

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the methodology in conducting the research. This chapter provides four main parts of the investigation. It includes research design, data collection techniques, research procedures, and data analysis technique.

3.1. Research Design

A quantitative method in the form of quasi experimental design was employed in this study. There were two groups which were involved. The first group was the experimental group (EG) and the second one was the control group (CG). According to Fraenkel & Wallen (2009), an experiment regularly involves two groups which can be determined as experimental group, control group or a comparison group. In this study, the experimental group and the control group received a different treatment in the classroom. Since the study was supposed to find the effectiveness of using reciprocal teaching strategy in improving students' reading comprehension, the new method was applied in the experimental group while the control group was given Question-Answer Relationship (QAR). The new method was called by reciprocal teaching strategy. It was used as a treatment for experimental group.

This research applied pre-test and post-test. A pre-test was administered before the implementation of reciprocal teaching strategy as the treatment. Pre-test was administered to measure the initial ability of the sample of the subject. Later on, the post test was given to both groups. The purpose of the post test was to find out whether the use of reciprocal teaching strategy was effective or not. The research design of this study is presented as follow:

Table 3.1

Sample	Pre-test	Treatment	Post-test
EG	O1	X	O2
CG	O1	-	O2

- EG refers to Experimental Group
- CG refers to Control group
- O refers to observation/measurement
- X refers to exposure of group to an experimental variable

3.1.1. Variable

There were two variables in this study. According to Fraenkel & Wallen (2009), variables can be classified as dependent and independent variable. Variable in this study is defined as an attribute or characteristic of a person or of an object which varies from person to person. Further, Kidder (as cited in Sugiyono (2010) described that variable is a quality which the researcher studies and makes conclusion.

According to Hatch & Farhady (1982), variable is classified into two types. They are independent and dependent variables. The independent variable is the variable which is selected, manipulated and measured by the researcher. Meanwhile, the dependent variable is the variable which the effect of independent variable is determined by a researcher. It can be concluded that the independent is the cause of effect which is in this study belongs to Reciprocal Teaching Strategy,

whereas, the dependent variable is an outcome which in this study refers to students' reading score.

3.1.2. Hypothesis

According to Sugiyono (2010, p.96), hypothesis can be defined as theoretical answer towards the statement of problems in the study which does not rely on empirical data. Fraenkel & Wallen (2009, p.45) further stated that hypothesis is a prediction of the possible result of a study.

In this study, there are two types of hypotheses; they are null hypothesis and alternative hypothesis. The null hypothesis is accepted when there is no significant difference between the score of students in the experimental and control groups. Meanwhile, the alternative hypothesis is accepted when there is a significant different from both groups. Therefore, According to Coolidge (2000) and Kranzler & Moursund (1999), the null hypothesis and the alternative hypothesis for this study are as follow:

- H_0 = there is no significant difference between the students' post-test scores of the experimental group and the students' post-test scores of the control group.
- H_A = there is significant difference between the students' post-test scores of the experimental group and the students' post test scores of the control group.

3.2. Data Collection

3.2.1. Population and Sample

According to Fraenkel, Wallen & Hyun (2012) that population is defined as a group of persons who own definite characteristics. It can be students, teachers or

other individuals. Meanwhile, sample is defined as the smaller group of population. Since quasi experimental does not contain random selection of subjects, the sample of the study was chosen purposively, based on the English teacher's consideration, both classes have the ability which is relatively equal.

The population of this study was eighth grade students from one of junior high schools in Cimahi, whereas, the samples were two classes, namely 8.15 as the experimental group and 8.17 as the control group.

3.2.2. Research Instruments

In this study, the researcher used two kinds of instruments. They were test and questionnaire. Those instruments were used to collect the data. It is supported by Arikunto (2010, p.36) who stated that the instrument is all media which used by the researcher to collect the data. The test for this study was divided into three parts; pilot test, pre-test and post-test. The pilot test was utilized in order to examine the validity, reliability and the difficulty of items that would be administered in experimental and control groups. It was conducted in the class which was not selected for both groups.

