CHAPTER III

RESEARCH METHOD

This chapter focuses on the discussion of the aspects of research methodology that cover research design, the subject selection stage, data collection and data analysis.

3.1 Research Design

The research design of this study uses quantitative research and it belong to experimental research design because this study is to investigate the effect of using three questioning strategy on reading comprehension for junior high school. In experimental research, it is usual to differentiate between independent variable and dependent variable. Independent variable is what is varied during the experiment. It is what the researcher thinks will affect the dependent variable. While, dependent variable is what will be measured. It is what the researcher thinks will be affected during the experiment. In this study, the researcher wants to know the effect of three questioning strategy on reading comprehension at eight grade in SMP Darul Islam Gresik. So that, the independent variable is three questioning strategy and for the dependent variable is reading comprehension.

According to Ary (1990:336), the goal of the researcher is to use designs that provide full experimental control through the use of randomization procedures. But, there are many situations that impossible for the researcher to do

true experiment design because she may not possible to random the students in the class. Here, the researcher uses quasi-experimental research design because in this school the headmaster forbidden the researcher to random the class. Based on Best (1981:72), Quasi-experimental design happens because the random process of experimental and control group cannot be applied. The design chart can be seen in figure below:

Group	Pre-test	Treatment	Post-test
Experimental	+	+	+
Control	+	-	+

Table 1. Pre-test, Post-test Quasi Experiment Design

Where:

\+ : With treatment of Three Questioning Strategy

\- : Without treatment of Three Questioning Strategy

3.2 Population and Sample

Rakhasandy (2012: 31) stated that if the number of the respondents is less than a hundred, it is better to take all the subjects. On the other hand, if the number of the respondent is more than a hundred, it is allowed to take 10%-15% or 20%-25% or more of population as the respondents.

Here, the researcher uses cluster sampling because it is very difficult to list all the members of a target population and select the sample from among them. In this case, it would be more convenient to study subjects in naturally occuring

groups or clusters. The researcher would choose a number of schools randomly from a list of schools and then include all the students in those schools in the sample. This kind of probability sampling is referred to as cluster sampling because the unit chosen is not an individual but a group of individuals who are naturally together. (Ary, 1990: 175).

The population of this research is the first semester students of eight grade at SMP Darul Islam Gresik in the academic year of 2014/2015 which is consist of three classes, those are: A, B, and C. Meanwhile, the researcher decided to choose only two classes from the populations as the sample of the study. The samples of this study are A class as experimental group consist of 25 students and C class as control group consist of 23 students and the total number of the sample are 48 students. The researcher chooses those two classes because those two classes has the same characteristic of the students. The students in those classes are active in the class when learning process especially in English class than B class. Actually, the skill of the students in A, B, and C class are same but the researcher choose the active one as her study.

3.3 Data Collection

It discusses about research instrument and procedure of how the researcher conducts this research.

3.3.1 Research Instrument

In this study, the researcher uses test in collecting the data. There are two tests that are used by the researcher. Those are pre-test and post-test. Pre-test and post-test will be conducted to the experimental group and control group. It is to find out whether the learners especially for experimental group makes progress in their reading comprehension or not. The researcher designed of pre-test different from post-test but the tests are still equal in the term of topics and items. She designed reading test by herself from book sources of the school and the internet.

Pre-test and post-test, selection of tests adapted with the syllabus of SMP VIII grade in the first semester are; describing people, describing animals, and describing things. The items of pre-test and post-test are 46 items of fill in the blank. The test can be elaborated as follows:

1) Pre-test

Pre-test is done by the experimental and control group. It is conducted for knowing the previous ability in their reading comprehension. They are asked to read the text and answered the questions followed. The items of pre-test are 46 items of fill in the blank. They have limited time to do it. Book and dictionary are not allowed. The questions of the pre-test is about descriptive text in the first semester.

2) Post-test

It is like pre-test. Post-test is also done by the experimental and control group. The procedure of the post-test has the same procedure with the pre-test, but this post-test was conduct after giving the all treatment to the experimental group only. It is to measure the result of the treatment. It is success or not. The items and topic of post-test are same with the items and topic given to the experimental and control group in pre-test.

3.3.2 Validity and Reliability

Before conducting pre-test and post-test as instrument of the research, the test should be tried out in terms of it is validity and reliability.

