

CHAPTER 3

RESEARCH METHODOLOGY

This study is designed to develop instructional packages of English speaking ability communication on cartoon animation for Matthayomsuksal students in aspect of learners' speaking ability proficiency after utilizing cartoon animation for enhancing speaking communication, the effectiveness index of cartoon animation lessons, and learners' satisfaction with cartoon animation lessons.

This chapter presents the research methodology utilized in the present study. It explains the population and samples, the instruments and how to construct them, the data collection, the data analysis, and the statistical method.

3.1 Population and Samples

3.1.1 The population of this study was 75 Matthayomsuksal students from 3 classes, who took Fundamental English (EN21101) course in the first semester of academic year 2013 at Watsrabua School, Wattayiam School, Bankunsrakaew School, Phutthaisong District, Buriram Province.

3.1.2 The samples in this study were 22 Matthayomsuksal students who took fundamental English (E21101) course in the first semester in academic year 2013 at Watsrabua School, Phutthaisong District, Buriram Province. The class was the sample group selected by purposing random sampling with the other 2 classes have equal chance to be selected.

3.2 Research Instruments

The instruments employed in this study were:

3.2.1 Cartoon animation for enhancing speaking ability communication for Matthayomsuksa1 students conducted by the researcher, comprising of 3 in cartoon animation: 1) cartoon animation1: My new friend; 2) cartoon animation2: Go shopping; and 3) cartoon animation3: Let's go to the zoo.

3.2.2 Lesson plans about English speaking communication lessons on CD for Matthayomsuksa1 students. There are 13 lesson plans 13 hours.

3.2.3 Achievement tests (pre-test and post-test) about English speaking for Matthayomsuksa 1 students, including 60 multiple-choice questions.

3.2.4 Observation form to investigate students' participation in learning.

3.2.5 The satisfaction questionnaire on students' satisfaction with cartoon animation designed to gather the information about learners' satisfaction towards cartoon animation lessons of English speaking communication for Matthayomsuksa 1.

3.3 The Construction of Research Instruments

The procedures of instruments construction and the determination of the instruments efficiency were as follows:

3.3.1 Cartoon Animation

The researcher conducted the cartoon animation lessons of English speaking communication for Matthayomsuksa 1 students as described in the following steps:

3.3.1.1 The researcher studied and explored causes and problems while learning and teaching English through observation, teaching record, and students' learning report.

3.3.1.2 The researcher studied the Basic Education Core Curriculum B.E. 2551 (A.D. 2008) about vision, principles, goals, learners' key competencies, desirable characteristics, learning standards, indicators, learning areas, and strands and learning standards of foreign languages.

3.3.1.3 The researcher studied principles, theories, and procedures of cartoon animation lessons.

3.3.1.4 The researcher chose the appropriate contents and divided them into 3 parts for solving problems. The researcher designed the purposes, objectives and contexts of instructional packages based on Basic Education Core Curriculum B.E. 2551 (A.D. 2008).

3.3.1.5 The researcher constructed 3 cartoon animation lessons:

- 1) Cartoon Animation 1 : My new friend
- 2) Cartoon Animation 2: Go shopping
- 3) Cartoon Animation 3: Let's go to the zoo

3.3.1.6 The cartoon animation were examined by advisors about content validity quality. The researcher developed the cartoon animation lessons based on the advisors' suggestions.

3.3.1.7 The cartoon animation lessons were then examined by 3 experts (See Appendix A) about content validity quality by using Likert's rating scale as follows (Srisa-ard. 2002: 102):

5 marks for the most appropriate

4 marks for more appropriate

3 marks for average appropriate

2 marks for less appropriate

1 marks for the least appropriate

The experts were as follows:

1) Mr.Sanit Kathaisong, the Education Officer at Buriram Primary Educational Service Area Office 4.

2) Mr. Cherdchai Raksain, the Education Officer at Buriram Primary Educational Service Area Office 4.

3) Mrs. Jiraporn Liamthaisong, the English lecturer at Watsrabua School.

3.3.1.8 The researcher analyzed the scores from the experts to find out the mean scores to compare with the criteria (Srisa-ard, 2002: 103) provided below:

Meaning		Opinion Level
4.51 - 5.00	means	It is the most appropriate.
3.51 - 4.50	means	It is more appropriate.
2.51 - 3.50	means	It is average appropriate.
1.51 - 2.50	means	It is less appropriate.
1.00 - 1.50	means	It is the least appropriate.