The pre-test and post-test were employed to generate the scores that were analyzed to find out whether reciprocal teaching strategy is effective to improve students' reading comprehension in reading narrative texts. The pre-test was conducted to both groups, experimental and control group before the treatments. It was intended to know the initial ability of students' reading skill in reading narrative texts. On the contrary, the post-test was employed for both experimental and control groups at the end of the treatments. It was utilized in order to see whether or not there is improvement on students' reading comprehension ability in reading narrative texts.

After the post-test, the questionnaire was administered to the experimental group only. It aimed to know the students' responses toward the use of reciprocal teaching strategy in the classroom. This questionnaire was constructed in checklist type based on Guttman scale.

3.3. Research Procedure

3.3.1. Organizing Teaching Procedure

In this study, the researcher served as the teacher for both experimental and control groups. As the preparation of learning process, the researcher organized teaching procedure in three steps. The first step was preparing the appropriate materials and media for teaching and learning process during the treatment. The second step was preparing the lesson plan for both experimental and control group.

3.3.2. Organizing Research Instrument

The researcher created the test items for both pre-test and post-test and also constructed statements for questionnaire.

3.3.3. Testing the Validity and Reliability of the Pre-test and Post-test through the Pilot test

The pre-test and post-test were tested to know whether or not the items had possessed the validity and reliability. In addition, it was also intended to know the difficulty index of items.

In this case, the pilot-test items were tested to the class which did not obtain the pre-test and post-test. It was other class whom the students had received material about narrative text.

3.3.4. Administering Pre-test

The pre-test was conducted for both experimental and control groups. It was aimed to know the initial ability of the students especially in their reading comprehension skills of narrative texts. Moreover, it was conducted to determine both groups, experimental and control groups, have equal average score from the result. It was administered to students in class 8.15 as experimental group and 8.17 as control group on Tuesday, 23rd of September 2014.

3.3.5. Conducting the Treatment

The Reciprocal Teaching Strategy was conducted in the experimental group; on the other hand, the control group was given Question-Answer Relationship (QAR). Even though the teaching methods were different, the materials and the context were approximately similar, as can be seen in the following teaching schedule:

Table 3.2

The Schematic of Teaching Schedule

Day/Date	Activity	
	Experimental Group	Control Group
Saturday, 19 th of September 2014 (Pilot test)	-	-
Tuesday, 23 rd of September 2014	Pre-test	Pre-test
Thursday, 25 th of September 2014		Treatment1: Modeling of reading text, asking and answering questions, reading exercise.

		Text: A Mouse Deer and Crocodile
Friday, 26 th of September 2014	Treatment 1: Modeling the text by using predicting strategy, reading exercise. Text: A Mouse Deer and Crocodile	
Tuesday, 30 th of September 2014	Treatment 2: Modeling the text by using clarifying & questioning strategies, reading exercise. Text: Goldilocks and the three bears	Treatment 2: Modeling reading text, asking and answering question, reading exercise. Text: Goldilocks and the three bears
Thursday, 2 nd of October 2014		Treatment 3: Modeling the text, asking and answering questions, reading exercise. Text: The Ugly Duckling
Friday, 3 rd of October 2014	Treatment 3: Modeling the text by using questioning & summarizing strategies, reading exercise.	

	Text: The Ugly Duckling	
Thursday, 9 th of October 2014		Treatment 4: Modeling the text, asking and answering questions, reading exercise. Text: King of the jungle
Friday, 10 th of October 2014	Treatment 4: Modeling the four strategies. Reading exercise. Text: King of the jungle	
Tuesday, 14 th of October 2014	Post-test (Reflection and evaluation)	Post-test (Reflection and evaluation)

From the table above, Reciprocal Teaching Strategy treatment was given to the experimental group and Question Answer Relationship (QAR) was given to the control group. Both groups were received those treatments after conducting the pre-test. Time allocation of each meeting for both groups was two hours. The treatments were conducted in four meetings for both groups which are interpreted as follows:

Experimental group

Before conducting the first treatment, at the very first time, the teacher introduced the method of reciprocal teaching strategy to the students. The teacher explained each strategy includes predicting, questioning, clarifying and summarizing. The teacher showed some key points of this method which can be used in following the four strategies which then presented in the students' handout

(see appendix A). After that, the teacher prepared to model the four strategies one at a time. The first section is predicting. The teacher showed the title of example text and modeled how she observed and read the title. This stage is useful to gain reader's prior knowledge. Then, the teacher made her prediction and listed it in the board. Later, the teacher showed the first paragraph of the text to the students and modeled silent reading. It was intended to know the introduction of the text itself. The second section is questioning. As they together read the first paragraph, the teacher wrote down her prediction the next paragraph. In this part, the teacher struggled to show the students how to generate the questions. The third section is clarifying. The teacher guided the students how to notice on unfamiliar words or confusing sentences in the text which needed to be clarified. Then she wrote the unfamiliar words in the board and looked up on the dictionary. At the last stage, after finishing reading the first paragraph, the teacher continued to show them how to write and retell of what have read into short summary. After it finished, as the follow up, the teacher invited some representative of students to review the four stages to make sure that the all students understood to apply it when reading text.

- Treatment 1: A mouse deer and crocodile

After the teacher modeled the four strategies, to make in dept understanding, the teacher divided the four strategies into four meetings, in which each meeting utilized one strategy of reciprocal teaching method as the focus of the learning. In the first treatment, the teacher modeled the predicting strategy to the students. After that, the teacher grouped the students into 4-5 members. Each group was given the section of texts which would discuss with their friends. In the group, the students practiced to predict the text by observing the title first and wrote down their prediction into the paper. In here, the teacher interacted (chit chat) with the students, by asking what their prediction. Then they started silent reading for the first paragraph. After finishing the first paragraph, they predicted again to what would happen in the next paragraph. So after they read, they could

monitor themselves how correct their prediction about the text. This activity is helpful since it could activate students' brain and stimulated their knowledge. (Palinscar&Brown, 1984). This activity was continued until all the sections of the finished to be discussed. Even though, focus of this meeting was all about predicting, the teacher still trigger the students, if they had something from the text which had to be clarified. So it helped them to be familiar with clarifying strategy. An example of student's prediction is presented in the following figure:

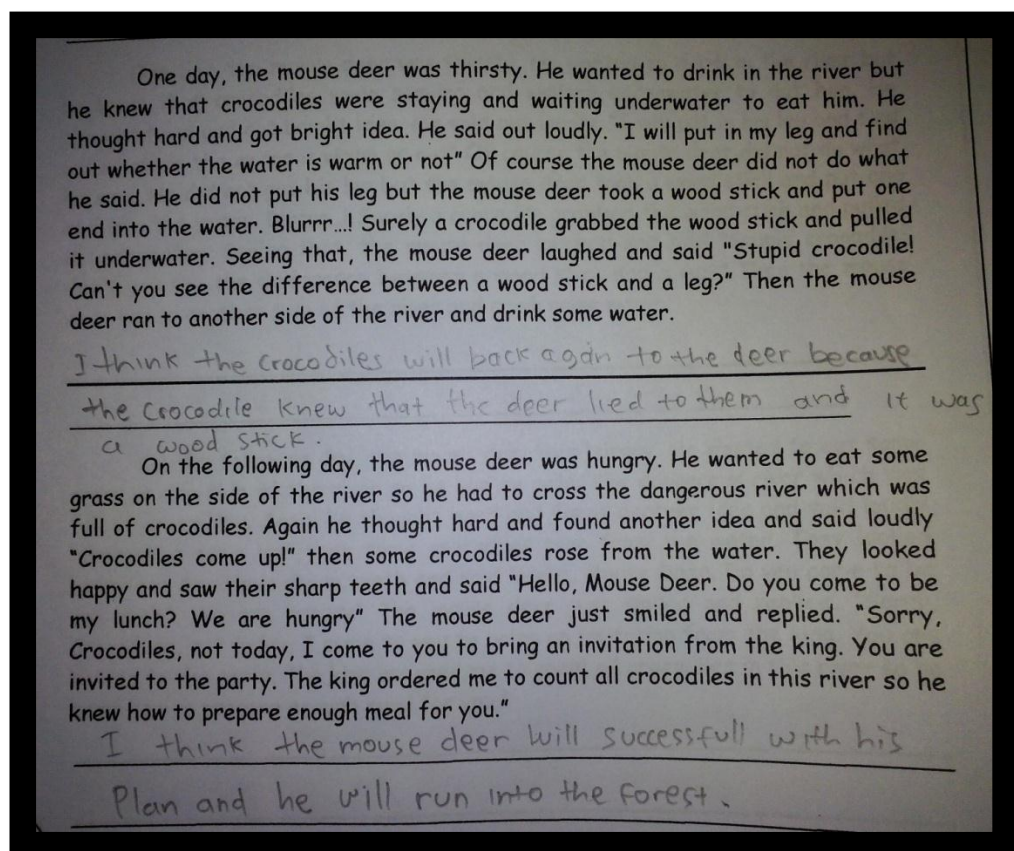


Figure 3.1 An Example of Students' Prediction (Taken from student's worksheet)

- Treatment 2: Goldilocks and the three bears

In the second treatment, the focus of learning was clarifying and questioning. First of all, the teacher still asked the students to work with their group which had been organized in the previous meeting. The teacher provided the second text to the students and asked them to repeat what had been done in the previous meeting. In here the student had familiar how to predict. The teacher continued to model the strategy of clarifying and questioning. The students were asked to list some vocabularies or unfamiliar words and then they discussed together with their friends to clarify one by one. It is helpful since it could motivate the students to re-read the text and shared what they understood and what they didn't. So when the text was clear they continue to read again. The teacher also asked the student to make questions of what happened in the previous paragraph or for the following paragraph. It was helpful to make students learned to identify important information and ideas. (Doolittle et al., 2006) After they finished the text, as follow up, the teacher asked the representative of each group to share what the important information that they could get from text, this activity was intended to check their understanding and comprehension. An example of student's clarifying and questioning can be seen in the following figure:

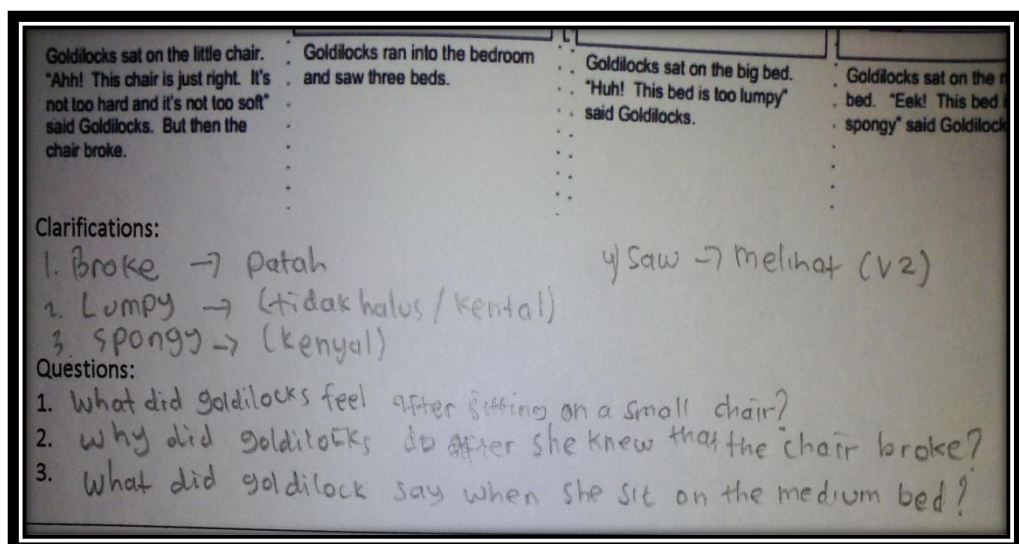


Figure. 3.2. An Example of Student's Clarifying and Questioning of Narrative text.

