

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

The objectives of this study investigated the effect of peer-assisted learning strategies implementation to enhance English reading comprehension.

The approaches of this research were as follows:

1. Population and Samples
2. Instrumentations
3. The Construction of Research Instruments
4. Data Collection
5. Data Analysis
6. Statistics Used in Data Analyses

#### **3.1 Population and Samples**

3.1.1 The population of this study included 170 grade eight students from 4 classes who took English Reading and Writing Course (E22202) at Nonsuwanpittayakom School under Secondary Educational Service Area Office 32, Buri Ram province, in the academic year 2015.

3.1.2 The samples of the study were 40 grade eight students who took English Reading and Writing Course (E22202) at Nonsuwanpittayakom School under Secondary Educational Service Area Office 32, Buri Ram province, in the second semester of the academic year 2015. Class 2/1 was selected as the sample by using cluster random sampling technique.

## **3.2 Instrumentations**

The instruments for this research included lesson plans, reading comprehension achievement test and a satisfaction questionnaire.

### **3.2.1 Lesson Plan**

The researcher constructed eight lesson plans. It took two hours for each lesson plan. The researcher chose the contents from the textbooks for grade eight students. They were based on the English Reading and Writing Course (E22202) curriculum of grade eight. Each lesson plan includes reading comprehension tasks using the peer-assisted learning strategies implementation. The contents consist of:

1. Lesson Plan 1 : I live in New York
2. Lesson Plan 2 : A Healthy Choice
3. Lesson Plan 3 : Short story
4. Lesson Plan 4 : The Queen's Garden Parties
5. Lesson Plan 5 : Breakfast around the world
6. Lesson Plan 6 : Sepak Takraw
7. Lesson Plan 7 : Google
8. Lesson Plan 8 : Life-saving fish

### **3.2.2 Reading Comprehension Achievement Test (Pre-test and post-test)**

The pre-test and post-test included 30 multiple-choice questions. The test was based on the English Reading and Writing Course (E22202) curriculum which the students should know around 2,100-2,250 vocabulary (Ministry of Education, 2008). The contents of the reading comprehension achievement test come from the passage that the students had learned in the lesson plans.

### 3.2.3 The Satisfaction Questionnaire

The researcher designed and created a questionnaire concerning satisfaction of students towards learning English reading comprehension through the peer-assisted learning strategies implementation including 2 main parts as follows:

Part 1 Learners' satisfaction towards learning English reading comprehension through the PALS lesson plans for grade eight students.

This section comprised 10 statements of five-point rating scales questionnaire with Likert's rating scale. It is aimed to elicit the learners' satisfaction toward the peer-assisted learning strategies implementation. The scores were interpreted by using the following criteria (Srisa-ard, 2002 : 102):

5 marks	=	The most satisfactory
4 marks	=	Very satisfactory
3 marks	=	Average satisfactory
2 marks	=	Less satisfactory
1 mark	=	The least satisfactory

#### Part 2 The Open-ended Questions

This section was about opinions and suggestions in learning English reading comprehension through the peer-assisted learning strategies implementation. The question was in the open-ended form in which the samples could write down their suggestions or comments.

### **3.3 The Construction of Research Instruments**

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

#### **3.3.1 Lesson Plans**

The researcher conducted the reading comprehension lesson plans with the use of peer-assisted learning strategies for grade eight students as described in the following steps:

3.3.1.1 The researcher studied and analyzed 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.

3.3.1.2 The researcher studied the limitation and details of contents in curriculum based on English Reading and Writing Course (E22202) of Nonsuwanpittayakom School.

3.3.1.3 The researcher studied the methodology, principles, theories, and writing techniques on the lesson plans.

3.3.1.4 The researcher studied the content of PALS which is applied to reading comprehension lesson plans.

3.3.1.5 The researcher chose the appropriate contents and designed the purposes, objectives and contexts of lesson plans based on learning standard and indicators for the English Reading and Writing Course (E22202).

