CHAPTER III

RESEARCH METHODOLOGY

This chapter provides a discussion on the methodology employed in conducting the research. The description and account below involve: research design, population and sample, variables, research procedure and data analysis.

3.1 Research Design

This study was conducted based on the true experimental design, since this study investigates the use of stories (narrative texts) to increase students' reading skill. According to Hatch and Farhady (1982), the true experimental study is categorized into two groups; posttest only control group design and pretest-posttest control group design. Thus this study was conducted based on the pretests-posttest control group design.

The subjects in this study were divided into two groups, the experimental group and the control group. The first group (G1) as the experimental group will be given a pretest (T1), treatment (X) and posttest (T2). The second group (G2) as the control group will be given a pretest (T1) and posttest (T2), but without treatment (X).

3.2 Population and Sample

Population is the whole subject of the research (Arikunto, 2002). The population of this research was the second grade students of SMPN 3 Bandung. Sample is a “part” or a representation of the investigated population. Considering that every class has relatively the same characteristics, two classes were chosen based on random cluster sampling. In accordance with the research design, the two classes were then determined to experimental group and control group. The two classes are; class 8-J as the control class, and class 8-I as the experiment class.

Both classes consists of 40 students, however, not all of the students of class become the sample o the research. This is due to the fact that some students were absent when the pre test/post test was held. As the result, there are 32 students became the sample of this research from each class.

3.3 Variables

Kerlinger (1978 in Arikunto 2002) exerts that every experiments have one fundamental idea behind them; to test the effect of one or more independent variable on a dependent variable. An independent variable is a variable that influences a dependent variable in a cause and effect relationship.

In this research, the students’ reading skill was measured with the test to determine the effect of using stories (narrative text) on the students’ scores. Therefore, in accordance with Kerlingers’ statement, there are mainly two types of two types of variable involved in this research, namely:

1. Dependent variable, students score or achievement in the test

2. Independent variable, the effect of using stories (narrative texts) to the students

3.4 Research Procedure

Before the research begun, the writer prepared the material used for teaching and learning process. The writer also prepared the instruments employed to test the students reading skill before and after the treatment.

a. Material

The material used for the teaching and learning process during the period of the experiment was taken from existing text book (Let's Talk). Materials were also taken from several other books. The writer selected, improved and adapted materials considered appropriate for the experiment.

b. Instrument Try Out

Before running the pre test, the researcher administered the instrument try out. The try out was undertaken to measure the validity and the reliability of the instrument. The try out was administered in other classes which were not involved in the research as the control group and the experimental group. The try out test was conducted on March, 12-13, 2008. The try out tests were administered to class 8-B and 8-C of SMPN 3 Bandung.

The try out tests were administered to find out whether the test instruments were suitable for further use in the research. The test consists of 20 items, some of which are multiple choice items, simple items about grammatical issues and others were about features of a text (further details can be seen in the appendices).

Afterwards, more analysis were undertaken to check the validity, reliability, discriminating power and level difficulty to ensure that the instrument was usable.

c. Pre-Test

The pre test was undertaken on March 27 and 29, 2008. The pre test instrument was similar with the instruments used in the first try out test, since the items of the set were considered statistically satisfactory (further explanation about the test instrument analysis will be discussed in the subsequent chapter). This test was intended to gain the data on students' basic reading skill. The test was administered to both experimental and control group in their classroom during school hours.

The Pre test for the experimental group was ordered on the 27'th of March 2008. Two students of the experimental group were absent during the pre test. The pre test for the control group was administered on March 29, 2008. Three students of the control group were absent during the pre test. The time allocation for the test was 60 minutes.

c. Treatment

In this research, the researcher uses stories (narrative texts) as a treatment to increase students reading skill. The treatment was given in eight meetings to the experimental group from March to April 2008.

d. Post Test

At the end of the course the researcher administered the post test. This test was given to both group (control group and experimental group) to find out their

reading skill after the experimental group received the treatments. The test was administered to both classes on May, 9 and 10, 2008.

When the post test was ordered to the experimental group on May, 9, 2008, one student was absent. On the 10'th of may 2008 when the post test was ordered to the control group, five students were absent. The post test followed the same procedure with the pre test, but on the other hand, the instruments used in the post test were a bit different with the ones used in the try out test (further explanation about the change will be discussed in the subsequent chapter).

3.5 Data Analysis

After the process of data collecting, the researcher moved on to analyze the data gained. Several steps were taken in the data analysis.

3.5.1 Scoring

According to Arikunto (2003), there are two types of formulas that can be used in processing or scoring the data previously obtained. The formulas are; formula with punishment and the formula with no punishment. In this research, the formula with no punishment was used. The formula:

1. S = R

   In which :

   S = Score

   R = Right answer

3.5.2 Data Analysis on Instrument Try Out

Having scored the test, the researcher then analyzed the items in order to find suitable items for the final version in the test design. These are the steps taken in analyzing the items

a. Validity

Validity is a measurement that shows the level of validity of an instrument. The researcher tests the instrument uses the pearson product moment formula. Therefore, the process of calculation follows the formula:

Where :

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

N = number of students from upper and lower group

X = number of correct answer of the selected item

Y =total of correct answer

r_{xy} = coefficient relation between X and Y variable.

