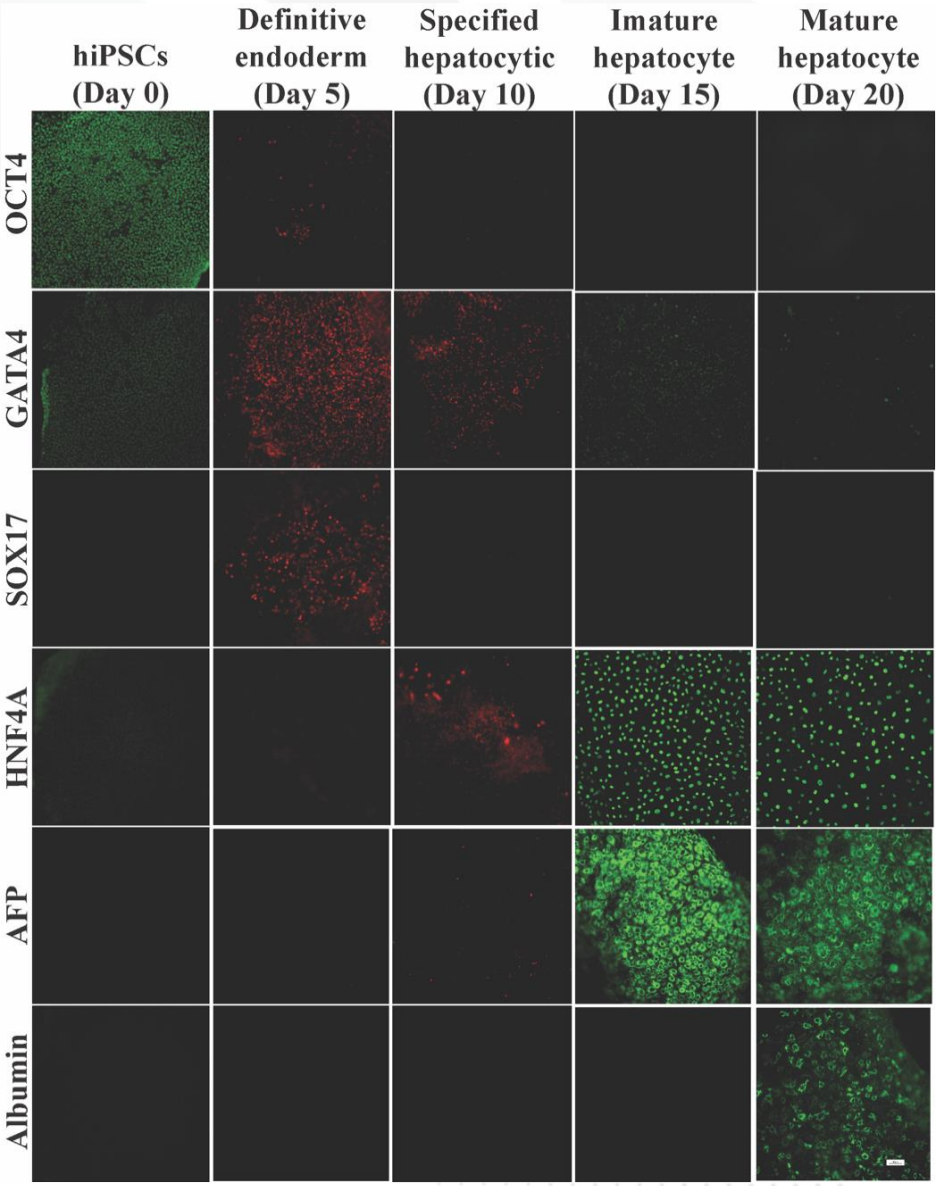
(OCT4), and definitive endoderm showed specific expression of GATA binding protein 4 (GATA4), and SRY-box transcription factor 17 (SOX17) after five days of culturing with activin. Then, cells were differentiated to the specified hepatocyte phase by culture media supplemented with BMP4 and FGF2 for five days. The expression of GATA4 decreased and SOX17 was disappeared, whereas hepatocyte nuclear factor 4 alpha (HNF4a) was observed. HNF4A signals became stronger upon further five-day culture with HGF and the cells started to show alpha-fetoprotein (AFP) in hepatoblast fate. For the last stage of differentiation, cells were cultured with a specified hepatocyte culture medium and it demonstrated the signal of HNF4a, AFP, and albumin (ALB) (Fig. 1B). The last phase of differentiation or mature hepatocyte was also verified by RT-PCR, showing expected AFP and ALB bands. (Fig. 1C)

We next investigated susceptibility of hHLCs to DENV-2 infection. hHLCs were infected at MOI 2, and at 72 hours post infection (hpi) cells were fixed and subjected to IF. In this study, we utilized a monoclonal anti-dsRNA antibody to detect viral infection and replication in cells. HNF4a was assigned as a marker for hHLCs (Fig. 2A). Interestingly, we found that albumin signals, but not HNF4a, were nearly abolished in infected hHLCs. The results also demonstrated that NF-κB was upregulated and activated via translocation from cytoplasm to nucleus (Fig. 2B).

