CHAPTER III

METHODOLOGY

This chapter elaborates the method of the research conducted. It covers the research design, variable, sample, research instruments, research procedure, and data analysis.

3.1 The Research Method

3.1.1 Research Design

In investigating the use of mind mapping approach, two classes of eight grades were selected. The first class is used as a control group and the other class as an experimental group which acquired some treatments as a part of mind mapping approach. This research uses a quasi-experimental design. A quasi-experimental design was employed by considering the feasibility of the research conducted. True experimental design was not feasible to conduct because of requiring a huge samples and time (Fraenkel &Wallen, 1990).

3.1.2 Variable

The variables used are classified into dependent and independent variables:

1. The independent variable is mind mapping technique because this is the prominent method which is investigated thus it is selected, manipulated, and measured by the researcher (Hatch and Farhady, 1982:15).

2. The dependent variable is students' writing score that is observed and measured to determine the effect of the independent variable (Hatch and Farhady, 1982:15).

3.2 Population and sample

3.2.1 Population

According to Arikunto (2002) population is a whole research subject. The population in this research is eight classes of the eighth grade students in junior high school in Bandung, enlisted in academic year 2010/2011.

3.2.2 Sample

The samples of this research are selected on some criteria's, namely: 1) descriptive text is taught in eight graders of junior high school; 2) the two groups have the same number of students; 3) the two groups are chosen by teacher's judgment which explained that both groups are homogeneous; 4) the samples have not been given any treatment of mind mapping in writing descriptive text.

3.3 Data Collection

In collecting the data, the following steps were taken:

1. Organizing teaching procedure in the experimental and control groups.

2. Making research instruments that consist of preparing pilot test, pre-test and post-test, and questionnaires.

3. Distributing a pilot test to the students outside experimental and control groups.

4. Administering pre-test to both the experimental and control groups to investigate initial abilities between two groups.

5. Organizing lesson plans in teaching writing in descriptive text using mind mapping technique. The experimental group was given treatments of mind mapping then the control group was taught by using conventional method.

6. Administering post-test to both the control and experimental groups in order to reveal the result of treatment.

7. Conducting questionnaires toward the experimental group in order to gather further information about student responses toward the treatments given.

3.4 Research Instrument

In this research, two kinds of instruments were used in collecting the data. Each of the instruments was important to answer the problem stated in the research; written test and questionnaires. The written test focused to answer the first research question that covers pre-test and post-test for both of the experimental and control groups.

Questionnaires were given for students who get treatments. The questionnaires gave information about students' responses of mind map in practice of writing to improve students' writing ability.

3.5 Times Allocation

In this research, the treatment was given for the experimental group in five meetings. This study was begun by giving pre-test for the experimental and control groups, and then treatment for the experimental group, the last step a post-test conducted for both groups.

3.6 Research procedure

3.6.1 Lesson Planning

Firstly, the researcher prepared the learning assistance and teaching material related to descriptive text. Elaborate the related topics that were suitable for writing during the treatment. Furthermore, the researcher also managed the teaching procedure by measuring the time allotment, students' condition, and availability of facility.

3.6.2 Administering Pilot Test

Before conducting the pre-test and post-test, the researcher examined the test whether it was appropriate or not. In this study, the researcher administered pilot test. The pilot test was given to five students in similar level which were not included in the control and experimental groups but have already learned descriptive text.

3.6.3 Administering Pre-test

As mentioned before, the pre-test is administered by using written test. Both the experimental and control groups were asked to compose a descriptive text based on the theme and instruction given. Thereupon, it would be assessed by the teacher of the English subject from that school. The scoring rubric proposed by Brown (1994) is used to assess the composition.

3.6.4 Conducting the treatment

After performing pre-test, the next step was given treatment for experimental group. The treatment was the form of applying mind mapping method to assist students in writing descriptive text. The treatments were settled in five times that consists of introducing mind mapping, making mind mapping, and applying mind mapping in writing descriptive text. The design of the lesson plan is based on the standard competence and the basic syllabus of the school which was developed by the teacher. Control group was thought by using the conventional method.

