

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

In this chapter, the researcher discusses how the research will be conducted in detail. The discussion includes research design, research subject, data collections technique, procedure of collecting data and data analysis technique. All those elements are discussed as follows:

#### **3.1 Research Design**

The research design of this research uses quantitative research and it refers to experimental research design because the purpose of this research is to investigate the effect of round robin summarizing on students' reading comprehension. In this research, the researcher uses quasi-experimental research in which quasi-experimental are sometimes called natural experiment because in a school setting, it is impossible for researcher to assign subjects randomly to group in other word the researcher is forbidden to change class arrangement. Quasi-experimental design focuses on treatment and outcome. Hence, the data was taken from pre-test and post-test is to fulfill the purpose of this research. It means that to know the significance difference on students' reading comprehension who are taught using round robin summarizing and students who are taught using summarizing technique. Therefore, pre-test and post-test were given to experimental and control group. Experimental group will use round robin summarizing and the control group is taught using summarizing technique.

In this research, there are two variables. The first variable is the effect of using round robin summarizing as independent variable. The second variable is

students' reading comprehension score as dependent variable. Independent variable is the main variable which is investigated while dependent variable is the variable which is observed and measured to determine the effect of the independent variable. T-test formula was applied to analyze the data.

The teaching activities for both groups can be illustrated as follows:

<b>Group</b>	<b>Pre-test</b>	<b>Treatment</b>	<b>Post-test</b>
Experimental	$X_1$	+	$X_2$
Control	$X_1$	-	$X_2$

**Table 3.1** The research design pre-test and post-test quasi-experimental design

Where:

$X_1$  : Pre-test (before giving a treatment)

+

 : Teaching reading by using round robin summarizing

-

 : Teaching reading by using summarizing technique

$X_2$  : Post-test (after giving a treatment)

### 3.2 Population and Sample

This research was held in SMA Nahdlatul Ulama 2 Gresik in academic year 2016 / 2017 which located on Jl. Akim Kayat VII / 49 Gresik. The population of the research was the tenth grade students of SMA Nahdlatul Ulama 2 Gresik in the first semester 2016 / 2017 academic year whose level of English proficiency was supposed to be some.

<b>Class</b>	<b>Number of Students</b>
X-A	30
X-B	30
X-C	30
X-D	30
X-E	30
Total	150

**Table 3.2** The population of tenth grades students SMA NU 2 Gresik 2016 / 2017

The amount of population in the tenth grade students of SMA Nahdlatul Ulama 2 Gresik in the first semester 2016 / 2017 are 150 students. Because the population is large in other word the researcher decided to use cluster sampling technique to select two classes with the same ability. One class as the experimental group and the other one as the control groups considered that both of the classes are regular class.

By using cluster sampling technique, X-A and X-B were chosen as the sample among those classes. X-A as the experimental group which consists of 30 students and X-B as the control group also consists of 30 students.

### **3.3 Data Collections Technique**

In order to answer the research questions of this research, some data are needed to be analyzed by the researcher. There are two kinds of data needed by the researcher:

#### **3.3.1 Instrument of the Study**

The researcher used some instrument to get the better data. In which, instrument is a tool that is used by research for collecting the data. To get the accurate data, the researcher chooses text multiple choice types for collecting the data.

##### **3.3.1.1 Test**

There are two tests are used by researcher (Pre-test and Post-test) for control group and experimental group. The test is used to know whether there is significance difference on students' reading comprehension using round robin summarizing or not. Actually, the tests of pre-test and post-test are different but, the topic of the material is same. There are same in format,

instruction, level of difficulty and allocated time. The researcher decided to use the multiple choice type in the reading test of pre-test and post-test. There are 20 items in every tests, it means that 20 items for pre-test and 20 items for post-test then, every correct answer could 5 points and incorrect answer could 0 points, totally 100 points. Time allocation for students to finish the reading test is 90 minutes.

Before giving the test the research measure the validity and reliability of test to know whether the test are propend to be given for students or not by doing try out. The researcher ensured the validity of the research by matching the test item with the curriculum. Then for ensuring the reliability of those test, the researcher conducted the try out to other class which is X-D consists of 30 students.

#### **3.3.1.1.1 Try Out**

Before the researcher conducted pre-test and post-test, try out is done by the researcher. The purpose of the researcher conducted the try out is to know whether the validity and reliability of test are good or not. Try out is done to other students that are not included in this research. The research conducted try out to tenth grade students in the same level class but different period. Try out will be tested in class X-D while the pre-test and post-test will be tested in class X-A and X-B after the result and analysis of try out.

#### **3.3.1.1.2 Pre test**

After the test item had been analyzed in terms of validity and reliability, the pre-test would be conducted before the treatment given for

experimental and control groups. The researcher gives the students 60 minutes to finish their pre-test.