3.3.1.6 The researcher constructed eight lesson plans. Each PALS lesson plan consisted of reading comprehension exercises. The lesson plan contents were as follows:

1. Lesson Plan 1 : I live in New York (Goodey & Goodey. 2010)
2. Lesson Plan 2 : A Healthy Choice (Mare. 2010)
3. Lesson Plan 3 : Short story (Robert. 2009)
4. Lesson Plan 4 : The Queen's Garden Parties (Smith et al. 2012)
5. Lesson Plan 5 : Breakfast around the world (Smith et al. 2012)
6. Lesson Plan 6 : Sepak Takraw (Santos. 2014)
7. Lesson Plan 7 : Google (Santos. 2006)
8. Lesson Plan 8 : Life-saving fish (Santos. 2014)

3.3.1.7 The lesson plans were examined by thesis advisors about content validity. Then the researcher improved the lesson plans based on the advisors' suggestions.

3.3.1.8 The lesson plans were examined by 3 experts about the content validity by using Likert's rating scale as follows (Srisa-ard. 2002 : 99-103):

5 marks	=	the most appropriate
4 marks	=	more appropriate
3 marks	=	average appropriate
2 marks	=	less appropriate
1 mark	=	the least appropriate

Consequently, it was assured that the instruments used in this research presented accept validity. The names of three experts were as follows:

1. Dr.Surachai Piyanukool, an English lecturer at Buriram Rajabhat University.
2. Mr.Henry Skip Dufour, an English teacher at TOA Wittaya School.

3. Mrs.Sombat Sayamprakhon, an English teacher at Nangrongpittayakom School.

3.3.1.9 The researcher analyzed the scores from the experts to find out the mean scores and compared with these criteria (Srisa-ard. 2002 : 103) provided below:

<b>Rating</b>		<b>Opinion Level</b>
4.51 - 5.00	=	the most appropriate
3.51 - 4.50	=	more appropriate
2.51 - 3.50	=	average appropriate
1.51 - 2.50	=	less appropriate
1.00 - 1.50	=	the least appropriate

The lessons plans with the scores from 3.51 and upper were considered that the PALS reading comprehension lesson plans could be utilized (See Appendix B). The mean score obtained was 4.54 (S.D.= 0.30).

3.3.1.10 The researcher improved the lesson plans based on the experts' suggestions and proposed them to check again.

3.3.1.11 The lesson plans were tried out with grade eight students who were not samples in the first semester of the academic year 2015 at Nonsuwanpittayakom School to find out the reliability and validity, and the researcher revised them before using with the samples. (See Appendix C)

To appraise the effectiveness of the lesson plans, there were three steps of performance. The three steps of the pre-trials were as follows (Promwong. 1978):

### 1) The individual trial

The PALS reading comprehension lesson plans were utilized with 3 different proficiency level students at Nonsuwanpittayakom School, namely 1 high, 1 moderate, and 1 low proficiency students who were not the samples in this 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 of grade 8 in the academic year 2015 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. They learned English through the PALS reading comprehension lesson plans. While the students were studying, they were asked to do the exercises. After that, they were requested to do the post-test and give some opinions about the lesson plans for a period.

According to PALS intervention, students are paired and the role of each pair is to be a tutor and a tutee (Fuchs et al. 2001). There will be four students in the individual trial step including 1 high proficient, 2 moderate proficient, and 1 low proficient students. After the trial, the scores which the students gained from the exercises and the post-test were computed to find out the efficiency of process ( $E_1=70.31$ ) and the efficiency of outcomes ( $E_2=69.17$ ) respectively. Afterwards the researcher improved the lesson plans based on the students' comments.

### 2) The small group trial

The twelve students who participated in this step were 4 high proficient, 4 moderate proficient, and 4 low proficient students. Before learning reading comprehension via lesson plans, they were asked to do the pre-test for a period.