(A)



(B)


hiPSCs (Day 0)
Definitive endoderm (Day 5)
Specified hepatocytic (Day 10)
Imature hepatocyte (Day 15)
Mature hepatocyte (Day 20)
OCT4
GATA4
SOX17
HNF4A
AFP
Albumin

(C)

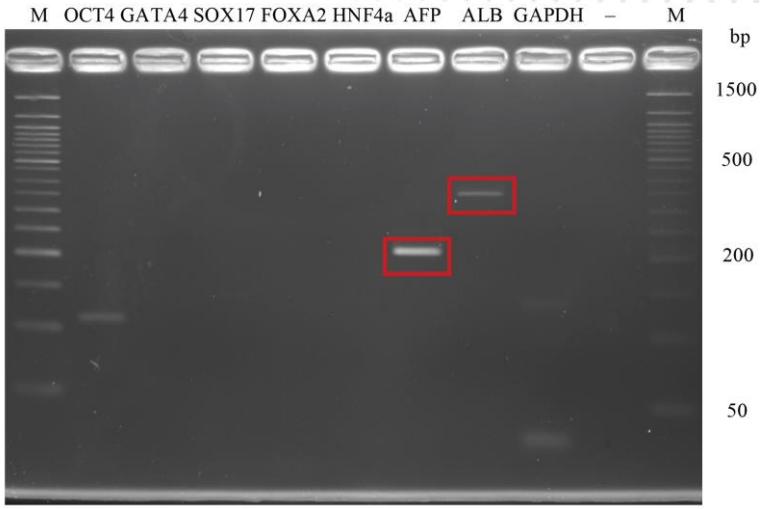
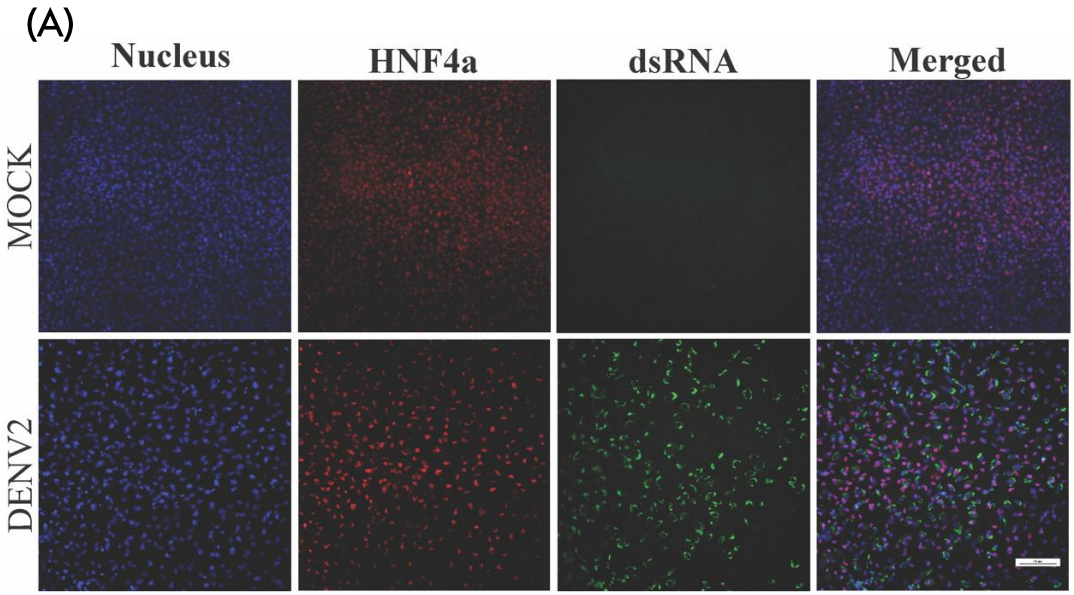

M OCT4 GATA4 SOX17 FOXA2 HNF4a AFP ALB GAPDH – M
bp
1500
500
200
50

Figure 1. Differentiation of hHLCs. (A) Flow diagram of hHLCs differentiation. (B) Immunofluorescence of hHLCs differentiation at days 0, 5, 10, 15 and 20 using OCT4, GATA4, SOX17, HNF4a, AFP, and albumin antibodies as molecular markers in each stage. A scale bar indicates 50 μm. (C) hHLCs were verified by RT-PCR. M is 50 bp ladders, and – is the negative control (no template).



