

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

This chapter presents research methodology employed in this study, as an attempt to find the answer to the following issues, namely if the use of Direct Reading Thinking Activity (DRTA) effective in teaching reading narrative text, and the students' perception toward the use of DRTA method in teaching reading narrative text. In general, it covers Research Design, Population and Sample, also Data Collection and Analysis.

#### **3.1 Research Design**

This study used a quantitative method and applied a quasi-experimental design with non-equivalent control group. Hatch and Farhady (1982) state that non-equivalent control group design means that there are two groups in the study, namely experimental and control groups. In this case, both groups were in the same grade level but used a different set of teaching in the teaching and learning process. Narrative text was used as the materials in teaching and learning process. Each group was taught how to read narrative texts, yet the experimental group applied some treatments to find out the answers of research questions. Meanwhile control group was taught through the conventional method, which is the whole class lecturing method.

Pre-test and post-test were conducted in this research. Pre-test was given at the beginning of the research and post-test was given at the end of the research. The results of those tests were used to find out whether or not there are any

difference between the experimental group and control group. The research design of the study will be illustrated in the following table:

**Table 3.1**  
**The Quasi-Experimental Design**

Group	Pre-test	Treatment	Post-test
Experimental	Xe 1	T	Xe2
Control	Xb 1	O	Xb 2

Xe 1 : Students' reading scores of the experimental group on pre-test

Xb 1 : Students' reading scores of the control group on pre-test

T : Treatment uses DRTA

O : No treatment

Xe 2 : Students' reading scores of the experimental group on post-test

Xb 2 : Students' reading score of the control group on post-test

Furthermore, this study tested two hypotheses. The first hypothesis is null hypothesis (Ho) which states that there is no significant different in total mean score between the experimental group and control group. The notation of the null hypothesis is as follows:

$$H_0 : \mu_1 = \mu_2$$

H<sub>o</sub> : Alternative hypothesis

$\mu_1$  : Experimental group

$\mu_2$  : Control group

The second hypothesis is an alternative hypothesis ( $H_a$ ) which states that there is a significant difference in total mean score between experimental and control groups. The notation of alternative hypothesis is as follows:

$$H_a : \mu_1 \neq \mu_2$$

$H_a$  : Alternative hypothesis

$\mu_1$  : Experimental group

$\mu_2$  : Control group

### 3.2 Population and Sample

The population of this study was the tenth grades students of a private Senior High School in Bandung. The school was chosen due to an easier access to the writer to conduct the study in this school. Moreover, the sample was selected by using purposive sampling in which the sample is not randomly selected. This study only used two classes as the sample of the study. The first class, XB was the experimental group and the other, XE was the control group. Each group consists of 25 students. To anticipate the absence of some students during the research, there were only 20 students from each class as the sample. Therefore, the total number of the sample are 40 students.

### 3.3 Data Collection and Analysis

In collecting data, this research study starts from the step of organizing teaching procedures for experimental and control group classes, organizing the research instruments, trying out to test instrument, and then administering pre-test

to both experimental and control groups in order to find the initial ability between the two groups.

After lesson plans were organized, DRTA in teaching reading narrative text was applied to experimental group students and teaching reading narrative text with conventional method (whole-class lecturing) was applied to control group. At the end of experimental treatment, post-test was administered to both control and experimental groups in order to find out the result of the treatment. Furthermore, to answer the second research question, a questionnaire was administered to the experimental group in order to gather further information on students' perception toward the implementation of DRTA in teaching narrative text.

### **3.3.1 Data Collection**

The data collection involved two instruments, namely reading test and questionnaire.

#### **3.3.1.1 Reading Test**

Research instruments are the tools which are used to measure something that we observe in order to obtain the data and answer the research problems (Sugiono, 2011). The instruments that were used in this study are pre-test, post-test, and questionnaire.

Pre-test was administered in both experimental and control groups. The test instrument was a reading comprehension test. It was given to the experimental and control groups to find the initial differences between the groups of students

who had a similar level of reading. Moreover, a post-test was implied in the last program of the research. After conducting several treatments, researcher administered the post-test to both experimental and control groups. This post-test was given to find out whether or not there are any difference between those groups as a result of some treatment given. All items of reading test were the same as those of the pre-test. It consisted of thirty multiple choice questions. It was composed based on standards in Indonesian curriculum of English teaching, as explained in the following tables:

**Table 3.2**  
**The Competencies and Indicators of Reading Test**

Aspect	Standard Competence	Basic Competence	Indicators
Reading	<b>11.</b> Understanding the meaning of the simple short essay in the form of recount and narrative relative to the environment	<b>11.2</b> Giving respond to the meaning in the simple functional text accurately, clearly, and appropriately relate to the environment  <b>11.3</b> Giving response to the meaning and the rhetorical stage in accurately, clearly, and appropriately relates to the environment in the recount and narrative	<ul style="list-style-type: none"> <li>• Identifying the generic structures of the text which include theme, place, time and actor/actress.</li> <li>• Identify type of the text</li> <li>• Identify contents of the text</li> </ul>

