

## CHAPTER III

### RESEARCH METHOD

This study conducted to find the answer of the research problem states earlier. To clarify these problems, this chapter devoted to the discussion of research design, variables, population and sample, data collection technique, data analysis, scoring guide and treatment.

#### 3.1 Research Design

This study used Quasi-experimental design. Dinardo (2008) found that quasi-experiment used to predict the cause and effect of the relationship between the independent and dependent variable. Campbell (2002) found that quasi-experiment do not evaluate the intervention randomly. This design are often used when there is impossible or illogical to do randomized controlled test.

Quasi-experiment can use both pre-test and post test as well as non randomly selected controled groups. Pre-test is firstly conduct for the whole groups to see which one of those group that include in control group and which one is experimental group.

**Table 2.**

Non Randomized Subjects, Pre-test Post-test Quasi-Experimental Design

<b>Groups</b>	<b>Pre-test</b>	<b>Treatment</b>	<b>Post-test</b>
<b>Experimental</b>	+	+	+
<b>Control</b>	+	-	+

The symbols are defined as:

+ : Conduct treatment

- : Do not conduct treatment

Based on Cohen (1989), pre-test conducted to measure students ability, in this case is writing ability before using Four-Square Writing Method (FSWM).

Classes that got lower score included in Experimental group while the higher one included in Control Group. Based on the pre-test score, the class that included in experimental class because of the low score is VIII-F. While VIII-G was included in Control group because of the higher score and it would not be given treatment. The researcher used the same classroom, the same condition and the same time for both groups. It has purpose to get the reliable of the test.

After the control group and experimental group were detected from the pre-test, then the treatment conducted only for experimental group that is class VIII-F. Then, post test conducted to both control group and experimental group, in order to evaluate students' writing ability after the treatment using Four-Square Writing Method (FSWM) had been given. After that, the researcher try to find the mean different between pre-test and post-test score. The researcher analyzed the data using t-test formula to prove the hypothesis.

### **3.2 Variables**

Gribbons and Joan (1997) stated that the first thing to do quasi experiment design is recognize the variable. The independet variable in quasi-experimental design is the variable that is controlled in order to affect the dependent variable. The independent variable classifying the variable into different levels. Classifying means grouped the classes into two groups which are Control group and Experimental group. So, the independent variable in this research is Four-Square Writing Method as a method for teaching writing. While the dependent variable in

quasi-experimental design is the variable which is measured or observed many times for any changes that may occur. In this research, the dependent variable is students' writing ability which is measured by the post-test after given treatment by the researcher.

### **3.3 Population and Sample**

According to the experimental dictionary, population defined as the complete collection of data that would be observed. It consisted of all subjects of interest. While sample is the partially or some part of the population. The researcher was impossible to observe all the students in the population because of the limited time and expense, so the researcher chose only eighth grade classes in SMP Negeri 2 Kebomas as the population of research and two classes as the sample.

The researcher determined the two classes as the sample by firstly asked the English teacher about students' English score especially writing score. Based on the students' score and the teacher statements, there are two classes that consist of students who have low score in writing. Secondly, the researcher conducted a try out for eighth grade classes to make it valid. After the subjects in the population had already researched, examined, and concluded and then the conclusion is valid for the subjects from the population. Sample of this research are 56 students of eighth grade students at SMP Negeri 2 Kebomas, that consist of 28 students from VIII-F class and 28 students from VIII-G class. Students of VIII-F and VIII-G have the lowest score of writing among the nine existing classes of eighth grade especially on writing descriptive Text.

### **3.4 Data Collection Technique**

This research used quantitative data taken from the students' writing score. The first data was pre-test that conducted to both classes to measure students' writing ability before the treatment given. From the pre-test score, the researcher classifying the groups into experimental group that taught using Four-Square writing method and control group that taught using traditional method as the teacher usually taught in the classroom. Class which have low mean or low score of pre-test classified into experimental group while the class with higher mean classified into control group.

After pre-test, the researcher conduct treatment only for the experimental group. The treatment consists of six meeting using Four-Square writing method in teaching writing. Each meeting have different topic of descriptive text in this state is describing people

The second data taken from post-test score of both experimental and control group to see the effect of using Four-Square writing method on students' writing ability.

Finally, the researcher collected the data from students' pre-test and post-test score. The last step, the researcher analyzed the data using Independent Sample t-test in SPSS 16.0 program to see whether there is any significant different or not between experimental group and control group.

#### **3.4.1 Research Instruments**

Any kind of research has an instrument as a key. The researcher has an important role in conducting this research. It means that the success of this

research is dependent on her role. The researcher collected and observed information on how Four-Square Writing Method affect students by using the test. The instrument of this research was descriptive writing test to examine the student's writing ability. It is also important to examine the validity and reliability of the test to make sure that the test is valid.

#### **3.4.1.1 Test**

Test conducted to get the main data of students' writing score after they taught using Four-Square Writing Method during the treatment. Based on Oxford Dictionary, a test defined as a method that aimed to improve the reliability of something before it applied into rife use.