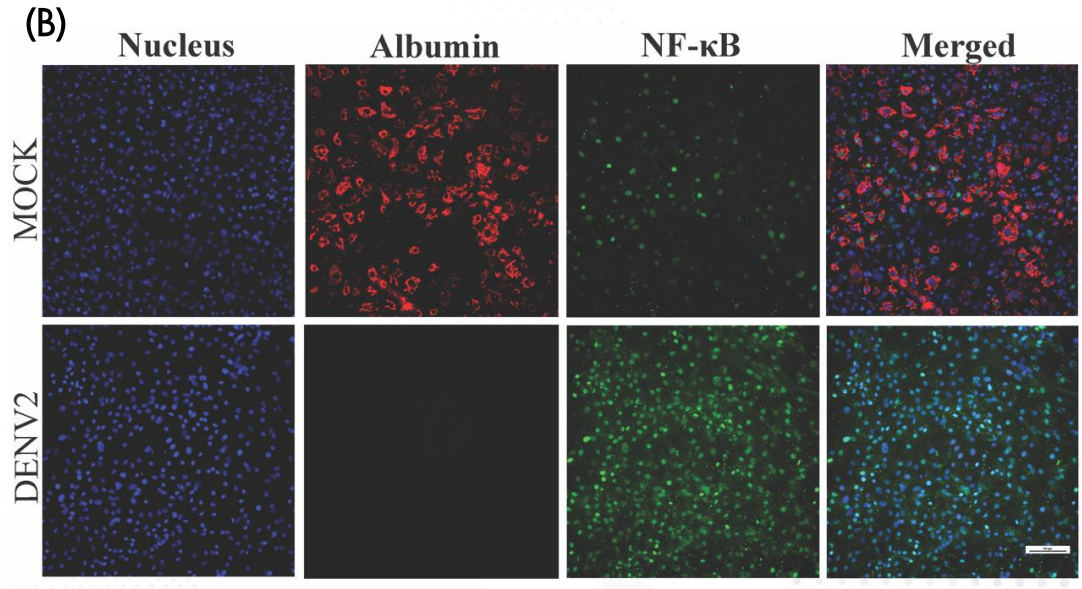


Figure 2. hHLCs responses to DENV-2 infection. (A) Immunostaining assay of hHLCs with and without infection at 72 hpi. Cells were stained with anti-dsRNA and anti-HNF4a antibodies. The scale bar, 100 μm. (B) Albumin expression and NF-κB (p65) activity after DENV-2 infection at 72 hpi. The scale bar, 100 μm

5. Discussions

In this study, we provided a concept of using hHLCs as an *in vitro* model for DENV infection to investigate viral response as in dengue patients. Our procedure to produce hHLCs was highly effective as the results of IF and RT-PCR clearly showed AFP and albumin expression in the last stage of mature hepatocytes. According to dsRNA fluorescence signals, hHLCs were susceptible to DENV-2 infection and the virus could efficiently replicate in hHLCs. Viral dsRNA is produced in infected cells during viral RNA replication. It is intriguing that albumin was almost disappeared in infected hHLCs whereas HNF4a were not affected. However, the precise molecular mechanism for albumin's dysregulation by DENV as well as its roles in dengue pathogenesis are not known. Albumin is a major protein in the plasma, contributing to a balance of intravascular oncotic pressure, preventing the increase of vascular permeability. In addition, reduction of albumin levels in serum was previously reported in severe dengue patients.

On the other hand, NF-κB plays crucial roles in regulation of the inflammation pathways, and the results showed that NF-κB was upregulated and activated through nuclear localization upon DENV infection. These supports a hypothesis of the cytokine storm possibly involved in vascular permeability in the development of DHF and DSS. Since it was recently reported that immortalized cancer cell lines possess either genetic abnormality or distinct immune response from normal cells, this study, therefore, provided a useful *in vitro* tool to study host responses to DENV and disease mechanisms in patients.

6. Conclusion

We demonstrated here the efficient production of hiPSC-derived hHLCs and the use of hHLCs in studying viral response in infected liver cells. Our results showed that DENV-2 could efficiently infect and replicate in hHLCs and induced inflammatory responses via NF-κB activation. It was found that DENV significantly reduced albumin expression in infected liver cells but the underlying mechanism requires more extensive investigation to understand the pathogenesis of severe dengue in human.

7. Recommendation

7.1 Using statistics to analyze the images and provide quantitative data.

7.2 Further study should be performed to investigate deeper about albumin reduction in different time points.

8. References

Aguila, J., Blak, A., van Arensbergen, J., Sousa, A., Vázquez, N., & Aduriz, A. et al. (2014). Selection Based on FOXA2 Expression Is Not Sufficient to Enrich for Dopamine Neurons From Human Pluripotent Stem Cells. *STEM CELLS Translational Medicine*, *3*(9), 1032-1042. doi: 10.5966/sctm.2014-0011

Brasier, A. (2006). The NF-κB Regulatory Network. *Cardiovascular Toxicology*, *6*(2), 111-130. doi: 10.1385/ct:6:2:111

Cerec, V., Glaise, D., Garnier, D., Morosan, S., Turlin, B., & Drenou, B. et al. (2007). Transdifferentiation of hepatocyte-like cells from the human hepatoma HepaRG cell line through bipotent progenitor. *Hepatology*, *45*(4), 957-967. doi: 10.1002/hep.21536

Dalugama, C., & Gawarammana, I. (2017). Dengue hemorrhagic fever complicated with acute liver failure: a case report. *Journal Of Medical Case Reports*, *11*(1). doi: 10.1186/s13256-017-1510-1

Hankins, J. (2007). The role of albumin in fluid balance. *Nursing*, *37*(12), 14-15. doi: 10.1097/01.nurse.0000302527.26765.69