Appropriate score at 3.50 and over was considered that the cartoon animation could be utilized (See Appendix B). The mean score obtained was 4.03 (S.D.= 0.48).

3.3.1.9 The researcher improved the cartoon animation based on the experts' suggestions and proposes them to the experts again.

3.3.1.10 The cartoon animation were tried out with class of grade 8 students in academic year 2013 at Watsrabua school who were not the samples to find out the reliability, and the researcher revised them before using them with the samples (See Appendix C).

To appraise the effectiveness of the cartoon animation media through English speaking communication of Matthayomsuksal students, there were three steps to perform. The three steps of the pre-trials were as follows (Promwong.1978):

1) The individual trial

The cartoon animation of English speaking communication were utilized with 3 different proficiency level students, namely, 1 high proficiency student, 1 moderate proficiency student and 1 low proficiency student who were not the samples in the study. The criteria of discrimination to divide the students into different levels of English learning achievement were as follows: 1) the students who had got grade 4 in English in grade 8 in the second semester in the academic year 2012 were high proficient students, the students who had got grade 2 or 3 were moderate proficient students, and the students who had got grade 1 were low proficient students; and 2) the three students were allocated to carry out a pre-test, and they learnt English speaking ability communication by utilizing cartoon animation for 12 fifty-five minute periods. While the students were studying via the cartoon animation of English speaking ability, they were requested to do the exercises. After that, they were requested to do a post-test and give some opinions about cartoon animation for a period. The scores which the students gained from the exercises and the post-test

were computed to find out the efficiency of process ($E1=72.38$) and the efficiency of the outcomes ($E2=67.22$) respectively. Then the researcher improved the cartoon animation based on the students' comments.

2) The small group trial

The nine students who participated in this step were 3 high proficient, 3 moderate proficient, and 3 low proficient students. Before learning past tense via cartoon animation for 12 fifty-five minute periods, they were asked to do a pre-test for a period. While the students were learning via cartoon animation, they did the exercises. Then they were asked to do a post-test and provide some opinions for a period. In this step, the efficiency of the process ($E1=74.12$) and the process of the outcomes ($E2=70.00$) were analyzed from the students' exercises and the post-test respectively.

3) The field trial

In this step, there were 17 participants with three different proficiency levels of English achievement participated the trial. They did pre-test for a period. Then they learnt through cartoon animation media for 8 fifty-five minute periods, they did the exercises while learning via cartoon animation. After learning, they did post-test. The scores of the exercises in the cartoon animation of English speaking communication, and the post-test scores from the field trial were decided to find out the efficiency of the cartoon animation based on 70/70 standard level (Promwong, 1978). The result of the field trial revealed that the efficiency index of cartoon animation in English speaking communication was 76.05/75.14 which met the specific criteria.

To conduct this study, the assessment of efficiency of the cartoon animation in English speaking was performed as shown in the following figure.