3.3.2.1 Validity

It is used to measure the level of validity instrument. The instrument called valid by checking the content validity, to determine the content validity, the researcher helped by the English teacher to check the instrument based on English curriculum and syllabus. The content of the tests appropriates with the handbook which taken from describing a particular thing, like people, animals, and things.

After the researcher looked the book and syllabus, the researcher made pre-test was matching in the syllabus, lesson plan, and handbook. If it is done and the pre-test was valid, pre-test will be given to the students. Before making the items of pre-test and post-test, the researcher makes the table of an analysis from the syllabus and the table of makes the lesson plan from the syllabus. It can bee seen in appendix 1 and 2.

Besides content validity, the researcher also uses languange testing assessment to know how many items that the researcher make is belong to accept, revise or reject items. Researcher made 46 questions and after formulate the items, she find that there are 25 items which is belong to revise or reject items, so the rest items is belong to accept items. The researcher modify the items that belong to revise or reject items because those items are imbalance. There are some items that too easy so, it makes the students easy to answer and there are some items that too difficult so, the students get difficulty to answer the questions. After the researcher revise 25 items which is belong to revise or reject items, she held the second try out to know whether it is proper to be tested or not. Then, the researcher formulate the result and from 25 items, all of the items are belong to accepted items so, the total items that the researcher used are 46 items. The result of the validity can be seen in appendix 3.

3.3.2.2 Reliability

The basic concept of reliability of a test is consistency of the test score. Reliability measurement supplied an instrument of how much a variance might expect under different condition. The reliability of the test is characteristically presented by means of reliability coefficient or the standard error of measurement. The researcher makes 46 items of fill in the blank. After the students doing the tests and giving score, the researcher will measure the reliability of the test by using split half reliability. Split half reliability is the items which is divided into two groups by collecting the items which is belong to odd number and items which is belong to even number because the arrangement of the test come from an easy number until another number which is difficult one. From the explanation

above, it hopes that the items should quite difficult than the items before and at the same time, the items quite easy than the items after it. It is hope by grouping the odd number and the even number, the researcher will get the balance of items which is belong to an easy items to the difficult items as the requirement of the split half reliability. (Djiwandono, 2011: 177).

According to Zawawi (2012: 46), the procedure to analyze the correlation; first, makes two columns. 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 → Correlate → Bivariate, input both scores into variables, then click Correlation Coefficients Pearson, in the option, click Mean and Standard Deviations, 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 SPSS 16.0.

The way to interpret the reliability of the test by the significance with α (0,05), that if sig. (2-tailed) > α (0,05), the researcher should accept the H_0, but if sig. (2-tailed) < α (0,05) so, the researcher can reject H_0, it means H_1 is accepted. This study uses coefficient of correlation for the reliability, based on Young in Zawawi (2012), there are four criteria for coefficient of correlation:

1. ± (0,7- 1,0) : It means that there is a high correlation
2. ± (0,4- 0,7) : It means that there is a medium correlation
3. ± (0,2- 0,4) : It means that there is a low correlation
4. ± (< 0,2) : It means that there is no correlation/can be rejected

The result of split half reliability as follow:

Correlations

		Odd	Even
Odd	Pearson Correlation	1	.680**
	Sig. (2-tailed)		.000
	N	25	25
Even	Pearson Correlation	.680**	1
	Sig. (2-tailed)	.000	
	N	25	25

**. Correlation is significant at the 0.01 level (2-tailed).

On the table above shows that the sig. (2-tailed) of both groups are 0,000. It shows that the significance less than α (0,05) level or (0,000 < 0.05). It means that there is a correlation between the odd items and the even items. Then, on the table of Pearson Correlation shows that the score (0,680) it means that both odd items and even items are belong to high correlation of reliability.

3.3.3 Procedure

The procedure of collecting the data, the researcher conducted the following procedure: for the first, the researcher makes English test for pre-test and post-test. Both pre-test and post-test consist of describing certain object. The second, the researcher takes two subjects which consist of experimental group and control group they are VIII A and VIII C, then both of them are given pre-test to get the first data before the treatment.

