

CHAPTER III

RESEARCH METHOD

In this chapter, the researcher would like to present about the methodology of study. This chapter consists of researcher design, population and sample, instrument, data collection, and data analysis.

3.1 Research Design

Research design is a strategy for conducting the data or research. According to Parahoo (1997: 142) research design is steps to describes how, when and where data are to be collected and analyze. In a research , to make easy in analyzing data, the researcher should have design, it is because to get accurate information from population. To find a suitable design, so the researcher should look the problem of research.

In this study, the researcher using quantitative approaches to experimental because this study to investigate the effect of peer and self assessment toward reading ability. It is usual to differentiate between independent variable and dependent variable. Independent variable is what is varied during the researcher doing experiment. Dependent variable is what will be measured. In this study, the researcher wants to know the effectiveness of peer and self assessment toward reading ability. So the independent variable here is peer and self assessment and dependent variable is Reading ability.

This research tried to describe the effectiveness of peer and self assessment toward reading ability. So the research design was pre-test and post-test group. Therefore, design was call a pre-test and post-test control group design.

The design chart can be seen in figure below:

Group	Pre-test	Treatment	Post-test
E	+	+	+
C	+	-	+

Where :

E : Experimental group

C : Control group

+

: With treatment of peer and self assessment strategy

-

: Without treatment of peer and self assessment strategy

3.1 Population and Sample

According to Best & Khan (1995) Population as group of people that become the research, while samples are a small part of a population selected for observation and analysis. In this research the population was the seventh grade students of SMP Yimi fds Gresik in academic year 2016/2017. After observation to get information essential for the study the researcher found that there were two class have same characteristic of students. The researcher uses purposive sampling technique to take the sample. Whereas the samples were two classes, namely VII-A as the experimental group and VII-B as the control group. The experimental group is VII-A which consisted of 26 students. While the control group was class VII-B with 26 students. So the total number of students as sample was 52 students. The sample have similar characteristic from their ability in the English class activity, so the sample is homogeneous.

3.2 Data collection

This data discussion about research instrument and procedure how to researcher conduct the data.

3.2.1 Research instrument

Instrument for collecting data is absolutely important. In this study, the researcher uses reading Test for collecting the data. The test will be given to the experimental group and control group. Those are pre- test and post –test. The test is intended to find out the effectiveness of peer and self assessment toward reading ability. The researcher make a design test for pre-test and post-test related with topic syllabus of SMP VII grade, about descriptive text. The test can be elaborated:

3.2.1.1 Pre – test

Pre-test is done by experimental and control group. It is conducted to find out the initial different between both of the two groups as they have similar level in reading ability. Before applying peer and self assessment as the treatment of this research, the researcher arrange pre-test to the subject to know the previous ability in term of questioning in reading comprehension. This test contains of a descriptive text and there will be ten multiple choice questions that can answer by reading the descriptive text.

3.3.1.1 Post-test

Post test is also done by both of the two groups. The procedure of post test is same with pre test, but using different title of descriptive text as the material. The test was conducted after giving all treatment to measure that the treatment is success or not.

3.2.2 Validity and reliability

3.3.2.1 Validity

Before conducting pre test and post test as instrument of this research, the researcher will test the validity of the test item. Validity is a compatibility test with the main targets that need to be measured. There are three kinds of validity, those are content, criterion and construct validity. Content validity is comparing test item with the curriculum and also the syllabus. Then, criterion validity it correlates test result with

another criterion of interest. For construct validity is used for objective matter as like multiple choice items. Here the researcher use content validity to check the test. It use because this test conducted in reading skill with the objective short answer test that need to compare to the curriculum and also the syllabus. The researcher check the instrument validity based on English curriculum and syllabus. Based on Djiwandono (2011:165) content validity can be done by arranging the outline of the task requirement in taking the test which compare with the items in the test or the content in the curriculum.

3.3.2.2 Reliability

Reliability is very important of a test to get reliable product of measurement. Reliability is stability of test it is used, a test will reliable if it is obtains the stable data or consistent if used to measure a same test in other time or place. According to Heaton (1988) states that reliability is a necessary characteristic of any good test, for its valid at all, a test must first reliable as a measuring instrument. The reliability of test is characteristically presented by means of reliability coefficient or the standard error measurement.

According to Zawawi (2012:46), the procedure to analyze the correlation, first makes two column. The first column is the score of odd items and the second column is the score of even items, after the score of odd items and the score of even items are input, then click analyze correla bivariate, input both scores into variables, then click correlation coefficients pearson. In the option, click mean and standard deviation, click continue, then click OK. The researcher define the reliability of the test in order to find out the stability of the test by using SPSS16.0.

3.3.3 Procedure of collecting data

The researcher to collect data using some procedure, for the first the researcher making reading test especially descriptive test for pre - test and post- test.