**Table 3.3**  
**Material Content of Multiple Choices Questions**

No	Number of Questions		Learning Material
	Pre-test	Post-test	
1	2,5,7,11,15	1,5,22,25,27	Identifying the generic structure
2	4,9,10,12,13,23,24, 25,26,27,28,29,30	2,3,13,14,15,16,17, 18,19,20,24,29,30	Identifying contents of the text
3	1,3,6,8,14,16,17,18, 19,20,21,22	4,6,7,8,9,10,11,12, 21,23,26,28	Language features

However, the pilot test had to be administered before conducting pre-test and post-test to the experimental and control groups in order to find whether the instruments were appropriate to be used in pre-test and post-test by discovering the value of validity, index of difficulty, reliability, and discrimination index. The pilot test was conducted in another class that did not belong to the control and experimental groups.

### 3.3.1.2 Questionnaire

According to Arikunto (2006), a questionnaire is a written test used to gain the information from the respondent. There are two types of questionnaire, namely open questionnaire and closed questionnaire. In open questionnaire, the respondents have a freedom to answer the question based on their own word of opinions. In closed questionnaire, a number of possible answers of questions are given by the researcher, so that the respondents only choose one of them. The advantage of using questionnaire is that the test can be given to a large number of

people at the same time, while the disadvantages are the unclear or ambiguous questionnaire cannot be clarified, and the respondents have no chance to expand or react verbally to particular questions (Conoley and Kramer, 1989).

The questionnaire was distributed in the experimental group after both control and experimental groups had finished their post-test. The closed questionnaire was used in order to provide consistency of response across the students and generally easier to use and analyzed related to the objectives of the study (Nunan, 1992). The questionnaire was conducted to find out the students' perceptions toward the use of DRTA in teaching reading narrative text. The questionnaire consisted of 7 questions with the following categories:

**Table 3.4**  
**Questionnaire Categories**

No	Aspects	Item number	Total
1	Students' feelings toward the use of DRTA	1,7	2
2	Students' thoughts toward the use of DRTA	2,3,4,5,6	5
<b>Total</b>			<b>7</b>

### 3.3.2 Data Analysis

#### 3.3.2.1 Scoring Technique

Since this study employed multiple choice questions, the scoring technique of the questions used the formulation with no punishment. The formula without

punishment is a formula that has no minus system of score to the students' in correct answers (Arikunto, 2006). The formula of scoring technique is stated as follows:

$$S = R$$

S = Score

R = Right

### 3.3.2.2 Pilot Test

The pilot test was conducted to find out whether or not the instrument was valid and reliable. In other words, it was to see if the test was appropriate to use or not. Furthermore, results of pilot test are attached in Appendix C.

### 3.3.2.3 Validity Test

The validity test was used to see whether the test was valid or not to be used in pre-test and post-test. According to Fraenkel and Wallen (2006), validity refers to appropriateness, meaningfulness, correctness and usefulness of the inferences a researcher makes.

Pearson's Product Moment was applied to test the validity. The data can be calculated using Bivariate-Correlation in SPSS 16 for Windows or calculated using Anates V4 programs. The result of r coefficient correlation is consulted to the critical table of r Product Moment. If the value of r-obtained is bigger than the r critical value with alpha 0.05, the correlation is significant and it can be said that the item is valid (Arikunto, 2003).



#### 3.3.2.4 Difficulty Test (Item Facility)

This test was done to measure how far the test item relevant to the participants' ability; whether the test items were too easy or too difficult for the participant. According to Heaton (1955) in order to find out how easy or difficult certain items established in the test, it can be analyzed using item difficulty index or facility value.

Therefore, items with facility value around 0.50 were considered to be ideal, with an acceptable range being from around 0.30 to 0.70.

The following is the formula of difficulty index:

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

FV = Facility/ Index of difficulty

R = The number of correct answers

N = The number of students taking the test

#### 3.3.2.5 Discrimination Test

Arikunto (2006) states that discrimination index is used to indicate how far a single test item can differentiate the upper group from the lower group of the class. The procedures to find the discrimination index are: (1) Arranging the students' total scores and dividing the scores into two groups of equal size (the top half and the bottom half), (2) Counting the number of the students in the upper group who answer each item correctly, then counting the number of lower group students who answer the item correctly, (3) Subtracting the number of correct answer in the upper group to find the difference in the proportion passing in the

upper group and the proportion passing the lower group, and (4) Dividing the difference by the total number of students in one group.