After getting the first data from pre-test, the researcher gives treatment for four times to the experimental group by using three questioning strategy, on the

other hand, control group is without giving treatment. Then, the researcher gives post-test for two groups after the treatment is given to the experimental group. The third, researcher give post-test to the experimental and control group to determine the outcomes of the use of three questioning strategy whether it has significant effect on students' reading comprehension or not.

1) Schedule

During doing this study, the researcher has schedule as follow:

No	Time	Activity
1.	July 18th, 2014	Giving pre-test
2.	August 8th, 2014	Giving first treatment
3.	August 9th, 2014	Giving second treatment
4.	August 15th, 2014	Giving third treatment
5.	August 16th, 2014	Giving fourt treatment
6.	August 22th, 2014	Giving post-test

3.4 Data Analysis

The data analysis is carried out in order to answer the research problems from pre-test and post-test with the data get through pre-test and post-test. The researcher analyzes the data by using Independent sample t-test, because subjects were small and the groups were independent. T-test independent samples are carried out to determine whether the differencess between experimental group and control group. The researcher used SPSS version 16.0 to compute descriptive statistics, descriptive statictics are conducted in order to find the effect of the

treatment whether there is positive effect by using three questioning strategy. (Rakhasandy, 2012: 39)

Assumption for independent t-test are: (1) Independence: observation within each sample must be independent (they don't influence each other), (2) Normal Distribution: the score in each population must be normally distributed and (3) Homogeneity of Variance: the two populations must be equal variances (the degree to which the distributions are spread out is approximately equal).

(Butler, 1985: 84) reinforced that, assumptions for the independent t-test about the distributions of the populations from which the samples are drawn: that they are approximately normal and that they have approximately equal variances.

In this study, the researcher only uses independence and homogeneity of variance because this study is quasi-experimental design. The researcher do not need normal distribution because she determine the subjects by taking the classes randomly from a list of schools and include all the students to be the sample who are naturally together. (Ary, 1990: 175). If they already homogeneous, they certainly normal distribution. So, it is enough if the researcher only uses independence and homogeneity of variance.

3.4.1 Homogeneity Test of Variance

Homogeneity test, the researcher used one Levene's test of homogeneity test in SPSS version 16.0. the prurpose of this test was to find out whether the variance of pre-test and post-test of experimental and control groups are homogeneous.

The test statistic of Levene's test (W) is defined as follows:

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

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_i : The number of cases in the ith group,

Y_{ij} : The value of the measured variable for the j^{th} case from the i^{th} group.

$$Z_{ij} = \begin{cases} \left| Y_{ij} - \bar{Y}_{i.} \right|, & \bar{Y}_{i.} \text{ is a mean of i– th group} \\ \left| Y_{ij} - \tilde{Y}_{i.} \right|, & \tilde{Y}_{i.} \text{is a median of i– th group} \end{cases}$$

The significance of W is tested against F (α, 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).

Based on Zawawi (2012: 28), the procedures in analyzing the homogeneity by using SPSS version 16.0 are as follow: first, makes two columns. The first column is a group and the second column is a score, after the pre-test data of both experimental 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

Independent t-test was used to find out the significant differemces between experimental and control groups. The steps of t-test calculation are:

The first step is the hypothesis of this research. The hypothesis can be formulated as follow:

H_0 : There is no significant effect on using three questioning strategy on reading comprehension at 8th grade in SMP Darul Islam Gresik.

H_1 : There is significant effect on using three questioning strategy on reading comprehension at 8th grade in SMP Darul Islam Gresik.

The second step is finding t-value using independent t-test formula hypothesis. T-test was calculated to find out the comparison of two means between experimental and control groups, pre-test and post-test. In analyzing the data the researcher used independent t-test formula. The formula used in calculating t-test 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 standard error of the two groups

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

Where:

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

$S_{x_1 - x_2}$ 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: the average of the two sample variances, allowing the larger sample to weight more heavily.

Formula:

$$S^2_{pooled} = \frac{(df_1)s^2 1 + (df_2)s^2 2}{df_1 + df_2} \quad or \quad S^2_{pooled} = \frac{SS_1 + SS_2}{df_1 + df_2}$$

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

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

Estimated standard error of the difference:

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

In calculating t-test, the researcher uses SPSS version 16.0 program. According to Zawawi (2012: 28), the steps in analyzing the data of post-test of both experimental and control group are as 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.