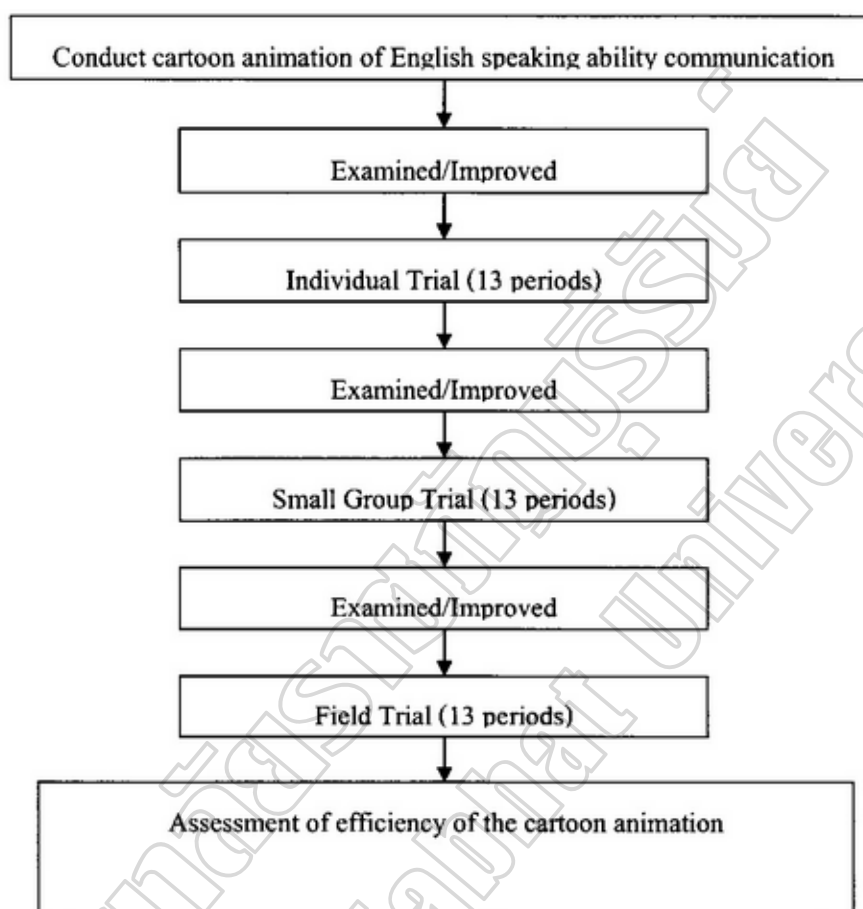


Figure 3.1 Steps of Trying out Cartoon Animation

Source: Suwanbenjakul (2002: 52)

3.3.1.11 The researcher conducted the complete the cartoon animation lessons to use with the samples (See Appendix D).

3.3.2 Lesson plans

The researcher will conduct the lesson plans of English speaking communication for Matthayomsuksa1 students were as follows:

3.3.2.1 The researcher studied the Basic Education Core Curriculum B.E. 2551 (A.D. 2008) about vision, principles, goals, learners' key competencies,

desirable characteristics, learning standards of foreign languages, indicators, learning areas, and strands and learning standards of foreign languages.

3.3.2.2 The researcher studied methodology, principles, theory, and writing technique of lesson plan.

3.3.2.3 The researcher constructed 13 lesson plans on past tense.

- 1) Lesson plan 1: Orientation and do the pre-test
- 2) Lesson plan 2: Greeting
- 3) Lesson plan 3: Introduction
- 4) Lesson plan 4: Talking about Personal Information
- 5) Lesson plan 5: Saying Thank You
- 6) Lesson plan 6: Saying Goodbye
- 7) Lesson plan 7: Go Shopping
- 8) Lesson plan 8: Selling and Buying
- 9) Lesson plan 9: At the Restaurant
- 10) Lesson plan 10: Apologizing
- 11) Lesson plan 11: Talking about Animals
- 12) Lesson plan 12: Reading Sign, Notices and People
- 13) Lesson plan 13: Do the achievement test or post-test and answer the questionnaire.

The researcher finds out correlation between the topic and learning strands and indicators.

3.3.2.4 The lesson plans were examined by advisors about key concepts, indicators, learning strands, activities, learning media, and learning assessment to give

some comments about content validity quality. The researcher improved the lesson plans based on the advisors' suggestions.

3.3.2.5 Lesson plans were examined by 3 experts about key concepts, indicators, learning strands, activities, learning media, and learning assessment to give some comments about content validity quality by using Likert's rating scale same as instructional packages construction.

3.3.2.6 The researcher analyzed the scores from specialists to find out mean scores to compare with the criteria same as cartoon animation lessons construction.

3.3.2.7 The researcher conducted the complete lesson plans for grade 11 students which utilized with cartoon animation lessons for enhancing English speaking ability communication in first semester of academic year 2013 at Watsrabua School.

3.3.3 Achievement Tests

Both pre-test and post-test as achievement tests were conducted and tried out by the researcher. The test comprised 60 multiple choice questions. The procedures of construction of the tests were as follows:

3.3.3.1 The researcher studied a syllabus for upper-secondary level of English subject and the content of speaking ability communication for Matthayomsuksal (Grade 7) students.

3.3.3.2 The researcher studied literature review on how to construct the test.

3.3.3.3 The researcher constructed the test about vocabulary and sentence that consists of 60 multiple choice questions with four alternatives.

3.3.3.4 The items of the test were edited and revised by the advisors before proposing to the experts to examine the content and construct validity by using IOC formula as follows (Phattiyathanee. 2003:219):

- +1 = When it was sure that items of the test were coincident with objectives.
- 0 = When it was not sure that items of the test were coincident with objectives.
- 1 = When it was sure that items of the test were not coincident with objectives.