Irie, N., Weinberger, L., Tang, W., Kobayashi, T., Viukov, S., & Manor, Y. et al. (2015). SOX17 Is a Critical Specifier of Human Primordial Germ Cell Fate. *Cell*, *160*(1-2), 253-268. doi: 10.1016/j.cell.2014.12.013

Kamiyama, T., Takahashi, M., Nakagawa, T., Nakanishi, K., Kamachi, H., & Suzuki, T. et al. (2006). AFP mRNA Detected in Bone Marrow by Real-Time Quantitative RT-PCR Analysis Predicts Survival and Recurrence After Curative Hepatectomy for Hepatocellular Carcinoma. *Transactions Of The ... Meeting Of The American Surgical Association*, *124*, 117-129. doi: 10.1097/01.sla.0000234840.74526.2b

Lang, J., Vera, D., Cheng, Y., & Tang, H. (2016). Modeling Dengue Virus-Hepatic Cell Interactions Using Human Pluripotent Stem Cell-Derived Hepatocyte-like Cells. *Stem Cell Reports*, *7*(3), 341-354. doi: 10.1016/j.stemcr.2016.07.012

RN, M., N, G., & M, V. (2020). Physiology, Albumin. Retrieved from https://pubmed.ncbi.nlm.nih.gov/29083605/

Samanta, J. (2015). Dengue and its effects on liver. *World Journal Of Clinical Cases*, *3*(2), 125. doi: 10.12998/wjcc.v3.i2.125

Si-Tayeb, K., Noto, F., Nagaoka, M., Li, J., Battle, M., & Duris, C. et al. (2009). Highly efficient generation of human hepatocyte-like cells from induced pluripotent stem cells. *Hepatology*, *51*(1), 297-305. doi: 10.1002/hep.23354

Srikiatkhachorn, A. (2009). Plasma leakage in dengue haemorrhagic fever. *Thrombosis And Haemostasis*, *102*(12), 1042-1049. doi: 10.1160/th09-03-0208

Srikiatkhachorn, A. (2009). Plasma leakage in dengue haemorrhagic fever. *Thrombosis And Haemostasis*, *102*(12), 1042-1049. doi: 10.1160/th09-03-0208

Tramontini Gomes de Sousa Cardozo, F., Baimukanova, G., Lanteri, M., Keating, S., Moraes Ferreira, F., & Heitman, J. et al. (2017). Serum from dengue virusinfected patients with and without plasma leakage differentially affects endothelial cells barrier function in vitro. *PLOS ONE*, *12*(6), e0178820. doi: 10.1371/journal.pone.0178820

Wilder-Smith, A., Ooi, E., Horstick, O., & Wills, B. (2019). Dengue. *The Lancet*, *393*(10169), 350-363. doi: 10.1016/s0140-6736(18)32560-1

Wongkummool, W., Maneepitasut, W., Tong-ngam, P., Tangprasittipap, A., Munkongdee, T., & Boonchuay, C. et al. (2017). Establishment of MUi009 – A human induced pluripotent stem cells from a 32 year old male with homozygous β°-thalassemia coinherited with heterozygous α-thalassemia 2. *Stem Cell Research*, *20*, 80-83. doi: 10.1016/j.scr.2017.02.012

The Preliminary Study on Preparation and Characterization of Antimicrobial Biodegradable Film from Carboxymethyl Cellulose

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Abstract

In this study, biodegradable films from carboxymethyl cellulose or CMC were developed. Basil essential oil was added to improve antimicrobial property of the film. The chemical structure of the film was analyzed by Fourier-transform infrared spectroscopy. Mechanical properties, morphology, and water vapor transmission rate (WVTR) of CMC films were also investigated. The experimental results showed that the flexibility of CMC film was improved by the addition of glycerol. Besides, all the developed films are transparent with smooth surface. The addition of basil essential oil significantly reduced WVTR of the films. The film with 2 %w/w basil essential oil showed the 18.8% reduction in WVTR value when compared to the neat CMC film. With 10%wt. of basil essential oil, the film showed the ability to inhibit Gram-positive bacteria, *Staphylococcus aureus*.

Keywords : Carboxymethyl Cellulose, Basil Essential Oil, Anti-Microbial Property

1. Introduction

Currently, biodegradable food packaging industry has become one of the fastest growing sectors. Apart from partial or total substitution of petrochemical sources with renewable ones, active and intelligent packaging as well as preservation of packaged food products and shelf life extension have become new trends in food packaging. (Radusin et al., 2019). The development of new food packaging systems that can significantly contribute in ensuring food safety has been proposed by many researchers. Among the proposed systems, biodegradable film derived from carboxymethyl cellulose (CMC) is one of the most attractive materials due to its non-toxic and non-allergenic properties, complete degradation and comes from renewable resource (Tongdeesoontorn et al., 2011). CMC film can be made from varieties of renewable materials such as durian rind (Rachtanapun et al., 2012), cornstalk (Shui et al., 2017), bagasse pulp (Kamthai & Magaraphan, 2017), recycled newspaper (Ünlü, 2013).