The second, the researcher takes two subject, which consist of experimental group and control group, both of them are given pre-test and post-test get the first data before the treatment. After the researcher getting data from pre-test, the researcher give treatment four times to the experimental group by applying peer and self assessment strategy. But in control group the researcher don't give treatment. So the researcher gives post-test for two group after the treatment is given to the experimental group. The third, researcher give post test for two group, here to determine the outcomes of the use of peer and self assessment whether it has significant effect on students' reading ability or not.

3.4 Data Analysis

This section describes the procedures and formula to analyze the data from pre-test and post-test of reading ability. The researcher analyzes the data by using independent sample t-test, because subjects were small and the groups were independent.

3.4.1 Homogeneity test of variance

The researcher used Levene's test of homogeneity of variance. The purpose of Levene's test is to calculate the equality of variances for two or more groups. The test statistic of levene's test (W) is defined as follows:

$$W = \frac{(N - k) \sum_{i=1}^k N_i (Z_i - Z_{..})^2}{(k - 1) \sum_{j=1}^{N_i} (Z_{ij} - Z_i)^2}$$

Where

W is the result of the test

k is the number of different groups to which sample cases belong

N is total number of cases in all groups

N_i is the number of cases in i th group

Y_{ij} is the value of the measured variable of the j th case from the i th group

$$Z_{ij} = \begin{cases} |Y_{ij} - \bar{Y}_i|, \bar{Y}_i \text{ is a mean of } i - \text{th group} \\ |Y_{ij} - \tilde{Y}_i|, \tilde{Y}_i \text{ is a median of } i - \text{th group} \end{cases}$$

The significance of w is tested against $F(\alpha, K-1, N-k)$ where F is a quantile of the F-test distribution, with $K-1$ and $N-K$ its degrees of freedom, and α is the chosen level of significance (usually 0.05 or 0.01).

According to Zawawi (2012:28) the procedure to analyze homogeneity by using SPSS version 16.0 are as follow: First, make two columns. The first columns a group and the second column is a score, after the pre-test data of experimental group and control group are input, then click analyze compare means independent sample T-test, input the score into test variable and the group into grouping variable, then click define groups to determine group 1 (for experimental) and group 2 (for control), click continue, then click OK.

3.4.2 Hypothesis testing

Before hypothesis testing, the researcher got the students scores of the experimental and control group. The score check for the pre-test and post-test. Independent t-test was used to find out the significant differences between experimental group and control group. Hypothesis testing is a kind of statistical inference that involves asking a question, collecting data, and then examining what the data tells us about how to proceed. in statistical hypothesis testing, there are always two hypotheses. Those are null hypothesis and alternative hypothesis. Null hypothesis is The hypothesis to be tested, the symbol for null hypothesis is H_0 . test the null hypothesis against an alternative hypothesis, which is given the symbol H_a . Independent t-test was used to find out the significant differences between experimental group and control group.

The first step is the hypothesis of this study, can be formulated as follow:

H0: there is no significant effect on using peer and self assessment toward reading ability at seventh grade in SMP Yimi fds Gresik.

H1: there is significant effect on using peer and self assessment toward reading ability at seventh grade in SMP Yimi fds Gresik.

The second step is finding t-value using independent t-test formula hypothesis. T-test was calculated to find out two groups between experimental group and control group from pre- test and post-test. The formula used in calculating t-test

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{S_{\bar{x}_1 - \bar{x}_2}}$$

Where:

t is t value

\bar{x}_1 is average group 1

\bar{x}_2 is average group 2

S is standard error of the two groups

$\mu_1 - \mu_2$ is always defaults to 0

$$S_{\bar{x}_1 - \bar{x}_2} = \sqrt{\frac{S_{pooled}^2}{n_1} + \frac{S_{pooled}^2}{n_2}}$$

Where:

$S_{\bar{x}_1 - \bar{x}_2}$ is standard error of two groups

S^2_{pooled} is variants of the two groups

n_1 is number of sample group 1

n_2 is number of sample group 2

Pooled variance is the average of the two sample variances, allowing the larger sample to be weighted more heavily.

Formula

$$s_{pooled}^2 = \frac{(df_1)s_1^2 + (df_2)s_2^2}{df_1 + df_2} \quad \text{OR} \quad s_{pooled}^2 = \frac{SS_1 + SS_2}{df_1 + df_2}$$

$df_1 = df$ for 1st sample; $n_1 + 1$

$df_2 = df$ for 2nd sample ; $n_2 + 1$

Estimated standard error of the difference:

$$s_{\bar{x}_1 - \bar{x}_2} = \sqrt{\left(\frac{SS_1 + SS_2}{n_1 + n_2 - 2} \right) \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}$$

In calculating T-test, the researcher uses SPSS version 16.0 program.

According in Zamawi (2012 : 28), the steps in analyzing the data of post-test of both experimental and control group are follow: first, input the data of post – test in SPSS program between experimental and control group , then click analyze compare means, independent sample T-test , after that in independent sample T-test, input the score variable into test variable , and for group variable into grouping variable, then click define group, choose group 1 (for experimental) and group 2 (for control) , then click OK.