#### **3.3.1.1.3 Treatment**

When the pre-test had been conducted, the treatment was implemented to experimental and control group and it was handled by the researcher herself. The researcher taught reading narrative text both of experimental and control groups. In experimental group the researcher delivered the material by using round robin summarizing while the control group giving treatment by using summarizing technique. The researcher uses summarizing technique in control group because strategy of summarizing has similarity with round robin summarizing when students identify the main idea a paragraph or composing a concise statement from a longer passage. The differences between them are for experimental group, the result of the students in summarizing will be shared with their team discussion but for control group, the result of the students in summarizing no need to share.

#### **3.3.1.1.4 Post-test**

The post-test was given after the researcher gave treatment. Post-Test was given to investigate the effect of the treatments. It would be given to both of experimental and control groups. The items that were used for post-test were similar of the test items of pre-test. The result of post-test is the final data for this research.

### **3.3.2 Procedure of Collecting Data**

In this research, there were several steps conducted to collect the data required. The first step the researcher is prepared the lesson plans to implement

for meetings in the treatment sessions. The first and the last meetings were allocated for pre-test and post-test, while the rest meetings were allocated for treatments sessions. The lessons plan arranged for this research based on the syllabus. To know whether the validity and reliability of test are good or not the researcher conducted try out before conducted pre-test and post-test. The researcher is giving pre-test both of the class before implementing round robin summarizing and getting the score of the test. After the researcher conducted pre-test, the researcher giving treatment to experimental class by implementing the treatment using round robin summarizing. Then the researcher giving post-tests both experimental and control group. Post-test is administrated to know whether there is significant difference before and after the treatment.

### **3.3.3 The Validity of Test**

According to J. Charles Alderson (1995:296), validity is a test measures relate with the way to make the test score was interpreted. In this research, validity is very important to measure what they want to measure it using instrument. It means that a test is said to be valid if it measures accurately. Before conducting pre-test and post-test as instrument of the research, the test should be tried out using validity and reliability. In order to check the validity of the test, the researcher divided into two steps. Those are checking content validity and construct validity. To determine the content validity the researcher check based on the syllabus. Meanwhile to find the construct validity the researcher uses SPSS 16, 0 programs to compute descriptive statistic.

By SPSS statistical 16, 0 program the step for determining validity of the test were open SPSS 16, 0 programs, choose file and New Data. Then, input the

data in the data view. For counting the test validity, click Analyze menu, correlates, bivariate. Input all variables in the variables part, give checklist in Pearson and choose two tailed in Test of significance then click OK. The last, the result of validity will appear in the output.

For checking validity of test items, the researcher conducted tries out once in other classes beside experimental and control group who had same ability with those group. The researcher only conducted try out for once.

The researcher uses testing the validity in presented below:

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

Where:

r = Pearson product-moment correlation

x = Score item which its validity is answered

y = Total score gained by the sample

N = Number of respondent

The index validity of each item was interpreted with the following criteria:

<b>Raw Score</b>	<b>Interpretation</b>
0.8-1.0	Very High
0.6-0.8	High
0.4-0.6	Moderate
0.2-0.4	Low
0.0-0.2	Very Low

**Table 3.3.3** Criteria Validity Test Item

### 3.3.4 The Reliability of Test

Reliability is the degree an assessment tool procedure stable and it shows a constant result, Colin Phelan and Julie Wren (2005-2006). It means that reliability was necessary in the research to assess the good instrument or not. The basic

concept of reliability of a test is consistency of the test score. To define the reliability in the test, the researcher uses SPSS 16,0.

The formula was used to check the reliability of multiple choice items is presented below:

$$r_i = \frac{k}{k-1} \left\{ \frac{St^2 - \sum p_i q_i}{St^2} \right\}$$

Where :

$p_i$  = Proportion of students passing the item 1

$q_i$  = Proportion of students failing the item ( $q = 1-p$ )

$\sum p_i q_i$  = Sum the product of  $p_i q_i$  for all items

$k$  = Number of items

$St^2$  = Variance pf the whole test (standard deviation squared)

The reliability of the test could be classified with the following criteria:

<b>Coefficient Correlation</b>	<b>Interpretation</b>
0.0-0.20	Low
0.20-0.40	Moderate
0.40-0.70	High
0.70-1.00	Very High

**Table 3.3.4** Criteria Reliability Test

### 3.4 Data Analysis Technique

The purpose of analyzing data is to answer the research problem with get through pre-test and post-test. The researcher uses independent sample T-test because the sample is small and the groups are independent. The steps applied in analyzing pre-test and post-test were scoring, normal distribution test, homogeneity test, if the data is normally distributed and homogeneity, independent T-test was conducted to analyze the significance different between experimental group and control group.