In active packaging application, antimicrobial compounds such as organic compounds, inorganic nanoparticles and metal nanoparticles were added into CMC film in order to preserve food quality. Essential oils and natural extracts are also well known and have been widely applied to improve the antimicrobial and/or antioxidant properties of food packaging materials for a long time (Benkeblia, 2004).

Basil essential oil is a type of essential oil commonly used in aromatherapy and alternative medicine for relief health problems such as acne, anxiety, bronchitis, colds and depression (Wong, 2020). Basil essential oil contains a number of compounds with four major chemotypes i.e. (1) methyl chavicol (estragole)-rich, (2) linalool-rich, (3) methyl eugenol-rich and (4) methyl cinnamate-rich (Murárikoá et al., 2017). Gaio et al. (2015) have proven that basil essential oil presented antibacterial activity in both Gram-positive and Gram-negative bacteria with the minimal inhibitory concentration varied from 0.25 to 1.00 mg g^{-1}. The essential oil showed a positive influence on reducing the count of *Staphylococcus aureus* until the 14th day of storage.

In this present work, biodegradable films from CMC were developed and their antimicrobial property were enhanced by the addition of basil essential oil. The chemical structure, mechanical properties, morphology, WVTR and the ability of the CMC films to inhibit Gram-positive bacteria, *Staphylococcus aureus*, were also investigated.

2. Objectives

This study aimed to develop biodegradable films with antimicrobial function from CMC. Basil essential oil was used as a natural and non-toxic antimicrobial compound. Effect of basil oil on chemical structure, morphology, tensile properties and WVTR of the films were investigated. Lastly, the ability of the films to inhibit Gram-positive bacteria, *Staphylococcus aureus*, was analyzed.

3. Methodology

3.1 Materials

Carboxymethyl cellulose was purchased from Changshu Wealthy Science & Thechnology Co. Ltd., China. Glycerol (AR grade, 99.5 % purity) was purchased from Ajax Finechem, Australia. Sweet basil essential oil was purchased from Chemipan, Thailand.

3.2 Preparation of CMC film

CMC powder (3 g) was dissolved in 150 mL distilled water at 50 ℃ for 25 min with continuously stirred by means of magnetic stirring. After cooling down to room temperature, the homogeneous CMC solution was ultrasonicated for 1 hr or until the air bubbles disappeared. Then 20 mL of the CMC solution was poured into 10-cm diameter Petri-dish and left to dry at

room temperature. Further drying was carried out in a hot air oven at 40℃ for 24 h and finally in a vacuum oven at 40℃ for 24 h. The preparation of the film containing 30 % (w/w) glycerol and 1, 2, 3, 4 and 5 % (w/w) basil essential oil were prepared by the similar procedure. The appropriate amount of glycerol and basil essential oil (EB) were added to the CMC solution before ultrasonication. Sample names and amount of materials used are described in Table 1.

Table 1 Names and compositions of CMC films.

Sample name	CMC (g)	Glycerol (g)	EB (g)
CMC	3.00	0	0
CMC-G30	3.00	0.90	0
CMC-G30-EB1	3.00	0.90	0.03
CMC-G30-EB2	3.00	0.90	0.06
CMC-G30-EB3	3.00	0.90	0.09
CMC-G30-EB4	3.00	0.90	0.12
CMC-G30-EB4	3.00	0.90	0.15

3.3 Characterization

Chemical structure of CMC, glycerol, basil essential oil and CMC film were inspected using Fourier-transform infrared spectrometer (PerkinElmer Frontier™ FT-IR/NIR system), equipped with a multiple-reflection ATR attachment with wavenumbers ranged from 400 to 4000 cm^{-1}.

Surface morphology of the CMC films was analyzed using LEO 1450 VP scanning electron microscope (SEM). Before the observation, the surfaces were coated with a thin layer of about 10 nm of gold via sputter coating technique.

Tensile properties of CMC films were measured according to the tensile test standard ASTM D882, using Testometric Micro 350 tensile testing machine, equipped with a 500N load cell. The tensile measurement was performed with a constant crosshead speed of 30 mm/min at 25±3 °C and 55%RH. At least five specimens were tested and the averaged values of tensile strength and elongation at break were collected.

WVTR of CMC films was measured according to the standard method ASTM E96 (Standard Test Methods for Water Vapor Transmission of Materials) as following. The plastic test boxes were filled with 4.0000 g of silica gel desiccant to produce a 0% RH below the film. A CMC film with the area of 2.5x2.5 cm^2 was mounted to the top of the box cup to give an air gap at approximately 0.5 cm between film surface and desiccant. After taking initial weights of the test box, the boxes were placed into a desiccator at the relative humidity test condition of 75% RH (saturated NaCl solution) at 28–30 °C. Weight gain was taken by weighing the test box to the nearest 0.001 g with an electronic scale every day for 14 days. A plot of weight

gained versus time was used to determine the WVTR. The slope of the linear portion of this plot represents the steady state amount of water vapor diffusing through the film per unit time (g/days). WVTR was expressed in units of grams per day per meter square. At least three samples were used and the averaged values of WVTR were calculated.