3.3.3.5 The researcher calculated IOC index, and chose the questions which had the IOC index at level 0.5-1.00 to be a test (See Appendix E).

3.3.3.6 The test was tried out with students in another class, who studied in grade 12 that were not samples at Thantongpittayakhom School in the academic year 2010.

3.3.3.7 An item analysis was carried out from the data obtained from the study. Each question was analyzed for the level of difficulty (p) and the discrimination power (B) by Brennan method and using the software programme to calculate the obtained data. The criteria used to select the test items were level of difficulty (p) at 0.2 - 0.8, and the discrimination power (B) at 0.2 – 1.0 (Srisa-ard. 2002: 82-83). It indicated the level of difficulty (p) was at 0.22-0.78, and the discrimination power (B) was at 0.21-0.75 (See Appendix F).

3.3.3.8 The reliability of the test was determined by using the Lovett's method (R_{cc}). The software programme was used to calculate the data, the reliability

of the test was accepted at ≥ 0.7 (Srisa-ard, 2002: 96). It indicated the reliability of the test was at 0.88.

3.3.3.9 The researcher selected the approved 60 test items as a pre-test and a post-test (achievement test) (See Appendix G).

3.3.4 Satisfaction Questionnaire

The researcher designed and created a questionnaire concerning satisfaction of students towards learning English speaking communication through cartoon animation of English speaking communication including 2 main parts as follows:

Part 1

This section comprised 12 statements of the five-point rating scales questionnaire with Likert's rating scale. It aimed to elicit learners' satisfaction toward cartoon animation of English speaking ability communication for Matthayomsuksa1 (Grade 7) students. Five-point Likert scales used for rating their satisfaction were as follows (Srisa-ard, 2002: 102):

	Meaning	Opinion Level
5	means	Most satisfactory
4	means	Very satisfactory
3	means	Average satisfactory
2	means	Less satisfactory
1	means	The least satisfactory

Part 2

This section was about additional information or other opinions in learning English speaking ability communication through cartoon animation apart

from part 1. The question was in the open-ended form in which the samples could write down their suggestions or comments in the questionnaire.

The questionnaire was constructed and developed gradually as follows:

3.3.4.1 The researcher reviewed the literature on satisfaction.

3.3.4.2 The researcher reviewed the literature on how to construct the satisfaction questionnaire by using Likert's method or five-point rating scales.

3.3.4.3 The researcher gathered and arranged the issues concerning learning through cartoon animation of English speaking communication into a list.

3.3.4.4 The researcher proposed the statements to the advisors before creating 15 statements based on the issues gathered from learning via cartoon animation for enhancing English speaking communication (See Appendix H).

3.3.4.5 The statements were examined by 3 experts to check the correctness and appropriation. There were five scales as follows (Srisa-ard. 2002: 102):

Strongly agree	is given	5 scores
Agree	is given	4 scores
Uncertain	is given	3 scores
Disagree	is given	2 scores
Strongly disagree	is given	1 score

The researcher calculated the obtained data to find out the mean scores.

The appropriate scores at 3.50 and over were considered as the questionnaire item statements, the mean score was 4.64 (See Appendix I). The researcher edited and revised the questionnaire if they had weak points. Next, the questionnaire was proposed to the experts again.

3.3.4.6 The researcher organized the statements to try out with grade 7 students who were not samples at Watsrabua School in academic year 2013.

3.3.4.7 Each item of five-point rating scales was calculated by utilizing Pearson's correlation coefficient formula (R_{XY}) to find out the discrimination power which had to be at 0.2792-1.00 level (Srisa-ard, 2002: 110). The discrimination was at 0.66-0.70 (See Appendix J).

3.3.4.9 The researcher selected 15 statements which had the most significant differences at level 0.05 to be part of the questionnaire. Then, it was tried out again to find out the reliability.

3.3.4.8 The method of coefficient alpha of Cronbach (α -Coefficient) (Srisa-ard, 2002: 99) was used to find out the reliability coefficient of which the value must be more than 0.80. The data was calculated by a software programme. The reliability coefficient of the questionnaire was 0.89 (See Appendix J).