3.6.5 Administering Post-test

Equal to pre-test, post-test was held after the treatment to the experimental group. The score of post-test would be used as a final comparison to determine any difference between students' achievement in experimental group and control groups.

3.6.6 Conducting Questionnaires

Questionnaires were conducted only to the experimental group students after post-test performed. Sugiyono (2008) states that there are two kinds of questionnaire open and close ended questionnaires. In this research, there are seven questions for close-ended questionnaires and one question for open-ended questionnaire.

3.7 Data Analysis Procedures

3.7.1 Scoring Technique

To acquire valid score that defines students' writing ability, it needs clear criteria to assess their work. To qualify this need, the research adopts the rubric of Brown (1994). Students' writings were assessed by the teacher and the researcher. Scale of numbers to evaluate students writing works areas follows; content, vocabulary, generic structure, and language features. The point of each criterion was in range 1 up 5, the maximum raw score is 20.

Table 3.1

Scoring Aspects

Aspect	Score	Criteria
Content	1	The content is not indeed relevant with the topic at all
	2	There are many confusing things; many contents are not relevant with the topics so that the meaning cannot be easily comprehended
	3	The contents that is not relevant still exists but it is understandable and it is not too bad
	4	There are several words that are used irrelevantly but do not influence the intended meaning much
	5	The topic and the content are very relevant

Vocabulary	1	Poor and irrelevant words; they do not fit the sentences meaning related to the topic and the situation given	
	2	There are still lots of words used in appropriately	
	3	The words have already been related with the topic and situation; however, they do not have any variation yet	
	4	The words are generally relevant with the situation and have enough variation, but sometimes there are inappropriate words, which do not change the meaning of the sentence	
	5	The words used are selected and have variations; they are relevant with the situation and condition so the meaning makes sense	
Generic structure	1	The generic structure of the content is very bad and it often does not consist of orientation and resolution	
	2	So many disorderliness are found in the content of the writing, but don't make the readers confused yet.	
	3	The generuc structure of the writing is not neither too good nor too bad	
	4	The generic structure of he writing is not in good, but this is actually not too principle	
	5	Every part of the writing is in good order, either in orientation, complication or resolution	
Language features	1	There are many irrelevant uses of descriptive language, many errors in using verb, tense and linking words.	
	2	There are some irrelevant uses of descriptive languages, some errors in using verb, tense and linking words	
	3	There are a little bit irrelevant but do not change the whole meaning. Generally, it is still accepted	
	4	Generally accurate; the use of descriptive languages, verb, tense, and linking words	
	5	No errors on the use of descriptive languages, verb, tense, and linking words	

Brown (1994)

3.7.2 Data analysis in pilot test

This pilot test was aimed to check validity and reliability of the instrument. It was conducted before doing pre-test and post-test. If the respondents were able to write the given instruction it was concluded that instrument can be used as pre-test and post-test.

3.7.3 Data analysis on pre-test and post-test

Pre-test and post-test were given to both experimental and control groups in the same procedures. A hypothesis was started with the alpha level at 0.05. The data gathered through pre-test and post-test computed one by one by using SPSS 16.0 for windows. Three steps were accomplished covering normality test, homogeneity test, and independent t-test. The details of statistical procedures were as follows:

3.7.3.1 Normal Distribution Test

Normal distribution test was calculated before the t-test. It was aimed to investigate whether or not the distribution of pre-test and post-test both of two groups were normally distributed. The statistical calculation of normality test used Kolmogorov-Smirnov by following three steps below:

1) Setting the level of significance (p) at 0.05 and establishing the hypotheses as follows:

   H_0: the variances of experimental and control group are normally distributed.

   H_1: the variances of experimental and control group are not normally distributed.

2) Analyzing the normality distribution with Kolmogorov-Smirnov test.

3) Comparing the asymp.sig with the level of significance (p) to test the hypothesis. If the asymp.sig >0.05, the null hypothesis is not rejected but alternative hypothesis is rejected, and the distribution of data is normal.