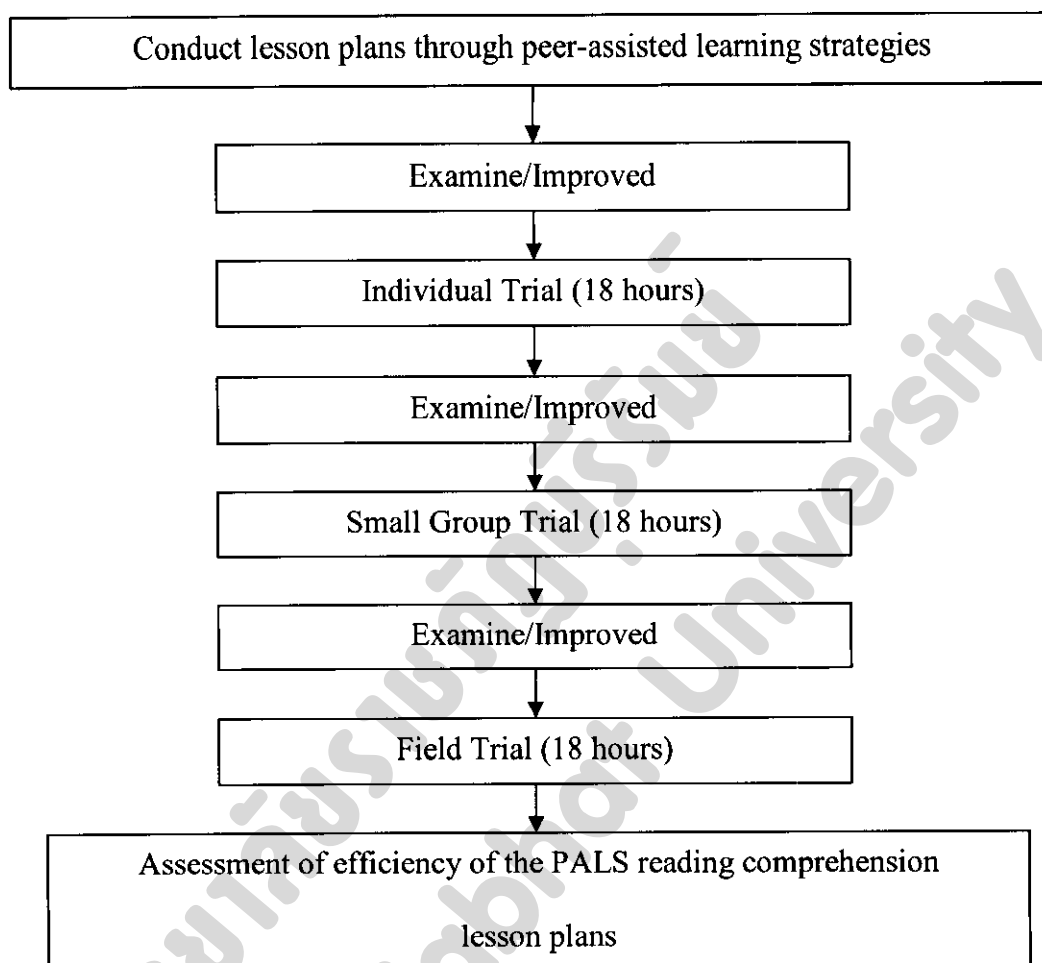
While the students were learning via the lesson plans, they did the exercises. After that, they were asked to do the post-test and provided some opinions for a period. In this step, the efficiency of process ( $E_1=71.67$ ) and the efficiency of outcomes ( $E_2=72.78$ ) were analyzed from students' exercises and the post-test. Then the researcher improved the lesson plan based on the students' comments.

### 3) The field trial

In this step, there were 30 students with three difference proficiency levels of English achievement. First, they did pre-test for a period. Then they learned through the PALS reading comprehension lesson plans. They did the exercises while learning via the lesson plans. After learning, they did the post-test. The scores of the exercises in the lesson plans and the post-test scores from the field trial were decided to find out the efficiency of the lesson plans based on 75/75 standard level (Promwong, 1978). The results of the field trial revealed that the efficiency index of the PALS reading comprehension lesson plans was 75.83/75.11 which met the criterion set.

To conduct this study, the assessment of efficiency of the PALS reading comprehension lesson plans was performed as shown in the following figure.





**Figure 3.1** Steps of trying out the lesson plans.

**Source:** Suwanbenjakul. (2002 : 52).

3.3.1.12 The researcher conducted the complete lesson plans with the samples in the second semester of academic year 2015. (See Appendix D)

### 3.3.2 Reading Comprehension Achievement Tests

Both the pre-test and the post-test were conducted and tried out by the researcher. The test comprised 30 multiple choice questions. The procedures of the test construction were as follows:

3.3.2.1 The researcher studied the limitation and details of contents in curriculum based on English Reading and Writing Course (E22202) of Nonsuwanpittayakom School.

3.3.2.2 The researcher studied the literature review on how to construct the test such as, "Testing and Assessment of Teaching English" by Wongsothorn (1995).