3.4 Data Collection

In this study, research design was One Group Pre-test - Post-test Design as shown in Table 3.1.

Table 3.1

Research Design

Group	Pre-test	Treatment	Post-test
Experimental	T_1	X	T_2

Source : Sai-yot (1995: 248-249).

X is Learning English speaking ability communication via cartoon animation or treatment

T₁ is Pre-test

T₂ is Post-test

To collect the data, the present study included achievement tests, and the satisfaction questionnaire. The procedures for collecting data were as follows:

3.4.1 A study was done with a pre-test. A pre-test was given to all of samples at the beginning of a class for 1 period.

3.4.2 The samples were orientated to understand about learning via cartoon animation lessons. Then they were taught English writing on past tenses by utilizing the cartoon animation and did the exercises for 13 periods.

3.4.3 A post-test was administered with all of the samples after the class for 1 period.

3.4.4 After doing a post-test, the samples were asked to fill out the questionnaires focusing on their satisfaction about learning via cartoon animation for 1 period.

The research design could be illustrated below.

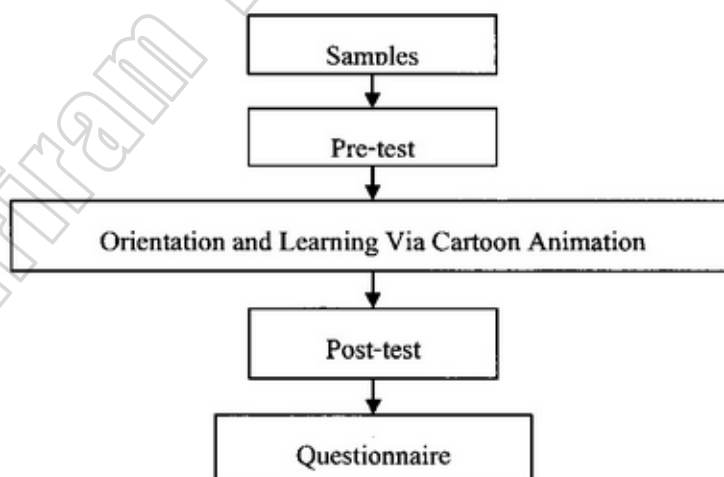


Figure 3.2: Research Procedures

3.5 Data Analysis

The collected data were analyzed and deduced by using the data analysis methods as below.

3.5.1 The data obtained from the exercise, the pre-test and post-test

3.5.1.1 In order to evaluate the students' English proficiency before and after being taught through cartoon animation, the pre-test and post-test were computed to find out the percentage (%), the mean (\bar{x}) and standard deviation (S.D.).

3.5.1.2 The scores obtained from the exercises and a post-test were calculated to find out the efficiency of process (E1) and the efficiency of the outcomes (E2), respectively.

3.5.1.3 Dependent samples t-test was used to compare the difference between pre-test and post-test mean scores to detect a significant difference set at .05.

3.5.1.4 The effectiveness index (E.I) was employed to find out learners' progress from learning through cartoon animation of English speaking communication for Matthayomsuksa 1 students after learning.

3.5.2 The data obtained from the satisfaction questionnaire

3.5.2.1 In order to evaluate the students' satisfaction toward learning English speaking communication via cartoon animation, the data from five-rating scales was computed for the mean (\bar{x}) and standard deviation (S.D.). The following criterion was employed for interpretation (Srisa-ard. 2002: 103).

Meaning		Interpretation
1.00 – 1.50	means	The least satisfactory
1.51 – 2.50	means	Less satisfactory
2.51 – 3.50	means	Average satisfactory

3.51 – 4.50	means	More satisfactory
4.51 – 5.00	means	The most satisfactory

3.5.2.2 Qualitative data for the final part of questionnaire

The data obtained by learners' opinions and suggestions were interpreted to find out their satisfactions and reactions towards learning speaking communication via cartoon animation.

Observation form content analysis was interpreted to find out their participation in learning towards learning English speaking communication via cartoon animation.