3.7.3.2 Homogeneity of Variance

The homogeneity of variance test used Levene test in SPSS program. The steps are as follows:

1) Setting the level of significance (p) at 0.05 and establishing the alternative hypotheses as follow:

H_0: the variances of the experimental and the control group are homogenous.

H_1: the variances of the experimental and the control group are not homogenous.

2) Analyzing the homogeneity of variance by using Levene test in SPSS.

3) Comparing the asymp.sig with the level of significance to test the hypothesis. If the asymp.sig $>$ 0.05, the null hypothesis is not rejected and alternative hypothesis is rejected. It suggests that the variances of data are homogenous. However, if the asymp.sig $\leq$ 0.05, the null hypothesis is rejected and alternative hypothesis is not rejected. It clarifies that the variances are significantly different.

3.7.3.3 Independent t-test

After revealing the result of normality and homogeneity tests, the next statistical computation was analyzing independent t-test. These are the procedures to follow in calculating the independent t-test of pre-test and post-test data:

1) Setting the level of significance (p) at 0.05 and establishing the alternative hypothesis for the pre-test and post-test data analysis. The hypotheses are stated as bellow:

H_0: there is no significant difference between the means in experimental and control groups.

H_1: there is significant difference between the means in experimental and control groups.

2) Analyzing the independent t-test by using SPSS 16.0.

3) Comparing the asymp.sig with the level of significance to test the hypothesis. If the asymp.sig $<$ 0.05 and $df = 48$, null hypothesis is rejected and alternative hypothesis is not rejected. It clarifies that there is difference of means between experimental and control group. However, if the asymp.sig $>$ 0.05, the null hypothesis is not rejected and alternative hypothesis is rejected. It declares that there is no difference of means between experimental and control group.

3.7.3.4 Dependent t-test

The t- test was used to analyze the difference between two groups' means in experimental design where the participants in both groups are related to each other in some way. The dependent variable assumed to have normal distribution, the variance of the two groups must be homogenous.

In this research, the dependent sample test was analyzed using computation with SPSS 16 by comparing the significance value with the level of significance to test the hypothesis. If the value is less than the level of

significance (0.05), the null hypothesis is rejected, and it will be concluded that there is significance difference between the two means. Otherwise, if the significance value is more than the level significance (0.05), the null hypothesis is retained, and it was mean that no significance differences from the other mean.

3.7.4 Effect Size

The effect size computation is conducted to check the level of effect of treatment after the t-test calculation by using SPSS 16.0 from independent t-test of posttest (Coolidge: 2000). It was used to determine the significance impact of the treatment of the experimental group. The formula is:

$$r = \sqrt{\frac{t^2}{t^2 + df}}$$

The t refers to the t value obtained from the independent t-test calculation on post-test data. Afterward, the df is the amount of samples minus by 2 (df = N-2). After obtaining the r value, in addition, it is analyzed by using Effect Size Scale (Coolidge, 2000).

Table 3.2

The Scale of Effect Size

Effect size	*r* value
Small	0.100
Medium	0.243
Large	0.371

3.7.5 Data Analysis on questionnaires

In this research, questionnaires were aimed to clarify the information and elaborate the data concerning the research question about what are the students' responses toward the use of mind mapping in learning descriptive text.

The data was gained from questionnaires that were classified into some major answers. Those are the students' responses toward learning writing text, students' responses to the use of mind mapping technique in their writing, and students' responses to the use of mind mapping technique as media in writing.

The criteria of percentage categories are described as (Kuntjaranigrat in Savitri: 2009):

Table 3.3

Criteria Percentage of respondent

Percentage of respondent	Criteria
1 – 25%	Small number of the students

26 – 49%	Nearly half of students
50%	Half of students
51 – 75%	More than half of students
76 – 99%	Almost all of students
100%	All of students

The formula of percentage is used to analyze the questionnaires. The data were interpreted based on the frequency of the students' answers. The formula is described as follow (Nigrat, 2000 cited from Mulyadin 2010):

$$P = \frac{F_0}{N} \times 100\%$$

Note: P = percentage

F= amount of each response for certain question

N= amount of all response for certain question