3.3.2.3 The researcher constructed the test that consists of 60 multiple choice questions with four alternatives.

3.3.2.4 The items of the test were edited and revised by the thesis advisors before proposing to the experts to examine the validity by using IOC formula (Index of Item-Objectives Congruence) as follows (Phattiyathanee. 2003 : 219).

+1 = When it is sure that items of the test are coincident with objectives.

0 = When it is not sure that items of the test are coincident with objectives.

-1 = When it is sure that items of the test are not coincident with objectives.

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

3.3.2.6 The test was tried out with grade 8 students who were not the samples at Nonsuwanpittayakom School in the first semester of the academic year 2015.

3.3.2.7 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 are level of difficulty (p) at 0.2-0.8 and the level of the discrimination power (B) at 0.2-1.0 (Srisa-ard, 2002 : 82-84). It indicated that the level of difficulty (p) was 0.57-0.77 and the discrimination power (B) was 0.20-0.67. (See Appendix F)

3.3.2.8 The reliability of the test was determined by using the Lovett's method (Rcc). The software programme was used to calculate the data. The reliability of the test will be accepted at  $\geq 0.7$  (Srisa-ard, 2002 : 96). It indicated the reliability of the test was at 0.93. (See Appendix F)

3.3.2.9 The researcher selected the approved 30 test items as a pre-test and a post-test (achievement test). (See Appendix G)

### **3.3.3 Satisfaction Questionnaire**

The questionnaire was constructed and developed gradually as follows:

3.3.3.1 The researcher studied literature reviews on satisfaction.

3.3.3.2 The researcher studied literature reviews on how to construct the satisfaction questionnaire by using Likert's rating scales.

3.3.3.3 The researcher gathered and arranged the issues concerning learning through the peer-assisted learning strategies implementation into a list.

3.3.3.4 The researcher proposed the statements to the thesis advisors before creating 15 statements based on the issues compiled from learning via the peer-assisted learning strategies implementation.

3.3.3.5 The statements were examined by 3 experts to check for correctness and appropriateness.

There were five scales as follows (Srisa-ard. 2002 : 102):

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

The researcher calculated the obtained data to find out the mean scores. The scores at 3.51 and upper were considered as the questionnaire item statements, the mean score was at 4.57 (See Appendix I). The researcher edited and revised the questionnaire if they had weak points. After that, the questionnaire was proposed to the experts again.

3.3.3.6 The researcher organized the statements to try out with grade eight students who were not the samples at Nonsuwanpittayakom School in the first semester of the academic year 2015.

3.3.3.7 Each item of five-point rating scales was calculated by utilizing Pearson's Correlation Coefficient formula ( $R_{XY}$ ) to find out the discrimination which must be at 0.20-1.00 level (Srisa-ard. 2002 : 110). The discrimination was 0.28-0.86.

3.3.3.8 The researcher selected 10 statements which had the most significant differences at level .05 to be part of the questionnaire. Then, it was tried out again to find out the reliability.

3.3.3.9 The method of Coefficient Alpha of Cronbach ( $\alpha$ -Coefficient) (Srisa-ard. 2002 : 99) was used to find out the reliability coefficient 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.

### 3.4 Data Collection

In this study, the 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 <sub>1</sub>	X	T <sub>2</sub>

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

T<sub>1</sub> is Pre-test

X is Learning English reading comprehension through the PALS reading comprehension lesson plans or treatment.

T<sub>2</sub> is Post-test

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

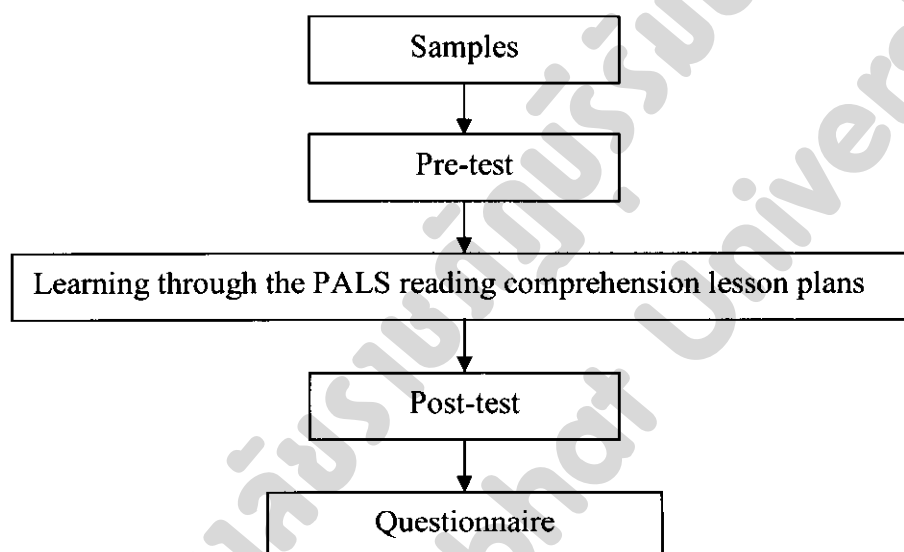
3.4.1 The study started with a pre-test. The pre-test was given to all the samples at the beginning of the lesson for an hour.