Best (1981) found that test is a set of an inquiry that used to determine the skill or ability of a group or individu. Achievement tests used to determine what the students have learnt. In this research, the achievement test is in the form of descriptive writing test. It was choosen in order to examine students' writing ability by considering some criteria of good writing. So that the researcher could measure students' improvement in writing from the test.

#### **3.4.1.2 Pre-Test**

Pre-test conducted to find the early differentiation of control group and experimental group as they have the same level in writing ability. Pre-test given before the students get treatment. The form of the pre-test is essay writing test to measure students' writing ability in writing descriptive text. The students asked to make short essay by using appropriate langauge features and generic structure which consists of identification and description. They should finish their writing

in the 60 minutes given. After the students collect their worksheet, the researcher measure their writing based on the table of The Standard Criteria Scoring of Writing Compositions by J.B Heaton (1989)

#### **3.4.1.3 Post Test**

Post-test conducted for both control group and experimental group after the treatment had already given. Post-test conducted to measure students' progress in their writing ability. In this research, The Standard Criteria Scoring of Writing Compositions by J.B Heaton (1989) used to scoring the students' writing. The post-test has the same procedure with the pre-test.

#### **3.4.1.4 Scoring Guide**

The scoring guide used in this study is *The Standard Criteria Scoring of Writing Compositions (J.B.Heaton; 1989)*. This guidance assesses students' composition in five areas of writing component namely content, organization, vocabulary, language use, and writing mechanic.

The scoring guide used the method of analytical and it was appropriate 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

The five of writing component above have levels which 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 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.

**Table 3.**

The Standard Criteria Scoring of Writing Compositions (J.B.Heaton; 1989).

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.

### 3.4.1.5 General Schedule of Research Implementation

**Table 4.**

NO	DATE/TIME	ACTIVITY
1.	October 21 <sup>th</sup> 2013	Sending approval letter to School
2.	October 21 <sup>th</sup> 2013	Asking approval to School Headmaster in order to conducting observation and data collecting
3.	October 28 <sup>th</sup> 2013	Giving Pre Test to Experiment and Control Group
4.	November 04 <sup>th</sup> 2013	Giving First Treatment
5.	November 07 <sup>th</sup> 2013	Giving Second Treatment
6.	November 11 <sup>th</sup> 2013	Giving Third Treatment
7.	November 14 <sup>th</sup> 2013	Giving Fourth Treatment
8.	November 18 <sup>th</sup> 2013	Giving Fifth Treatment
9.	November 21 <sup>th</sup> 2013	Giving Sixth Treatment
10.	November 25 <sup>th</sup> 2013	Giving Post Test to Experiment and Control Group

### 3.4.2 Validity and Reliability

The researcher tried out the instrument before applied the pre-test and post test to get it's validity and reliability. To measure the validity and reliability of the test, the researcher measured the content validity and the construct validity.

The researcher asked the two English teacher that were Mrs. Sahadatun and Mrs. Diah to rate the content validity, while SPSS version 16.00 used to measure the construct validity so that the researcher could know whether the item that were tested is good or not. The researcher used the validity formula as follows:

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

The symbols defined as follow:

$r_{-xy}$  : 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 X scores
- $\sum Y$  : the sum of total score for each student.
- $\sum X$  : the sum of total score in each item.
- $\sum XY$  : the sum of multiple score from each student with the total score in each item
- $\sum X^2$  : the sum of the square score in each item and,
- $\sum Y$  : the sum of the total score from each student each item square is determined by using these following categorizations:
- |             |              |           |         |
|-------------|--------------|-----------|---------|
| $< 0,3$     | is difficult | $0,7 - 1$ | is easy |
| $0,3 - 0,7$ | is medium    |           |         |

Besides the validity, reliability is also an important element in determining the quality of the test. To get the reliability of the test, the researcher use some rater, so that it can be found the consistency of the test. The raters was the researcher and the two English teacher (Mrs. Sahadatun and Mrs. Diah). After the test conducted, the three raters would scoring the test. So, apart from his own score, the reseacrher get two different score from the two English teachers. Then, the researcher calculates the correlation of those three score. The correlation between .10 and .30 are referred to as small or low positive relationships, .40 to .60 are moderate positive relationship and .70 and above are high positive relationships. In the other hand, for negative correlation: the rate -.10 and -.30 are considered as small correlation, between -.40 and -.60 are moderate and between -

.70 and -.10 are high correlation. The researcher uses Pearson formula to compute the result of the reliability.