The following formula is used to calculate the discrimination index of an item:

$$r_{pbi} = \frac{x_p - x_q}{s_x} \sqrt{pq}$$

$r_{pbi}$  = point biserial correlation

$X_p$  = mean score on the test for those who get the item correct

$X_q$  = mean score on the test for those who get the item incorrectly

$S_x$  = standard deviation of test scores

$p$  = the proportion of test takers who get the item correct (facility value)

$q$  = the proportion of test takers who get the item incorrectly.

### 3.3.2.6 Reliability Test

Fraenkel & Wallen (1990) state that reliability refers to the consistency of the scores obtained from one administration of an instrument to another and from one set items to another. To test the reliability of the instrument, Alpha Cronbach in SPSS 16.0 for Windows was performed. Then it was interpreted based on the following categorization:

### 3.3.2.7 Pre-test Data Analysis

Pre-test and post-test were given to the experimental and control groups in the same procedures. A hypothesis started with the alpha level at 0.05. The data

were collected through pre-test and post-test computed one by one using SPSS 16.0 for Windows.

The steps taken in analyzing pre-test and post-test were: normal distribution test, homogeneity variance, and independent t-test. The details of statistical procedures are as follows:

### **3.3.2.8 Normality of Distribution Test**

A Normality test was conducted to ensure that the students' scores were normally distributed, it was computed using Kolmogorov-Smirnov test in SPSS 16 for Windows. Before the test, the null hypothesis was established; Ho: the data taken from samples which are distributed normally. The level of significance then was set at 0.05.

### **3.3.2.9 Variance Homogeneity Test**

The variance homogeneity test was intended to find whether the variance score of both experimental and control groups were homogenous or not. The data were calculated using Levene Test in SPSS 16 for Windows. The null hypothesis was stated before conducting test, which was Ho: the variance score of both experimental and control groups being homogenous. The level of significance was 0.05.

### **3.3.2.10 Independent t-Test**

Lastly, the data taken from pre-test were analyzed using independent t-test to ensure that the score of the two groups (experimental and control group) were not significantly different. It was also intended to ensure that the two groups had equal ability and could be used as samples in this research.

The null hypothesis was  $H_0$  = there is no significant different between experimental and control mean scores on pre-test (Experimental Group = Control Group). With the level of significance of 0.05, the computation of independent t-test was then conducted using SPSS 16 for Windows.

### **3.3.2.11 Post-test Data Analysis**

The post-test data analysis was quite the same as the pre-test data analysis. The primary distinction lied on the purpose. The purpose of the pre-test was simply to see both groups' difference prior to the treatment while the purpose of the post-test was to see whether the treatment made any significant difference in students' achievement. Another distinction was that there was no effect size calculation in pre-test but it was employed in the post-test to see how effective the treatment was. The analysis of post-test are elaborated in the next chapter.

### **3.3.2.12 Effect Size**

An effect size test was conducted to find out the level of effect of the treatment given after the calculation of t-test is done. The purpose of the test is to determine how significant the impact of the treatment of the experimental group's

score is. According to Collidge (2000), effect size refers to the effect of the influence of independent variable upon the dependent variable. The formulation effect size can be seen as follows:

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

Where:

$r$  = effect size

$t$  = t- test value

$df$  = degree of freedom (the amount of samples minus 2.  $df = N1+N2-2$ )

The value of effect size will be interpreted to the following scale:

**Table 3.5**  
**Scale of Effect Size**

<b>Effect Size</b>	<b><i>r</i> Value</b>
Small	.100
Medium	.243
Large	.371

### 3.3.2.13 Dependent t-Test

Dependent t-test was used to analyze the effectiveness of using DRTA by comparing the mean score on pre-test and post-test of each group. Dependent t-test was calculated by SPSS 16 for Windows. If the t-obtained is bigger than t-critical value at level 0.05, it means that the use of DRTA is effective.

### 3.3.2.14 Questionnaire Data Analysis

This study used a set of questions in order to answer students' perception toward the use of DRTA technique in reading narrative text. In constructing each question in the questionnaire, it is important to determine the data that should be gathered related to the objective of the study (Nunan, 1992). Thus, the questionnaire items were divided into two parts based on students' feelings and thoughts toward the used of DRTA in teaching narrative text.

Data from the questionnaire were analyzed based the frequency of the students' answers and their impressions of the application of DRTA were interpreted as well in chapter IV. The results of the questionnaire are put into the percentage below:

$$P = \frac{f_o}{n}$$

In which:

P = percentage

$f_o$  = frequency of observed

n = number of samples

**Table 3.6**

#### Criteria of Percentage

Percentage of respondents	Criteria
1-25 %	Small number of the students
26-49 %	Nearly half of the students
50 %	Half of the students
51-75 %	More than half of the students
76-99%	Almost all of the students
100 %	All of the students

(Indah Rahmawati, 2008 cited in Sistiawan, 2011)