CHAPTER III

RESEARCH METHOD

This chapter presents the research design, research variable, population and sample, data collection technique, and data analysis technique.

3.1   Research Design

The research entitled "the effectiveness of think-talk-write as a collaborative learning strategy to improve the students' ability in writing descriptive text in MTs Nurul Islam was considered as an experimental research. It is because the data was taken from experiment and observe the classroom condition which occurred naturally and the purpose is to quantify data and results from sample to the population into number such us the percent of students' ability in writing descriptive. It means this research is belonging to quantitative.

According to Aliga and Gunderson (2002) stated that Quantitative research is collecting numerical data using mathematically based methods (in particular statistics) to explaining the phenomena." It means that the quantitative is collecting the numerical representation data to explain a particular phenomenon and manipulation of observation in the form of naturally quantitative data.

Therefore, these studies use experimental research to collect the data. Montagomary (2005:1) defined that experimental is a process to identify the observation or phenomenon by as test or series of test. In this study, researcher should pay attention to the experimental and control variables and the result of the experimental. This research consists of two groups. There are experimental group

and control group. The experimental group is the group in scientific experiment where the experimental is performed. The experimental group was exposed to the independent variable being tested and gives the changes observed and recorded and the control group is not. Both the groups were given a pre-test. The treatment is given in the experimental group but in control group is without given a treatment just taught a usual. However both of the experimental groups and control groups were given the same material, pre-test and post-test at the same time. The design of pre-test and post-test in the experimental group is:

Group	Pre-test	Treatment	Post-test
E	X1	T	X2
C	X1	-	X2

Table 3.1 Quasi Experiment Design

Remarks:

E   : The experimental group (which given a treatment)

C   : The control group (which not given a treatment)

X1 : The pre-test (before the experimental treatment)

T   : The treatment

X2 : The post test (after giving a treatment)

In this case, researcher uses the eighth grades of MTs Nurul Islam. Researcher decided to choose VIII-A and VIII-B in her observation.

3.2   Research Variable

Variable is something that can be changed, such us characteristic or value. In this study the variable are think-talk-write strategies, collaborative learning,

teacher, students and scores or value. Based on the function and the correlation, variable divided into two types there are dependent variable and independent variable. Dependent variable is the variable that is measured by the experimenter. It is the impact or the result of the study. Dependent variable can be influenced by another variable. In contrast, independent variable is the variable that is controlled and manipulated by the experimenter. It is the cause of the study. Independent variable can't influenced by another variable. Therefore, the purpose of variable is to measure the qualities and to describe how to classify the subjects into groups or categories.

In this study, the independent variable is a Think-Talk-Write technique while the dependent variable is the scores of the students' writing of eight graders at Junior High School.

3.3   Population and Sample

Population is the subject where the research data is collected. According to Bartz (1976:152) explains that population is a group of elements that are alike in one or more characteristics. Then sample is a part of the population. It is smaller in number than the size of the population (Bartz, 1976:152). There are several types of sample, they are random sample, stratified sample, and cluster sample. Random sample can be used if all the population has the same chance to be the sample. Stratified sample can be used if the population has the small groups/levels which each level has different characteristics. And cluster sample is the way to collect the sample by random of the group/class to get weather the class that is representative as the sample or not. It is used if the proportional

sampling technique can't be used.

Population of this study is the eighth graders of Junior High School in MTs Nurul Islam Pongangan Gresik. It is consist of seven classes. Two classes were taken as the sample of this study there are VIII-A is the experimental group and VIII-B is the control group.

3.4 Data Collection Technique

Data collection is the process of gathering and measuring information. There are stages to collect collection:

3.4.1 Instrument of the Study

Instrument is a tool used to collect the data. It is the most important components of research design because the researcher gathers or collects valid data or information from research instrument. Without research instrument, impossible the researcher can collects valid data. A good instrument will reflect the good result. It is because the instrument takes in important role in collecting valid data. Data is gathered to answer research question, it is refers to the information.

3.4.1.1 Test

Instrument that will be used to collect data suitably with this study is test. Test is a set of techniques, procedures, and items that constitute an instrument of some sort that requires performance or activity on the part of the test taker. A test is standard question of cognitive knowledge or skill (McMillan, 1992:114). There were two tests that was given to the both experimental and control groups, they are pre-test and post test.