The item is valid if r_{xy} > r table (Arikunto 2003). Moreover, according to Sugiyono (1998,273),

> *"…analysis item dilakukan denganmenghitung korelasi antara skor butir instrument dengan skor total,atau dengan mencari daya pembeda (discriminating power) skor setiap item dari kelompok yang memberikan*

jawaban jawaban yang tinggi dan jawaban rendah. Jumlah kelompok tinggi diambil 27% dan kelompok yang rendah 27% dari sampel uji coba."

b. Reliability

An instrument is regarded as reliable if it is good enough to collect the data required (Arikunto 2002). The researcher used the split half method (Spearman-Brown prophecy formula) to calculate the reliability of the items.

First the writer divided the test result into two parts. The odd numbered items become one half, and the even numbers become the other half. Then the writer calculates the correlation between the two half items using the formula as follows:

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

Where:

N = number of items

X = number of correct answer of the odd numbered items

Y = number of correct answer of the even numbered items

r_{xy} = coefficient relation between X and Y variable.

The calculated coefficient relation is then incorporated in the Spearman-Brown prophecy formula as follows:

$$r_{11} = \frac{2\, r\, {}^{1}/_{2}\ {}^{1}/_{2}}{(1 + r\, {}^{1}/_{2}\ {}^{1}/_{2})}$$

Where:

$r_{1/2\ 1/2}$ = correlation between each half test score

r_{11} = coefficient reliability

3.5.3 Data Analysis on Pre-Test and Post-Test

A pre-test was administered at the beginning of the experiment in order to obtain the initial equivalence between the groups. T-test was assigned to determine whether the experimental group and the control group were equivalents.

The post-test was administered at the end of the experiment. The T-test was also used to find out the null is hypothesis is accepted or rejected. If the null hypothesis is accepted, it means that there is no difference between the experimental group and the control group after treatments. The T-test undertaken here is quite different with the first one. The T-test here was not administered on the outcome of the post test of the two groups. The T-test was administered to find out whether there is a change or not in the outcome the pre test and the post test of each group. Therefore, the T-test administered here is the paired sample T-test and not the independents sample T-test. This step was chosen by the researcher to present the actual data, in this case the outcome of the research, as simple as possible.

The writer underlies that there are several assumptions underlying the T-test. The assumptions are:

1. The scores in each group are normally distributed. This assumption requires that the distribution of scores for each group be approximate to be normal.
2. The variances of each scores of the group are equal. This assumption is also referred to as the homogeneity of variances. It means that the square values of the standard deviation (SD) should be the same.

3.5.3.1 Testing the Normal Distribution

These are the steps taken to test the normal distribution:

1. Looking at the hypothesis

   Ho = the distribution of the scores are normally distributed

2. Finding the mean
3. Finding the standard deviation using the formula :

$$SD = \sqrt{\frac{\sum (X-X)}{N-1}}$$

4. Looking at the hypothesis of the normal distribution as follow
   a. Looking at the hypothesis
   b. Looking at the alpha level P 0,05
   c. Calculate the degrees of freedom with the formula

      df = (k-3), where k = class interval.

d. Compare the observed and critical statistics at the calculated degree of freedom (df)

e. If the probability (asymp.2tailed)> 0,05 accept Ho

To analyze the normality of distribution, the writer uses the SPSS 15.0 computer program.

3.5.3.2 Testing the Homogeneity of Variances

These are the steps taken to test the homogeneity of variances:

1. Starting the hypothesis, Ho; S = S
2. Setting the alpha level P 0,05
3. Determining the degrees of freedom

   $df = N_1-1$

   $df = N_2-1$

   Where:

   - df = degrees of freedom for numeration
   - df = degrees of freedom for denominator
   - N_1 = number of sample with higher variance
   - N_2 = number of sample with lower variance
4. Testing the hypothesis, if the probability < 0,05 accept Ho.

To analyze the homogeneity of variances, the writer uses the SPSS 15.0 computer program.

3.5.3.3 Calculating the T-test

These are the steps taken to calculate the T-test:

1. Setting the null hypothesis (Ho = $\overline{X}_e = \overline{X}_c$)
2. Setting the alpha level t(0.05) directional decision
3. Finding the mean of experimental group (X_e), standard error of mean (S_e), number of observation (N_e) and mean of control group (X_c), standard error of mean (S_c), number of observation (N_c).
4. Finding standard deviation differences with the formula:

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

5. Calculating the standard error of differences between two means using the formula: $S_{\bar{d}} = \frac{S_d}{\sqrt{n}}$
6. Finding the T-value using the formula

$$t = \frac{X_e - X_c}{S_{\bar{d}}}$$

7. Determining degrees of freedom with the formula

   Df = n1 + n2 – 2

8. Determining t-critical in table t(0,05) df
9. Comparing t_{obs} and $t_{critical}$, if $t_{obs} < t_{critical}$ the null hypothesis is accepted. If if $t_{obs} > t_{critical}$, we the null hypothesis is rejected and the alternative hypothesis should be accepted.

The formula used for the pre-test is the same as the analysis on the post-test that is the T-test. The only difference is that in analyzing the outcome of the post test, the researcher incorporated the paired sample T-test to analyze the mean difference of the pre-test and post-test of each group and not the mean difference of the post-test of the two groups. In analyzing the data obtained, the researcher used a computer statistical program namely SPSS version 15.0.