CHAPTER III
RESEARCH METHODOLOGY

This chapter presents the research methodology in order to answer the two research questions as follows.

1. Can mind map technique improve students' reading comprehension?

2. What are the students' responses toward the use of the mind map technique?

This chapter includes research design, variable, hypothesis, population, data collection, research procedures, and data analysis.

3.1 Research Design

This study used pre-experimental design: one group pre-test-post-test. In this design, the study measured one group of students by conducting pre-test before giving treatment. In the end of teaching process, the students were measured by post-test in order to find out the improvement of their reading comprehension after using mind map technique.

The table below portrays the design of one group pre-test-post-test.

Table 3.1

The One Group Pretest-Posttest Design (Creswell, 2008)

O	*X*	*O*
Pretest	**Treatment**	**Posttest**

3.2 Variable

In this research, the independent variable is the mind map technique which is the major variable which was investigated, while the dependent variable was the students' score which is observed and measured to determine the effect of the independent variable. The design is adopted from Hatch and Farhady (1982:1).

3.3 Hypothesis

In this study, the researcher stated a hypothesis as follows:

H_0: The use of mind map technique cannot improve the students' reading comprehension.

3.4 Population and Sample

In this study, the population was the eighth grade students in one junior high school in Bandung. Meanwhile, the sample was one class consisting of 40 students.

This study took that class to be the sample because of several decisions. First, the students had already been taught about reading comprehension on narrative text by the teacher but they had not applied any specific technique related to mind map technique. Second, the English

teacher of the class has recommended that class to be the sample because the students have similar prior ability and are cooperative.

3.5 Data Collection

To gather the data, the researcher employed three instruments. They were tests, questionnaires, and interviews.

3.5.1 Tests

There are two kinds of test administered in this study namely pre-test and post-test. The pre-test is conducted to measure the students' prior knowledge and skill about reading comprehension on narrative text. Meanwhile, the post-test is conducted to examine whether the use of mind map technique is effective to improve the students' reading comprehension. Both pre-test and post-test are in a multiple choice form consisting of 40 questions. Both of them can be seen in Appendix B.

3.5.2 Questionnaires

There are two kinds of questionnaire used in this study. Both of them are close questionnaire (see Appendix B).

First questionnaire is administered to the students after they had finished doing the pre-test. It consists of five questions about the students' general perception toward reading English text. Meanwhile, second questionnaire is administered after they had finished doing the post-test. It consists of ten questions which generally revealing the students' response toward the use of mind map technique.

By employing the two questionnaires, it is easy to monitor the students' opinion about reading English text before and after using mind map technique.

3.5.3 Interview

The interview is aimed at confirming the students' response toward reading English text before and after using mind map technique (sees Appendix B).

3.6 Research Procedure

The following is the procedure used in conducting the present research.

3.6.1 Organizing Teaching Procedures

In this study, the student samples were taught by one teacher. Before the teaching process, lesson plans were developed and teaching materials were prepared. The materials were taken from various resources. It was also decided to set the keywords that the students had to put in the branches of the mind map. The keywords are described as the table follows.

Table 3.2

The Ideas and the Keywords for the Students' Mind Map

No.	Idea	Keyword
1.	The character of the story	WHO
2.	The place setting of the story	WHERE
3.	The time setting of the story	WHEN
4.	The generic structure of the text	GENERIC STRUCTURE
5.	The unfamiliar words in the text	THE NEW WORDS

3.6.2 Administering Pilot Test

Pilot test is aimed to check the validity, reliability, and test the difficulty level of the test instrument. The pilot test was given to other 36 eighth graders. The result of the pilot test can be seen in Appendix C.

3.6.3 Conducting Pre-test

Pre-test was conducted to diagnose the students' prior ability in reading narrative text and it was conducted before the teacher gave the treatments. Pre-test instrument is in a multiple choice form and it has forty questions focusing on looking for explicit information from the text (see Appendix B).

3.6.4 Administering First Questionnaire

First questionnaire was administered to the students right after they had finished doing the pre-test. It consists of five close questions about their general perception towards reading English text. It can be seen in Appendix B.

3.6.5 Giving Treatments

After administering the pre-test, the treatments were given to the student samples. In this study, mind map technique was implemented after the students read the text or post-reading.

The main procedures of giving treatments are mentioned as follows (see Appendix A).

1. Teacher shows pictures related to the narrative text that will be read by students. It is aimed at activating their prior knowledge of the text.

2. Teacher elicits students' prior knowledge about the text that will be read by asking what they know about it.

3. Students read the narrative text given.

4. After reading, teacher elicits what students have learned from the narrative text that they have read.

5. Teacher guide students to identify main ideas of the narrative text.

6. Students create their own mind map.

7. After completing mind map, students have to do comprehension exercises given based on the text they have read. they are not allowed to look back to the passage.

The treatments were given to the student samples in six meetings. The time allocation of each meeting is 80 minutes and it is based on the lesson plan that has been developed before (see Appendix A).

This following table shows the research schedule.