3.4.1.1.1 Pre Test

Before using the technique as a treatment, the researcher arrange pre-test to the subjects. Pre-test was arranged in both experimental and control group. Pre-test was used to know the basic ability of students in writing descriptive text. The researcher gives the students 60 minutes to finishing their pre-test. Pre-test was used to know the ability before giving treatment for the students.

3.4.1.1.2 Post Test

Post test was used to know the improvement the students' ability after getting a treatment. The time allocation was 60 minutes. The research subjects were given a topic, descriptive text then they had to find the ideas until produce a writing descriptive paragraph. The post test has same procedure with the pre test.

3.4.2 Procedure of Data Collection

The data of this study was in form of number. Then the data were collected through a test. The test is used to know and investigated the students' ability. The researcher used pre-test and post-test to test in this study. The data of this research consists of primary and supporting data. The primary data were taken from the writing ability test. The researcher chooses the subjects and divine group who is taught by Think-Talk-Write as Experimental Group and group who is taught without use Think-Talk-Write as a control group. The teacher collects the result of pretest.

The last stage in collecting the data is using post-test. Post-test was arranging in both experimental and control group. Post-test used in order to know whether or not there was a significant difference between students' ability in

writing descriptive text before and after treatments such us in terms of content and vocabulary. The students in control class did the post-test after they were taught without getting a treatment. Whereas in experimental class the students do the post-test after getting a treatment. The time to do the post-test was appropriate with the schedule. They worked individually in doing the post-test. The last is analyzing the data from pre-test and post-test by using SPSS 16.0 program.

3.4.3 Validity and Reliability

A test is valid it is appropriate, meaningful, and useful in term of purpose of the test (Brown, 2004:22). There are three kinds of validity: content validity, criterion-related validity, and construct validity. In this study the test was analyzed by using content validity and construct validity. To determine the content validity, the researcher asked the English teacher to check the instrument validity. The content validity was measured by relating the content of the instrument in Indonesian curriculum. Whereas to define the construct validity, the researcher used the assistance of SPSS version 16.0 to calculate descriptive statistics the instrument validity was examined by analyzing item was good or not. The formula to testing the instrument is:

$$\text{r-xy} = \frac{N(\sum Xy) - (\sum X)(\sum Y)}{\sqrt{\{N\sum X^2 - (\sum X)^2\}(\sum Y^2 - (\sum y)^2)}}$$

Where :

rxy : the coefficient of correlation X and Y variable or validity of each item.

N : the number of students/subject participating in the test

X : the sum of X scores

Y   : the sum of Y scores

Y   : the sum of total score for each student.

X   : the sum of total score in each item.

XY : the sum of multiple score from each student with the total score in

each item

X2 : the sum of the square score in each item and,

Y2 : the sum of the total score from each student each item square is

determined by using these following categorizations:

The test should determine whether the items of the test represent the objective. Reading and writing included to the objective item whereas speaking and writing included to the subjective. This study included in subjective test, the content validity was measured by relating the content of the instrument to Standard Isi in Indonesian curriculum. The instrument of this study is in the form of writing test which measure the ability in writing descriptive text. It was matched with the Competence Standard and Basic Competence of Standard Isi in Indonesian curriculum. Descriptive text stated in Standar Isi, it is one of the genres that should be understood and mastered by eight grades students in Junior High School.

The test is reliable when the test is consistent and trusty in measurement (Brown:2001,386). The reliability is used to know whether the test is reliable or not. To measure the reliability of a subjective test, such us writing test, the inter-raters were used to measure the consistency of the test. The procedure of determining the reliability is administering test once, then having two different people score the test. It will get two data of scores. Then, the last is computing

correlations between those three sets of scores. To compare the reliability of the test, the formula of Pearson r is conducted. The formula is :

$$r = \frac{\frac{\sum XY}{N} - X\,\bar{Y}}{Sx\,Sy}$$

Where:

N = the number of pairs of scores

= the sum of the products of each pair of scores

X = the mean of the X distribution

Ȳ = the mean of the Y distribution

Sx = the standard deviation of the X distribution

Sy = the standard deviation of the Y distribution

3.5 Scoring Guide

According to Heaton (1975:36) stated that the scoring guide used the method of analytical and was chose because it was ideally suited to the classroom situation, its certain features have been graded separately so that students was able to see how his particular grade had been obtained. This study use scoring guide based on the standard criteria of writing compositions. This guidance assesses students' composition in five areas of writing component namely content, organization, vocabulary, language use, and writing mechanic.