Antimicrobial activity of a CMC film was evaluated using the agar diffusion method. The inhibition zone test on Meuller Hinton agar (MHA) was used to determine the antimicrobial activity of the film. About 0.1 ml of Gram-positive bacteria, *Staphylococcus aureus* ATCC 25923, suspension of 1 x 10^8 cfu/ml was cultured on MHA. A disk form CMC film of 6-mm diameter were placed in sterile conditions at the center of petri dishes containing a medium. The petri dish was incubated in the incubator at 35-37°C for 24 h. Then, the diameter of the inhibitory zone surrounding film disks was measured using a caliper with 0.01 mm precision. Ampicillin (10 μg/disk was used as positive control antimicrobial agent.

4. Results and discussion

Digital photographs and SEM micrographs at the magnification of 5000X of the developed CMC films are presented in Figure 1. The results confirmed that all the developed films are transparent with smooth surface. This is good for use as transparent packages that the customer can be able to see the packed goods.

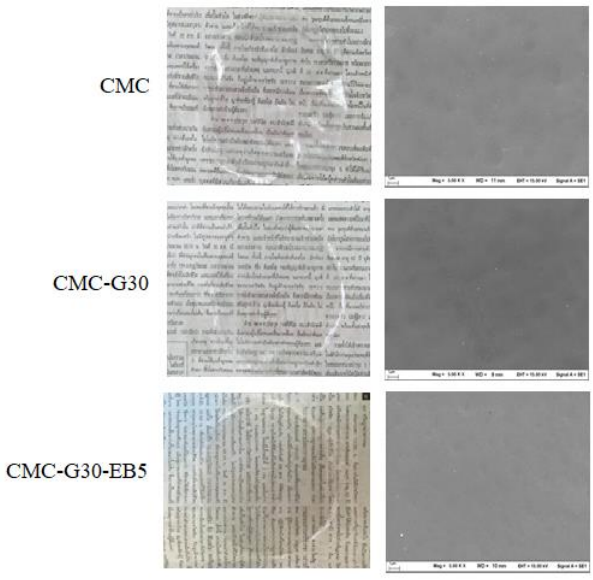


Figure 1. Digital photographs and SEM images of selected CMC films namely CMC, CMC-G30 and CMC-G30-EB5.

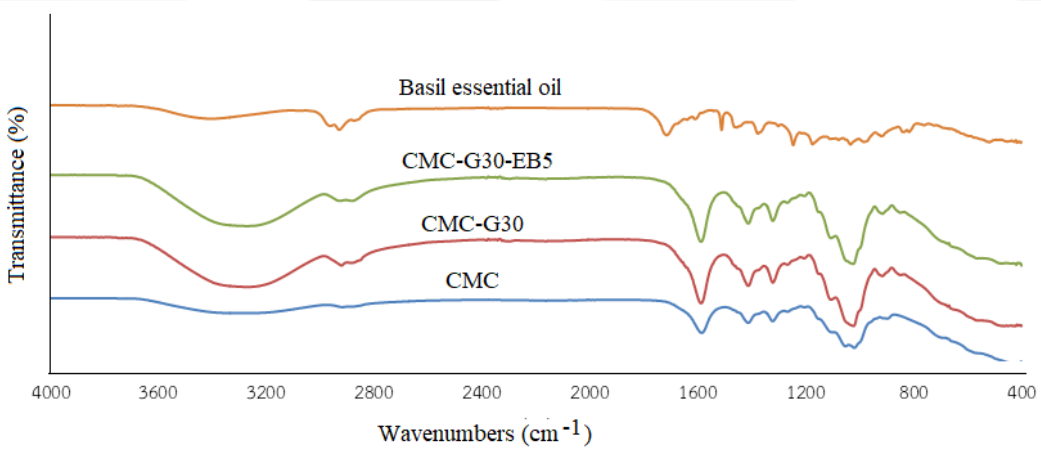


Figure 2. FTIR spectra of basil essentials oil and selected CMC films namely CMC, CMC-G30 and CMC-G30-EB5.

Figure 2 shows FTIR spectra of basil essentials oil and selected CMC films namely CMC, CMC-G30 and CMC-G30-EB5. Functional groups characteristics of CMC were found at 3430 cm^{-1} (O–H stretching), 2920 cm^{-1} (C–H stretching), 1603 cm^{-1} (C=O stretching), and 1300 cm^{-1} and 1000 cm^{-1} (–O–stretching) (Khemkaew & Kaewpirom, 2016). With the addition of glycerol the peak at 3100-3650 cm^{-1} broadened and shifted to the lower wavenumbers due to the hydrogen bonding between OH groups of CMC and glycerol (Tongdeesoontorn et al., 2011). The spectrum of CMC-G30-EB5 did not showed any change compared with CMC-G30. This confirmed that basil essential oil did not react with either CMC or glycerol.

The tensile properties i.e. Young's modulus and elongation at break of the developed films are displayed in Figure 3.