- Treatment 3: The Ugly Duckling

As the third treatment, the teacher recalled the three strategies which are predicting, clarifying and questioning in the beginning of the lesson as brainstorming. The teacher provided another narrative text to be discussed. In here, the teacher used summarizing strategy as the focus of the learning. The teacher guided the students to read the text again by using predicting, questioning and clarifying as what they had been learned in the previous meeting. After they finished their reading, the teacher asked the students to sum up what they had been read. First of all the teacher guided the students to list some important points from another text, and then, the teacher showed how to make summary from it by making mini draft from each section of text. Summarizing strategy was helpful as their tool to self-review. Palinscar & Brown (1984, p. 122) convinced that this activity is perceived as a self-test of what had been understood related to the text. An example of student's summary can be seen in the following figure:

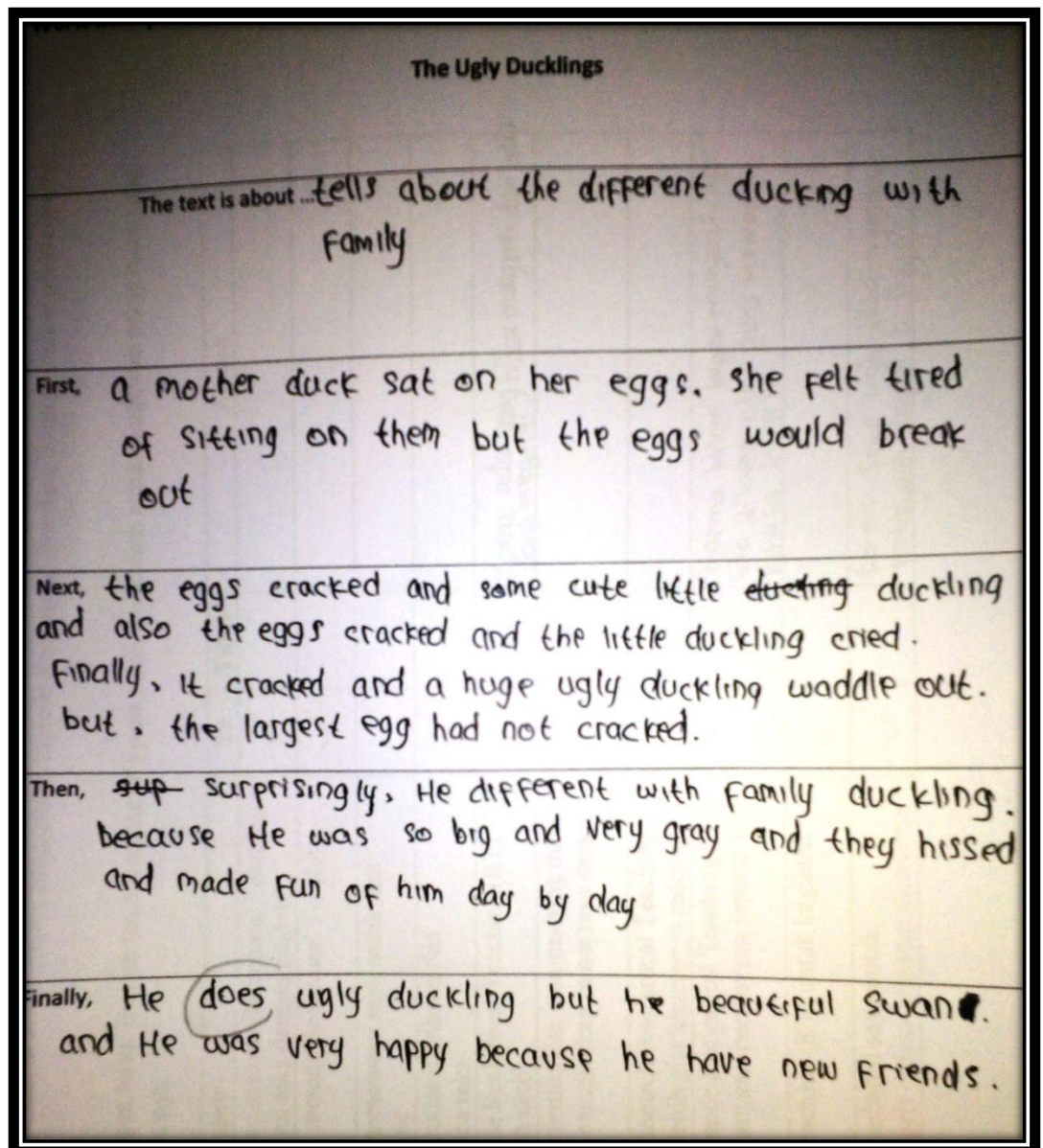


Figure 3.3. An Example of Student's Summary of Narrative text.

- Treatment 4: King of the jungle

As the last treatment, the teacher recalled the four strategies in a different way. The teacher presented four characters which owned the functions from the four strategies. They are predictor, questioner, clarifier and summarizer. In here, the students were asked to read another narrative story which each member of the group acted the four characters. This activity would motivate the students to be more active to engage in the discussion and helped them to understand the text easier with fun activity. In the discussion, each member had their job, student as predictor would help other students to predict about the text. Student as questioner would help other students to make or generate questions from the text. Student as clarifier would help to clarify unfamiliar words which were in the text. And the last, summarizer helped their friends to sum up the text/story. Finally, as the follow up, the teacher led big discussion and asked the students about the text and asked what they had been understood so far or their difficulties related to the four strategies.

Control Group

Control group used Question Answer Relationship (QAR) as the treatments. The treatments were given to the students in the four meeting. In each meeting, the teacher utilized the stages of QAR strategy to be implemented in the classroom. The stage of QAR itself was focused on question-answer reading text and exercises. Differ from the experimental group which gave different focus of the learning in each meeting, control group did not. The control group utilized the same treatments for the four meeting. So in here, only one example of the implementation of this method in the first meeting which will be explained as follows:

Treatment1: A Mouse Deer and Crocodile

In the first meeting, the teacher provided the students with one of narrative texts. The title was A mouse deer and crocodile. It was shown on the projector so

the students had a clear view of the text. First of all, the teacher asked the students to pay attention then the teacher read aloud the text in front of the students. After that, the teacher invited some of students to read aloud the text in front of the class. Related to the QAR strategy, after some representative students finished read aloud the text, the teacher explained to the students about what the focus of the lesson. In here, the teacher explained that to understand the whole text, the students had to be able to answer the questions from the text. The teacher explained that there were four types of questions that they would encounter when they read the text. The four questions were examined based on QAR strategy, those are: Right-there questions, Think and Search Questions, Author and You, and On My Own. Before conducting reading exercise, the teacher modeled one text by using QAR strategy. In here the teacher showed how the students could find information to answer the questions. An example of the question can be seen on the following figure:

QAR: Four Levels of Questions	
Right There	Where did the mouse deer live?
Think and Search	How did the mouse deer do to get the water to relieve his thirsty?
Author and Me	How can you tell that the mouse deer is considered cleverer than crocodile?
On My Own	What the message that you can get from the text?

3.4. An Example of the QAR Level of Questions from Narrative text: A Mouse Deer and Crocodile.

3.3.6. Administering the Post-test

After the treatments were applied in the classroom, the post-test was administered to both experimental and control groups. It was aimed to investigate the effectiveness of Reciprocal Teaching Strategy in improving students' reading comprehension. Moreover, it was purposed to compare the post-test result of the experimental and control groups.

3.3.7. Conducting Questionnaire

In the final step, the questionnaire was conducted in the experimental group only. It was constructed based on Guttman scale. It was aimed to find out the students' responses toward the use of Reciprocal Teaching Strategy in the classroom. The questionnaire was related to the strengths and weaknesses of the method. It was administered to Experimental group, 8.15, on Tuesday, October 14th, 2014.