Assumption for the independent T-test:

- (1) Independence: Observation within each sample must be independent
- (2) Normal distribution: The score in each population must be normally distributed
- (3) Homogeneity of variance: Two populations must have equal variance.

$$t = \frac{Md}{\sqrt{\frac{\sum X^2 d}{N(N-1)}}}$$

Where :

t = The coefficient of the formula

Md = Mean of deviation (pre test and post test)

X<sup>d</sup> = Deviation of each subject

$\sum X^2 d$  = The sum of squared of deviations

N = The total number of subject

Db = N-1 (degree of freedom)

T-test is used to check the effect of using Round Robin Discussion Combined Summarizing Technique (R2DCS) on students' reading comprehension. Then, to know the degree of effectiveness of the treatments, the researcher applies the formula of DRE (Degree of Relative Effectiveness) as follows:

$$DRE = \frac{MX_2 - MX_1}{MX_1} \times 100\%$$

Where :

DRE = The degree of relative effectiveness

MX<sub>1</sub> = Mean of pre-test

MX<sub>2</sub> = Mean of post-test

### 3.4.1 Homogeneity Test of variance

Homogeneity test was done to know the variant of the data students' reading comprehension in narrative text are same or not. In experimental class and control class the researcher analyzed it by using test of homogeneity. For homogeneity test, the researcher uses Levine's test of homogeneity in SPSS 16,0 program. The test of Levine's defines as follow:

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

Where:

W = The result of the test

K = The number of different groups to which the sampled cases belong

N = The total number of cases in all groups

N<sub>i</sub> = The number of cases in the i group

Y<sub>ij</sub> = The value of the measured variable for the j<sup>th</sup> case from i<sup>th</sup> group

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

To analyze the homogeneity, the researcher uses SPSS 16.0 program.

The homogeneity assumption is checked in SPSS by Levine's test with the following procedures.

First, makes two columns. The first column is a group and the second column is a score after pre test data of both experimental and control group are input, then click analyze then compae means then independent sample T-test, input the score into test variable and the grouping variable, then click define groups to determine group 1 (for experimental) and group 2 (for control) click continue and the last click OK.

### 3.4.2 Hypothesis Testing

Independent T-test is used to find out the significance between experimental group and control group. Here the steps of T-test calculation. The first is started the hypothesis and setting the alpha at the level 0.05 (two tailed test). In this research, the hypothesis used null hypothesis that said “there is significance difference on the use round robin summarizing on students’ reading comprehension between experimental group and control group.

The hypothesis can be formulated as follow:

Null hypothesis is  $\mu_1 - \mu_2 = 0$  ( $\mu_1 = \mu_2$ )

Alternative hypothesis is  $\mu_1 - \mu_2 \neq 0$  ( $\mu_1 \neq \mu_2$ )

$H_1$  = Students’ reading comprehension through round robin summarizing

$H_2$  = Students’ reading comprehension through without round robin summarizing

Hypothesis testing in this research was:

$H_0$  = There is no significant difference on applying round robin summarizing on students’ reading comprehension between experiment and control groups

$H_1$  = There is significant difference on applying round robin summarizing on students’ reading comprehension between experiment and control groups.

The second step was finding t-value using independent T-test formula and comparing the probability with the level of significance for testing the hypothesis. Determining t-critical in table t (0.05) df, the researcher compared t-observed and t-critical. If  $t_{obs} < t_{critical}$ , the researcher should accept the

null hypothesis and if  $t_{obs} > t_{critical}$ , it means the researcher can accept the alternative hypothesis.

T-test was calculated to find out the comparison of two means between experimental and control group pre and post test, in analyzing the data, the researcher used independent T-test formula. The formula is:

$$t = \frac{(x_1 - x_2) - (\mu_1 - \mu_2)}{S_{x_1 - x_2}}$$

Where:

t = Is t-value

$x_1$  = Is average group 1

$x_2$  = Is average group 2

S = Is standart error of two groups

$\mu_1 - \mu_2$  = Is always defaults to 0s

$$S_{x_1 - x_2} = \sqrt{\frac{S^2_{pooled}}{n_1} + \frac{S^2_{pooled}}{n_2}}$$

Where:

$S_{x_1 - x_2}$  = Is standart error of two groups

$S^2_{pooled}$  = Is variants of two groups

$n_1$  = Is number of sample group 1

$n_2$  = Is number of sample group 2

Pooled variance = The average of two sample variances, allowing the larger sample to weight more heavily.

Formula:

Estimated standart error of the difference

$$S_{x_1-x_2} = \sqrt{\left(\frac{SS_1 + SS_2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

Therefore, the results of the test were subjected for the following statistical procedures. To calculate t-test, the researcher uses SPSS (Statistical product and service solution) version 16.0. The post test score experimental and control group were analyzed by using SPSS version 16.0 with the following procedures. The first procedure was inserting the post test data both experimental and control group using the data view. The second procedures were going to the analyze menu, selecting compare means, then choosing independent sample t test output, automatically it could answer to the research question about the comparison between two groups. The final result was collected by means of pre test and post test score. It is aimed to find out the significance of the effect round robin summarizing on students' reading comprehension.