3.4.2 The samples were orientated to understand about learning via the PALS reading comprehension lesson plans. Then they were studied English reading comprehension with PALS reading comprehension lesson plans and did the exercises for 16 hours.

3.4.3 The samples took the post-test at the end of the lessons for an hour.

3.4.4 After the post-test, the samples were asked to fill out the questionnaires for their satisfaction to learning through the PALS reading comprehension lesson plans.

The steps of data collection could be illustrated as follows:



**Figure 3.2** Steps of Data Collection

### 3.5 Data Analyses

The collected data was analyzed and deduced by using the data analysis methods as follows:

#### 3.5.1 The data obtained from the exercises, the pre-test and post-test.

3.5.1.1 In order to evaluate the students' English reading comprehension proficiency before and after being taught through the PALS reading comprehension lesson plans. The pre-test and post-test were computed to find out percentage (%), 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 ( $E_1$ ) and the efficiency of the outcomes ( $E_2$ ), 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.

### 3.5.2 The data obtained from the satisfaction questionnaire

In order to evaluate the students' satisfaction toward learning through the PALS reading comprehension lesson plans, the researcher explained some parts of the question to the students while they did the questionnaire. The data from five-rating scales is computed for the mean ( $\bar{x}$ ) and standard deviation (S.D.). The following criterion was employed for interpretation (Srisa-ard. 2002 : 103).

<b>Rating</b>		<b>Interpretation</b>
4.51 – 5.00	=	The Most Satisfactory
3.51 – 4.50	=	More Satisfactory
2.51 – 3.50	=	Average Satisfactory
1.51 – 2.50	=	Less Satisfactory
1.00 – 1.50	=	The Least Satisfactory

### 3.6 Statistics Used in Data Analyses

#### 3.6.1 Statistics Use to Find out the Quality of Instruments

3.6.1.1 Validity of achievement test by using IOC (Index of Item-Objectives Congruence) formula (Phattiyathanee. 2003 : 220) as follows:

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

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 level of difficulty of each question of the test (p) by using Brennan's method (Srisa-ard. 2002 : 84).

$$P = \frac{R}{N}$$

P = Difficulty Level

R = Total of the students who choose the correct answer

N = Number of the low level students and high level students

3.6.1.3 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 pass the examination set at 15  
scores which correctly answered

L = Number of the students who fail the examination set at 15  
scores which correctly answered

$n_1$  = Number of the students who pass the examination set at 15  
scores

$n_2$  = Number of the students who fail the examination set at 15  
scores

#### 3.6.1.4 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

3.6.1.5 Discrimination power of each item for 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

3.6.1.6 Reliability coefficient of the satisfaction questionnaire by using Cronbach's Alpha-coefficient ( $\alpha$ -Coefficient) (Srisa-ard. 2002 : 99).

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

$\alpha$  = Reliability coefficient

$k$  = Number of statements

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

$S_t^2$  = Variance of total scores

### 3.6.1.7 The efficiency of lesson plans ( $E_1/ E_2$ ) (Kitrakarn. 2001 : 44-49).

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

$E_1$  = 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 lessons

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

$E_2$  = Efficiency of the outcomes

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

$N$  = Number of samples

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

### 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

$N$  = Numbers 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).

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

S = 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

The differences between pre-test and post-test mean scores are 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 conclusion, this chapter proposed the research procedure. It explained the population and the samples of the study. After that the research instruments and the construction were described. In addition, data collection and data analyzes were indicated. Finally, the statistics used and the data analyzes were identified. The results of the study are presented in the next chapter.

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