3.6 Statistics Used in Data Analysis

3.6.1 Statistics used to find out the quality of instruments.

3.6.1.1 Validity of achievement test by using IOC (Index Item of

Congruence) formula :

$$IOC = \frac{\sum R}{N}$$

IOC = Index Item of Congruence between question and objective

$\sum R$ = Total scores of experts' opinion

N = Number of experts

3.6.1.2 The discrimination index of each question of the test (B) by using Brennan's method (Srisa-ard. 2002: 90).

$$B = \frac{U}{n_1} - \frac{L}{n_2}$$

B = Discrimination index

U = Number of the students who passed the examination set at
30 scores which correctly answered

L = Number of the students who failed the examination set at
30 scores which correctly answered

n_1 = Number of the students who passed the examination set at
30 scores

n_2 = Number of the students who failed the examination set at
30 scores

3.6.1.3 The reliability of the test by using Lovett's method (Srisa-ard. 2002: 96).

$$r_{cc} = 1 - \frac{k \sum X_i - \sum X_i^2}{(k-1) \sum (X_i - C)^2}$$

r_{cc} = The reliability of the test

k = Numbers of question

X_i = Each of student's scores

C = Criterion scores of the tests

3.6.1.4 Discrimination power of each item for the five-point rating scale
questionnaire by using Pearson's Correlation Coefficient (Srisa-ard. 2002: 110)

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

r_{xy} = Correlation coefficient between variable X and variable Y

$\sum X$ = Total scores of variable X index

$\sum Y$ = Total scores of variable Y index

$\sum XY$ = Total of multiplied result between variable X and variable Y

$\sum X^2$ = Total scores of variable X index's square

$\sum Y^2$ = Total scores of variable X index's square

N = Number of a pair of variables index or number of samples

3.6.1.5 Reliability coefficient of the satisfaction questionnaire by using

Cronbach's Alpha-coefficient (α -Coefficient) (Srisa-ard. 2002: 99)

$$\alpha = \frac{k}{k-1} \left[1 - \frac{\sum S_i^2}{S_t^2} \right]$$

α = Reliability coefficient

k = Number of statements

$\sum S_i^2$ = Total of each statement's variance

S_t^2 = Variance of total scores

3.6.1.6 The efficiency of cartoon animation lessons (E_1/ E_2) (Kitrakarn. 2001: 44-

$$E_1 = \frac{\sum X}{N} \times 100$$

E_1 = Efficiency of the process

$\sum X$ = Total scores of exercises that the samples gained

N = Number of samples

A = Total score of the exercises in the lesson

$$E_2 = \frac{\sum F}{N} \times 100$$

E_2 = Efficiency of the outcomes

$\sum F$ = Total score of samples who passed the post-test

N = Number of samples

B = Total score of the post-test in the lessons

3.6.1.7 The effectiveness index (E.I) of cartoon animation lessons (Kitrakarn.

2001: 44-49)

$$E.I. = \frac{P_2 - P_1}{\text{Total} - P_1}$$

$E.I.$ = The effectiveness index

P_1 = Total scores of all samples' pre-test

P_2 = Total scores of all samples' post-test

Total = Multiplied result of samples' number and real scores

of the test

3.6.2 Basic statistics used

3.6.2.1 Percentage (Srisa-ard. 2002: 104)

$$p = \frac{f}{N} \times 100$$

p = Percentage

f = Frequency of the data

N = Number of total frequency

3.6.2.2 Mean (\bar{X}) (Srisa-ard. 2002: 105)

$$\bar{X} = \frac{\sum X}{N}$$

\bar{X} = Mean

$\sum X$ = Total scores in group

N = Number of scores in group

3.6.2.3 Standard Deviation (S.D.) (Srisa-ard. 2002: 106)

$$S.D. = \sqrt{\frac{\sum (X - \bar{X})^2}{N - 1}}$$

S.D. = Standard Deviation

X = Score of each item

\bar{X} = Mean

N = Number of scores in group

\sum = Total scores

3.6.3 The differences between pre-test and post-test mean scores calculated by dependent samples t-test formula (Srisa-ard. 2002: 112).

$$t = \frac{\sum D}{\sqrt{\frac{n \sum D^2 - (\sum D)^2}{(n-1)}}}$$

t = Statistical index used to compare with critical index to find out a significant difference

D = Different result of minus between a pair of scores

n = Number of samples or a pair of scores

3.7 Summary of the Chapter

In short, this chapter proposed a research procedure. It explained a description of population and samples in the study. Then, the research instruments, and the construction of research instruments were described. In addition, data collection, and data analysis were indicated. Finally, statistics used in data analyses were identified. The next chapter is devoted for the results of the present study.