The five of writing component above have levels which is divided into: They are 'Excellent to Very Good', 'Good to Average', 'Fair to Poor', and 'Very Poor'. In each level, those are stated the criteria that guide the composition, to

29

decide on which level the composition are. There are also stated the point of each

level. They are can be seen as the following table.

No.	Aspect	Score	Criteria
1.	Content	30-27	Excellent to very good; knowledgeable-substantive-etc.
		26-22	Good to average; some knowledgeable of subject-little substance-etc.
		21-17	Fair to poor; limited knowledgeable of subject-substantive-etc.
		16-13	Very poor; knowledgeable-non substantive-etc.
2.	Organization	20-18	Excellent to very good; fluent expression-ideas clearly stated-etc.
		17-14	Good to average; somewhat choppy-loosely organized but main ideas stand out-etc.
		13-10	Fair to poor; non fluent-ideas confused or disconnected-etc.
		9-7	Very poor; doesn't communicate- no organization, etc.
3.	Vocabulary	20-18	Excellent to very good; sophisticated range-effective word/idiom choice and usage-etc.
		17-14	Good to average; adequate range-occasional errors of word/idiom form, choice, usage but meaning not obscured-etc.
		13-10	Fair to poor; limited range-frequent error of word/idiom form, choice, usage-etc.

		9-7	Very poor; essential translation-little knowledge of English vocabulary-etc.
4.	Language	25-22	Excellent to very good; effective complex construction-etc.
		21-19	Good to average; effective but simple construction-etc.
		17-11	Fair to poor; major problem in simple construction-etc.
		10-5	Very poor; virtually no mastery of sentence construction rules-etc.
5.	Mechanics	5	Excellent to very good; demonstrate mastery of conventions-etc.
		4	Good to average; occasional errors of spelling, punctuation-etc.
		3	Fair to poor; frequent errors of spelling, punctuation, capitalization-etc
		2	Very poor; no mastery of conventions-dominated by errors of spelling, punctuation, capitalization-etc.

To get the valid score, this study use two teachers and researcher itself to giving the score. For the teacher, the criteria to be participant who given of writing score to get the valid and objective result is having good English for both speaking and writing, having experience in teaching English for at least four years. The class should be heterogeneous and the teacher should able to design the writing itself. The last, teacher has rich experiences in their education.

3.6   Data Analysis Technique

After getting the data, the researcher compared the result of pre-test and post-test. The scores were analyzed by using *t-test* to measure the significance difference of the result between the experimental group and the control group to answer the hypothesis weather it can't be rejected or rejected. Since the result of the study was determined by the comparison of pre-test and post-test (McMillan, 1992:174). The researcher take two students' result of writing descriptive was compared by using *t-test* formula. It is used to compare two means to see the level of significance is less than .05 (t .05). To get the result some formulas are needed:

The formula stated from Bartz (1976) as followed:

1. Tabulating the score from pre-test and post test

2. For calculating the mean is as follows:

μ   =   X / N

Where :

μ   =   the symbol for the population mean

X   =   the sum of students' score

N   =   the total number of scores

3. Determining standard deviation

$$S = \sqrt{\frac{\Sigma X^2}{N} - X^2}$$

Where :

S   =   standard deviation

X^2 =   is the sum of the squared scores

X^2 =   square mean of the distribution

4. Determining standard error of the difference

$$S_{DS} = \sqrt{\frac{N1S1^2 + N2S2^2}{N1+N2-2}\left(\frac{1}{N1} + \frac{1}{N2}\right)}$$

Where :

S_{DS} = standard error of difference

N1 = size of the first respective sample

N2 = size of the second respective sample

S1 = standard deviation of the first sample

S2 = standard deviation of the second sample.