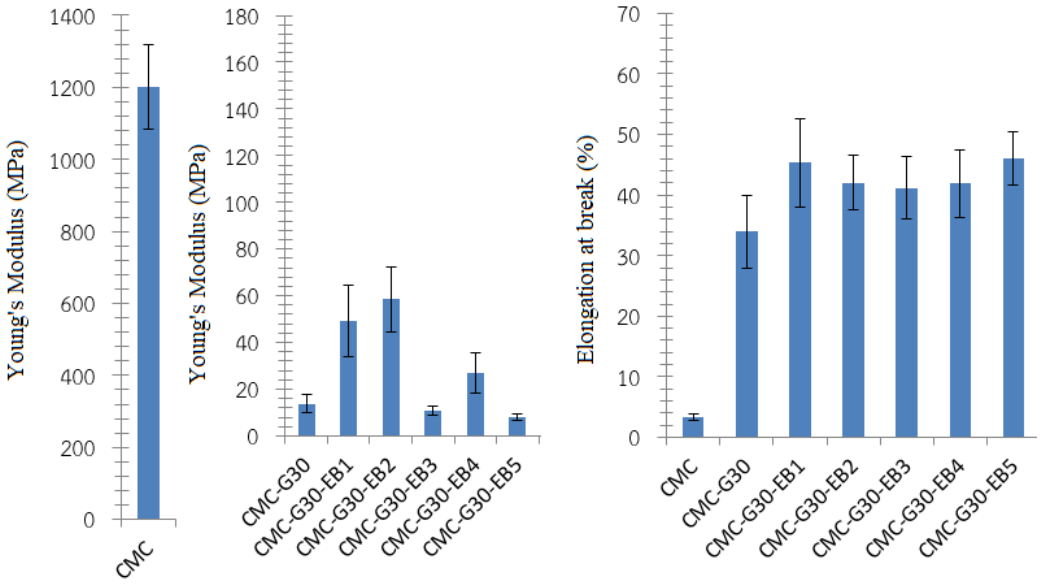
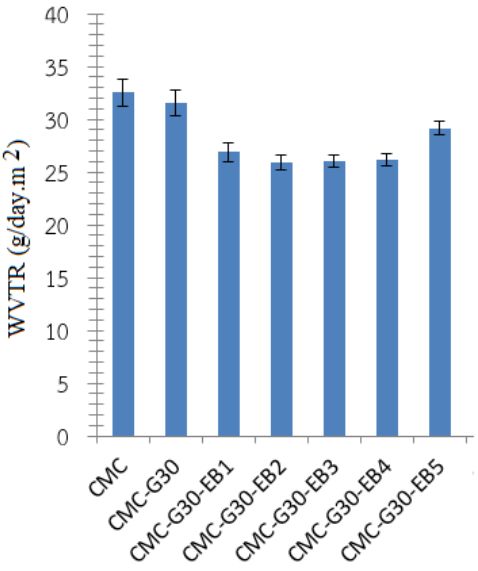


Figure 3. Young's modulus and elongation at break of developed CMC films.

It was found from Figure 3 that CMC film shows high Young's modulus value of 1.2 GPa, while its elongation at break is low (2.8%). This confirmed that neat CMC film is hard and rigid. The Young's modulus was dropped to 13 MPa when 30 %(w/w) of glycerol was introduced to CMC matrix. Not surprisingly, the elongation of CMC-G30 film shows the high value of 34%. This was because the small glycerol molecules intercalated between CMC chains, disrupting the hydrogen bonding between CMC chain themselves. Therefore, CMC chains moved easier, resulting in lower Young; modulus and higher elongation at break (Gontard et al., 2006).

After basil essential oil was introduced to glycerol-plasticized CMC film, it was found that elongation at break of the film increased significantly, while the Young's modulus of the film increased obviously when 1–2% (w/w) of basil essential oil was added. However, after 3–5% (w/w) of basil essential oil was added the Young's modulus of the film reduced. This may be because at low concentration the mixed compounds in basil essential oil especially estragole and eugenol formed hydrogen bonds with CMC chains, resulting in the increased Young's modulus. As the concentration of basil essential oil increased, the phase separation may occurred resulting in the decreased Young's modulus.



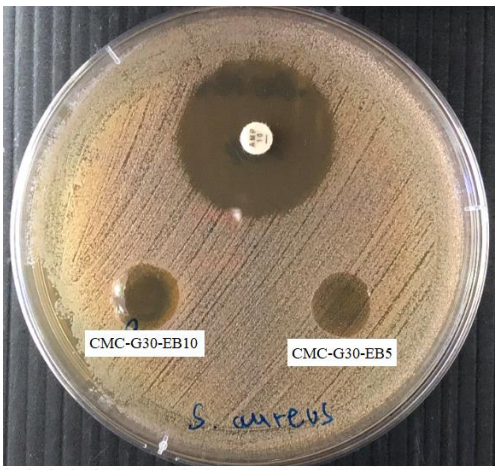


Figure 4. WVTR of developed CMC films. Figure 5. The inhibitory zone of CMC films.

Figure 4 shows WVTR of all the developed CMC films. Neat CMC shows WVTR of 32.6 g/day.m^2. This value was hardly changed when 30 %(w/w) of glycerol was added to CMC film. However, WVTR of the films reduced by 12.5% when basil essential oil was added to the films, regardless of the oil concentration. Estragole and eugenol may be responsible for these dropped values because they have capability to absorb water molecules.