3.4 Data Analysis

3.4.1. Scoring Technique

Since the researcher developed pre-test and post-test in the form of 40 numbers multiple choices, the test scores were determined by the correct numbers answered which are divided by 0.4. Therefore, the maximum score that can be obtained by the students is 100.

3.4.2. The Validity Test of Pilot-test

According to Sugiyono (2010, p. 173) stated that "Valid means the instrument can be used to measure what is should be measured". Since this study used multiple choices as test, the content of the test should be valid. This study employed content validity for validity testing. Thus, the Pearson Product Moment Correlation Coefficient was used to find the validity. According to Kranzler & Moursund (1999, p.56), the formula proposed as follows:

$$r = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\{N\sum X^2 - (\sum X)^2\} \{N\sum Y^2 - (\sum Y)^2\}}}$$

r = Pearson Product-Moment Correlation Coefficient

X = test item score (correct = 1. Wrong = 0)

Y = respondent's score

N = respondent

The data were calculated by using Anates V4. After correlation coefficient (r) value was calculated, the obtained value was gained, and then it was compared to $r_{critical}$. If $r_{obtained} \geq r_{critical}$, it means that the test is valid, while if the $r_{obtained} \leq r_{critical}$, it means that the item is not valid.

3.4.3. The Reliability Test of Pilot-test

According to Hatch & Farhady (1982, p.244), reliability was utilized in order to find the consistency of the result in a test when it is administered under similar conditions. The reliability of the test was analyzed by using ANATES V4 and the Cronbach's alpha in SPSS 20 for Windows. After that, the result was interpreted according to the following criteria:

Table 3.3

The Criteria of Reliability

0.00-0.20	Almost None
0.21-0.40	Low
0.41-0.60	Moderate
0.61-0.80	High
0.81-1.00	Very High

If the value of Cronbach's Alpha of the test reaches the range 0.41 to 1.00, the test is considered to be reliable to be used. In the contrary, if the value is less than 0.40, the test is considered inappropriate to be used in the study.

3.4.4. The Difficulty Index

The difficulty index is defined as the assumption in which the items of the test should in the middle level, which means not too easy or too difficult. This study used AnatesV4 to process the test. It was purposed to measure the degree of difficulty of the test items. The formula is presented as follows:

$$P = \frac{B}{JS}$$

P refers to difficulty index

B refers to number students who answered correctly

JS refers to number of students

3.4.5. Data Analysis on the Pre-test and the Post-test Scores

3.4.5.1. The Normal Distribution Test

In order to investigate the normal distribution of the set of data, the Shapiro-Wilk test was employed. According to Razali (2011, p.25), the test was used for the sample or subject which less than 50. Therefore, this test is appropriate to be used since the sample of this research took two classes of eighth grade students which each of the class has 26 students. The test was employed by using SPSS 20 for windows.

There were several steps in using Shapiro-Wilk test. The first step was stating the hypothesis and setting the alpha level. The second was analyzing the groups' scores by using Shapiro-wilk through SPSS 20 for windows. The last but not least was interpreting the output data.

In the first step, 0.05 (two-tailed) is set as the alpha level. Thus, hypotheses are as follow:

- H_0 = the score of the experimental and control groups are normally distributed.
- H_A = the score of the experimental and the control groups are not normally distributed.

Finally, the data were analyzed by using Shapiro-Wilk through SPSS 20 for windows. The output data were interpreted by these ways: if the result is non-significant ($p < 0.05$) which means the distribution of the sample is significantly different from normal distribution (probably normal) and the null hypothesis is rejected. In the contrary, if the result is significant ($p > 0.05$) then the distribution is approaching the normal distribution and the null hypothesis is accepted.

3.4.5.2 Homogeneity of Variance Test

In analyzing the homogeneity of variance test, this study used the Levene's test through SPSS 20 for windows. According to Field (2009, p.150), the variances in the groups are equal which means that the difference between variances are zero.