Here is the formula of (Bartz 1976) *Pearson r*

$$r = \frac{\frac{\sum XY}{N} - \bar{X} \bar{Y}}{S_x S_y}$$

Descriptions:

N : the number of pairs of scores

$\sum XY$  : the sum of the products of each pair of scores

$\bar{X}$  : the mean of the X distribution

$\bar{Y}$  : the mean of the Y distribution

$S_x$  : the standard deviation of the X distribution

$S_y$  : the standard deviation of the Y distribution

The basic concept of reliability of a test is the consistency of the test score. Reliability measurement supplied an instrument of how much a variance might expect under different conditions. To see the consistency of the test score, the researcher tried the instrument out twice. The reliability of test is characteristically presented by means of reliability coefficient or the standard error of measurement.

Criterion:

0.0 ≤ rkk < 0.20 is the lowest reliability

0.20 ≤ rkk < 0.40 is the low reliability

0.40 ≤ rkk < 0.60 is the quite reliability

0.60 ≤ rkk < 0.80 is the high reliability

0.80 ≤ rkk < 1.00 is the highest reliability

### 3.5 Treatment

In this research, the researcher gave the same test items for both experimental and control groups. The difference is only on the treatment where the experimental group were taught by using Four-Square Writing Method (FSWM) while the control group did not taught using Four-Square Writing Method (FSWM). The procedure described as follow:

#### 3.5.1 The Procedure Given to the Experimental Group

1. The teacher (researcher) introduces the model of Descriptive Text genre.
2. The students learn the social function, the generic structures, and the language features.
3. The teacher explains about Four-Square Writing Method (FSWM).
4. Then the teacher asked the students to listen the instruction.
5. The teacher asked the students to write Descriptive Text based on the topic by Using Four-Square Writing Method (FSWM).
6. The last, data collected from the students' writing from their individual test and graded their scores in writing by using *The Standard Criteria Scoring of Writing Compositions*.

#### 3.5.2 The Procedure Given to the Control Group

1. The teacher (researcher) introduces the model of Descriptive Text.
2. The students learn the social function, the generic structures, and the language features.
3. The student asked the students to write Descriptive Text based on the book.

### **3.6 Data Analysis**

Data analysis method is very important in a research. In conduct research, it is a requirement to analyze the data in order to interpret the data obtained from the field. The data analysis is carrying out in order to answer the research problems with the data obtained through pre-test and post-test. The researcher analyzes the data by using Independent sample t-test. Since the samples are small and the groups are independent, the t-test for independent samples is carried out to determine whether there is any difference between experimental group and control group. The researcher used SPSS version 16.0 to compute descriptive statistic in order to find the effect of the treatment whether there is significant or not by using Four-Square Writing Method (FSWM).

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

#### **3.6.1 Normality Distribution Test**

In this study, Kolmogorov Smirnov Sample Test in SPSS version 16.0 used to analyze the normality distribution. 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. Firstly, in calculating the

normality distribution test state that the hypothesis: Null hypothesis: the score of the experimental and the control group are normally distributed. Secondly, in calculating the normality distribution test tried to compare the Sign 2-tailed (probability) with the level of significance for testing the hypothesis. If the probability or Sign 2-tailed is more than the level of significance (0,05) the null hypothesis is accepted; the score are normally distributed. The Procedure Analyze is you can press Menu, choose Nonparametric test after that you choose 1-sample K-S.

### 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 Levene's test, or P, defined as follow:*

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

The symbols defined as follow:

P : the result of the test,

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

N : the total number of samples,

N<sub>i</sub> : the number of samples in the i<sup>th</sup> group,

Y<sub>ij</sub> : ithe value of the j<sup>th</sup> sample from the i<sup>th</sup> group,

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

The significance of P is tested against F ( $\alpha$ ,  $k - 1$ ,  $N - k$ ) where F is a quintile of the test distribution, with  $k - 1$  and  $N - k$  its degrees of freedom, and  $\alpha$  is the chosen level of significance (0.05). To analyze the homogeneity, the researcher used SPSS (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 find out the significant difference between experimental and control group. Here were the steps of t-test calculation:

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 different on the use of Four-Square Writing Method (FSWM) in students' writing ability between experimental and control group."

The hypothesis can be formulated as follow:

H1 (null hypothesis) is  $\mu_1 - \mu_2 = 0$  ( $\mu_1 = \mu_2$ )

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

H1: The achievement of student's writing through Four-Square Writing Method (FSWM)

H2: The achievement of student's writing without Four-Square Writing Method (FSWM)

Hypothesis testing in this research was:

Ho: There is no significant difference on the use of Four-Square Writing Method (FSWM) in writing between experimental group and control groups.

H1: There is significant difference on the use of Four-Square Writing Method (FSWM) in writing between experimental group 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 t-table (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 other word, the researcher can accept the alternative hypothesis.

T- test was calculated to find out the comparison of two means between pre and post test score of experimental and control group. 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:

$$s_{pooled}^2 = \frac{(df_1)s^2_1 + (df_2)s^2_2}{df_1 + df_2} \quad \text{OR} \quad s_{pooled}^2 = \frac{SS_1 + SS_2}{df_1 + df_2}$$

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

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

Estimated Standard Error of the Difference

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

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 of 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 in 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.