Antimicrobial property of glycerol-plasticized CMC blended with basil essential oil was investigated via the agar diffusion method and the results are shown in Figure 5. Inhibitory zone

diameter was considered as an index of antimicrobial activity of films (Sayanjali et al., 2011). It was found that inhibition zone of CMC-G30-EB5 film was not formed. This means there was no antimicrobial activity. Therefore, the CMC film with 10 %(w/w) of basil essential oil (CMC-G30-EB10) was prepared and tested. As expected, the antimicrobial activity of CMC-G30-EB10 was observed with the inhibition zone diameter of 8 mm confirming that basil essential oil presented antibacterial activity in Gram-positive bacteria with the minimal inhibitory concentration of 10 %(w/w).

5. Conclusions

The biodegradable films with antimicrobial function, derived from CMC, glycerol and basil essential oil, were successfully developed. The transparent films with smooth surface showed acceptable tensile properties. The film with 10 %(w/w) of basil essential oil showed the ability to inhibit Gram-positive bacteria, *Staphylococcus aureus*.

References

Benkeblia, N. (2004). Antimicrobial activity of essential oil extracts of various onions (Allium cepa) and garlic (Allium sativum). *LWT - Food Science and Technology*, 37(2), 263–268. https://doi.org/10.1016/j.lwt.2003.09.001

Gaio, I., Saggiorato, A.G., Treichel, H., Cichoski, A.J., Astolfi, V., Cardoso, R.I., Toniazzo, G., Valduga, E., Paroul, N., & Cansian, R.L. (2015). Antibacterial activity of basil essential oil (*Ocimum basilicum* L.) in Italian-type sausage. *Journal für Verbraucherschutz und Lebensmittelsicherheit*, 10, 323–329.

Gontard, N., Guilbert, S., Guilbert, S. & Cuq, J.L. (2006). Water and glycerol as plasticizers affect mechanical and water vapor barrier properties of an edible wheat gluten film. *Journal of Food Science*, 58(1),206 – 211. https://doi.org/10.1111/j.1365-2621.1993.tb03246.x

Kamthai, S. & Magaraphan, R. (2017). Mechanical and barrier properties of spray dried carboxymethyl cellulose (CMC) film from bleached bagasse pulp. *Industrial Crops and Products*. 109, 753-762. http://dx.doi.org/10.1016/j.indcrop.2017.09.040

Khemkaew, S. & Kaewpirom, S. (2016). Effects of Glycerol and PEG-10 dimethicone on Properties of Biofilm from Durian rind. *The Journal of Industrial Technology*, 12(2), 11-21.

Murárikovᡠ, A., Tažkˇý, A., Neugebauerovᡠ, J., Plankovᡠ, A., Jampílek, J., Muˇcaji, P., & Mikuš, P. (2017). Characterization of essential oil composition in different basil species and pot cultures by a GC-MS method. *Molecules*, 22, 1221. https://doi.org/10.3390/molecules22071221

Rachtanapun, P., Luangkamin, S., Tanpraserte, K., & Suriyatem, R. (2012). Carboxymethyl cellulose film from durian rind. *LWT - Food Science and Technology*, 48(1), 52-58. https://doi.org/10.1016/j.lwt.2012.02.029

Radusin, T., Torres-Giner, S., Stupar, A., Ristic, I., Miletic, A., Novakovic, A., & Lagaron, J.M. (2019). Preparation, characterization and antimicrobial properties of electrospun polylactide films containing *Allium ursinum* L. extract. *Food Packaging and Shelf Life*, 21: Article 100357. https://doi.org/10.1016/j.fpsl.2019.100357

Sayanjali, S., Ghanbarzadeh, B., & Ghiassifar, S. H. (2011). Evaluation of antimicrobial and physical properties of edible film based on carboxymethyl cellulose containing potassium sorbate on some mycotoxigenic Aspergillus species in fresh pistachios. *LWT – Food Science and Technology*, 44, 1133–1138. https://doi.org/10.1016/j.lwt.2010.12.017

Shui, T., Feng, S., Chen, G., Li, A., Yuan, Z., Shui, H., Kuboki, T., & Xu (Charles), C. (2017). Synthesis of sodium carboxymethyl cellulose using bleached crude cellulose fractionated from cornstalk. *Biomass and Bioenergy*, 105, 51-58. http://dx.doi.org/10.1016/j.biombioe.2017.06.016

Tongdeesoontorn, W., Mauer, L.J., Wongruong, S., Sriburi, P., & Rachtanapun, P. (2011). Effect of carboxymethyl cellulose concentrationon physical properties of biodegradable cassavastarch-based films. *Chemistry Central Journal*, 5:6 https://doi .org/10.1186/1752-153X-5-6

Ünlü, C.H. (2013). Carboxymethylcellulose from recycled newspaper in aqueous medium. *Carbohydrate Polymers*, 97, 159-164. http://dx.doi.org/10.1016/j.carbpol.2013.04.039

Wong, C. (2020). The Benefits of Basil Essential Oil. https://www.verywellhealth.com/the-benefits-of-basil-essential-oil-88773

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