Table 3.3

The Research Schedule

No.	Date	Activity
1.	Friday, January 11, 2013	Pilot Test
3.	Tuesday, January 29, 2013	Pre-test Administered first questionnaire
F 4.	Tuesday, February 5, 2013	Treatment 1 Nyai Roro Kidul
5.	Thursday, February 7, 2013	Treatment 2 Jack and the Beanstalk
6.	Tuesday, February 12, 2013	Treatment 3 The Frog Prince
7.	Thursday, February 14, 2013	Treatment 4 The Legend of Toba Lake
8.	Tuesday, February 19, 2013	Treatment 5 The Legend of Prambanan Temple
9.	Thursday, February 21, 2013	Treatment 6 Beauty and the Beast
10.	Tuesday, February 26, 2013	Post-test Administering second questionnaire
11.	Thursday, February 28, 2013	Conducting interview

3.6.6 Administering Post-test

After all treatments administered, post-test is conducted to find out whether the use of mind map technique makes impact for their reading comprehension. The post-test instrument is in a multiple choice form and it consists of 40 questions about explicit information from narrative texts (see Appendix B).

3.6.7 Administering Second Questionnaire

Second questionnaire was administered to the students right after they had finished doing the post-test. It consists of ten questions which generally revealing the students' response toward the use of mind map technique (see Appendix B).

3.6.8 Administering Interview

After all second questionnaires classified according to students' response, this study used six students to be interviewed. The interview was administered to confirm the students' response toward reading English text before and after using mind map technique (see Appendix B).

3.7 Data Analysis

The following part present how the data collected are analyzed.

3.7.1 Scoring Technique

The pre-test and post-test instruments are in the form of multiple choice questions. Both of them have forty questions and they are in 100 in scale.

3.7.2 Data Analysis on Pilot Test

The pilot test is conducted to measure the validity, reliability, and the level of difficulty of the instrument. The valid and reliable items are used as the research instrument.

3.7.2.1 Validity Test

In this study, the validity formula is computed by using Pearson Product Moment Correlation (Field, 2000). It is used to analyze the validity of each item and it was calculated through SPSS 19 for windows. Sugiyono (2011) states that an item is considered as a valid item if its *r* value is 0.3 or higher than 0.3. In addition, a high *r* value of an item shows a high level of validity.

3.7.2.2 Reliability Test

A good instrument does not have tendency to direct the respondent to choose particular answers. Hence, this study uses Cronbach's Alpha formula to measure the reliability of the instrument. George and Mallery (2003), as cited in Gliem and Gliem (2003:87), provide the following rules of Cronbach's Alpha reliability coefficient: _ > .9 − Excellent, _ > .8 − Good, _ > .7 − Acceptable, _ > .6 − Questionable, _ > .5 − Poor, and _ < .5 − Unacceptable.

3.7.2.3 Difficulty Level Test

The difficulty level test is aimed to measure whether an instrument is considered as difficult or easy. The formula below is used to analyze the level of the instrument:

$$P = \frac{B}{Js}$$

Where:

P = index of difficulty

B = the number of students who can answer the item correctly

Js = the number of all students

The index of difficulty level is classified as the table follows.

Table 3.4
The Classification of Difficulty Level Item

Index of Difficulty	Interpretation
0.0 – 0.30	Difficult item
0.30 – 0.70	Moderate item
0.70 – 1.00	Easy item

(Arikunto, 2010)

3.7.3 Normality Distribution Test

Normal distribution test is used to investigate whether a set of data is normally distributed or not. Kolmogorov-Smirnov test is used in this study using SPSS 19 for Windows (Field, 2000).

In conducting the normal distribution test, there are three steps that as follows.

1. Setting the alpha level. By default, this study test at 5% level of significance (two tailed). Then, stating the hypothesis:

H_0 : the pretest score are normally distributed

2. Analyzing the data by using Kolmogorov-Smirnov test through SPSS 19 for Windows

3. Interpreting the result of the test. If the significant value (Asymp.Sig) is less than 0.05 (Asymp.Sig < 0.05), the normality assumption is rejected. Meanwhile, if the Asymp.Sig is greater than 0.05 (Asymp.Sig > 0.05), the normality assumption is accepted (Field, 2005).

3.7.4 Data Analysis on Pre-test and Post-test

The pre-test and post-test scores are analyzed by comparing their means through dependent t-test to find out whether the difference between the pre-test and post-test mean score is significant or not. The dependent t-test is used to determine the degree of relationship between pairs of two or more variables (adopted from Hatch and Farhady, 1982).

The dependent t-test is calculated by using SPSS 19 for Windows. If the result of $t_{obtained}$ was less than $t_{critical}$ value at the 0.05 level of significance, the null hypothesis (H_0) is not rejected and it can be concluded that there is no significant difference between two means. However, if $t_{obtained}$ is higher than $t_{critical}$ value at the 0.05 level of significance, the null hypothesis (H_0) is rejected and it can be concluded that there is significant difference between two means (adopted from Field, 2005).

3.7.5 Data Analysis of Questionnaires

After both first and second questionnaires administered, this study used percentage of the students' response toward the use of mind map technique.

3.7.6 Data Analysis of Interview

The interview is conducted to obtain the students' response toward the use of mind map technique in their reading comprehension. The interview is analyzed by categorizing data into certain categories, presenting, and interpreting the result of interview. The result is used to verify the previous data collected.