5. Computing t-test

$$t = \frac{X1 - X2 - 0}{S_{DS}}$$

6. Explaining the result

The t-test formula is used to analyzed the significant difference between pre-test and post-test between experimental and control groups.

Meanwhile to analyze the result of questionnaire, the formula is used as follows :

Percentage = the number of students' answer each question X 100%
                      the number of the students

3.6.1 Normality Distribution Test

To analyze the normal distribution, this study use Kolmogorov Smirnov Sample Test in SPSS version 16.0. It is aimed to find whether or not the distributions of pre-test score in the two groups are normally distributed. In this case, the result of the normality the distribution is also used to find out whether or not the hypothesis that had been determined is accepted. The first step in

calculating the normality distribution test state that the hypothesis: H0: the score of the experimental and the control group are normally distributed.

The second step in calculating the normality distribution test tried to compare the Asymp. Sign.(probability) with the level of significance for testing the hypothesis. If the Asymp is more than the level of significance (0,05) the null hypothesis is accepted; the score are normally distributed. On the other hand if the Asymp is less than the level of significance (0,05) the null hypothesis is rejected. The Procedure Analyze is you can press Menu, choose Nonparametric test after that you choose 1 – sample K-S click Exact choose monte carlo 99% and the last click ok.

3.6.2 Homogeneity Test of Variance

The analysis of variance, assume that variances are equal across groups or samples. For homogeneity test, the researcher uses Levene's *test* of *homogeneity in SPSS 16.0 version. The test of Levine's test, or P, defines as follow:*

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

Where:

P is the result of the test,

K is the number of different groups to which the samples belong,

N is the total number of samples,

N_i is the number of samples in the ith group,

Y_{ij} is the value of the jth sample from the ith group,

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

The significance of P is tested against F (, k − 1, N − k) where F is a quintile of the F-test distribution, with k − 1 and N − k its degrees of freedom, and is the chosen level of significance (0.05). To analyze the homogeneity, the researcher used SPPS (Statistical Product and Service Solution) version 16.0. The homogeneity assumption was checked in SPSS by Levene's test with the following procedure. The first procedure was inserting the pre test data of both experimental and control group using the data view. The second procedures were going to the Analyze Menu, selecting Compare Means, and the choosing Independent Sample t-test. The last procedure was interpreting the homogeneity test output. In interpreting homogeneity test output, the researcher needed to see Leven's test column to know whether the equality of variance in the two groups of scores were homogeny or not.

3.6.3 Hypothesis Testing

Independent t-test was used to know the significant difference between experimental and control group had to be accepted or rejected. Here were the steps of t-test calculation:

1. The first step was stating the hypothesis and setting the alpha level at 0,05 (two tailed test). In this research, the hypothesis used was a null hypothesis that said, "There is significant difference on the use of Think-Talk-Write in Writing Descriptive Text between experimental and control group." The hypothesis can be formulated as follow:

   Null hypothesis is $\mu1-\mu2=0$ ($\mu1=\mu2$)

   Alternative hypothesis is $\mu1-\mu2$ 0 ($\mu1$ $\mu2$)

H1: The achievement of student's writing through Think-Talk-Write

H2: The achievement of student's writing through without Think-Talk-Write

Hypothesis testing in this research was:

H0: There is no significant difference on the use of Think-Talk-Write in writing between experiment and control groups.

H1: There is significant difference on the use of Think-Talk-Write in writing between experiment and control groups.

2. 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 reject the null hypothesis. In another word, 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 used in calculating t-test is:

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

Where:

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

Pooled variance: the average of the two sample variances, allowing the

larger sample to weight more heavily.

Formula:

Estimated Standard Error of the Difference

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

Clearly, the results of the tests were subjected for the following statistical

procedures. To calculate t-test, the researcher used SPSS (Statistical Product and

Service Solution) version 16.0. The post test score experimental and control

groups were analyzed by using SPSS version 16.0 with the following procedures.

The first procedure was inserting the post test data of both experimental and

control group using the data view. The second procedures were going to the

Analyze Menu, selecting Compare Means, and then choosing Independent

samples t-test. The last procedure was interpreting t-test output. From interpreting

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

pretest and posttest score. It is aimed to find out the significance on the effect of

Think-Talk-Write in Writing Descriptive text.