There are several steps which should be followed in the Levene's test. First, stating the hypothesis and setting the alpha level. The hypotheses are classified into two types, null hypothesis and alternative hypothesis. The null hypothesis (H_0) is when the variances of the experimental and the control groups

are homogenous, whereas, the alternative hypothesis (H_A) is when the variances of both groups are not homogenous. The next step is setting alpha level at 0.05 ($\alpha = 0.05$).

Further the data were analyzed through SPSS 20 for windows. After that, the output data were interpreted by these ways: if the Levene's test (F) is greater than alpha level ($F > 0.05$), it is determined as non significant, and then, the null hypothesis is accepted; if the Levene's test (F) is less than alpha level ($F < 0.05$), it is determined as significant and the null hypothesis is rejected.

3.4.5.3. Independent T-test

The independent t-test is utilized in order to analyze a relevant relationship between independent variable (treatment) and dependent variable (reading score) that is measured on experimental and control groups. According to Coolidge (2000, p.141), the focus of the test is determining whether or not there is significant difference between the experimental and control groups' means on the dependent variable.

In conducting the independent t-test, the hypothesis should be stated at first. The hypotheses can be presented as follows:

H_0 = there is no significant difference between both groups, experimental and control.

H_A = there is significant difference between both groups, experimental and control.

After that, the alpha level is set at 0.05 (two-tailed test).

The second part is analyzing the groups' scores by using independent test formula in the SPSS 20 for windows which the results in the t value or $t_{obtained}$. The third part is comparing the $t_{obtained}$ with the level of significance for testing

the hypothesis. The result or t_{obtained} can be interpreted by these ways: if the result > 0.05 , the null hypothesis is rejected which means there is significant difference of mean between experimental and control groups. In contrary, if the result < 0.05 , the null hypothesis is accepted which means there is no significant difference of mean between experimental and control groups.

3.4.5.4. Dependent T-test

In this case, the dependent t-test is purposed to compare the scores of the experimental group on pre-test and post-test. The test focuses on determining whether or not there is a significant difference between the pre-test and post-test scores before and after the treatment. In conducting this test, the alpha level was set first at ($p = 0.05$). And after that, the null hypothesis (H_0) was stated which there is no significant difference between the pre-test and post-test after the treatment given. It means that there is no improvement. Next, the data obtained were calculated by using the dependent t-test through SPSS 20 for windows. The last was comparing the t_{obtained} with the level of significance for testing the hypothesis t_{critical} . If the $t_{\text{obtained}} \geq t_{\text{critical}}$, the null hypothesis is rejected, and if $t_{\text{obtained}} < t_{\text{critical}}$, the null hypothesis is accepted.

3.4.5.5 The Calculation of Effect Size

According to Coolidge (2000, p.151), the effect size is employed to find out how far independent variable affects the dependent variable. In sort, the effect size reflects how well the treatment works in this study. The effect size of independent t-test was calculated by correlation coefficient with the formula can be figured as follows:

$$r = \sqrt{\frac{t^2}{t^2 + df}}$$

r = effect size

t = the independent t-test value

df = degree of freedom (N1+N2-2)

After calculating the effect size, its value compared and analyzed by using the table's scale. The correlation coefficient of effect size is always positive and range from 0 to 1.00. The scale can be figured as follows:

Table 3.4

The Scale of Effect Size

Effect Size	<i>r</i> value
Small	0.100
Medium	0.243
Large	0.371

3.4.6. Data Analysis of the Questionnaire

The questionnaire was constructed by using Guttman scale. According to Sugiyono (2010, p. 139), Guttman scale is used to obtain the explicit answer towards the problems which were questioned by the researcher. The questionnaire was developed by using checklist type, in terms of “yes” or “no” statements.

In order to analyze the questionnaire data, this study used the percentile formula. Then, the data were interpreted based on the frequency of students' answer. According to Hatch & Farhady (1982, p.46), the formula can be presented as follows:

$$P = 100 \times \frac{F}{N}$$

P = Percentile

F = Frequency of students' answer

N = Respondent

