CHAPTER III

RESEARCH METHODOLOGY
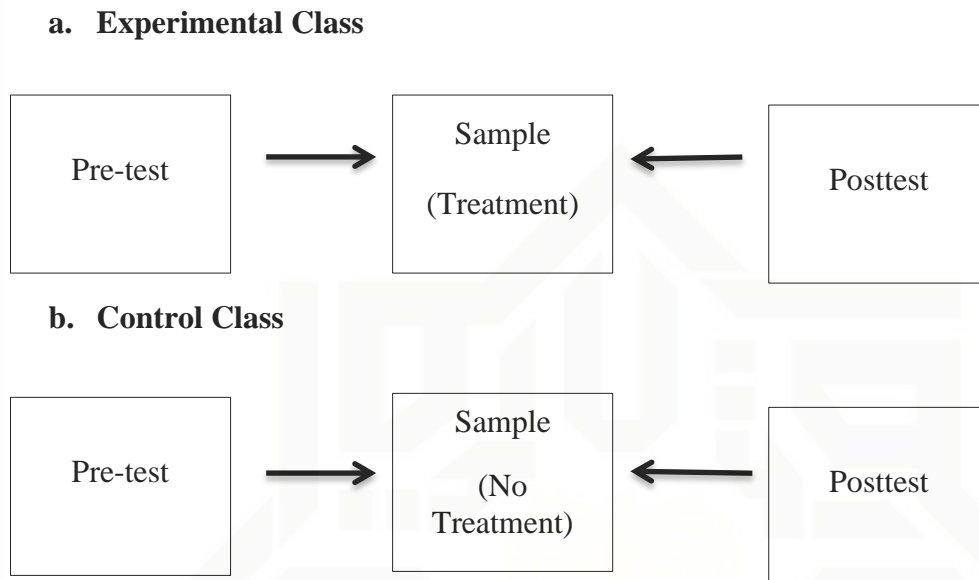
A. The Research Design

Research design is strategy to arrange the setting of the research in order to get valid data which is suitable to the characteristic variable and research purpose. According to Arikunto (2006, p. 136), research method is the way or procedure that is used by the researcher in the following data. This research was designed as an experimental design, precisely quasi experimental research. According John W. Creswell (2008, p. 313), quasi experiment research is testing an idea (or practice or procedure) to determine whether it influences an outcome or dependent variable.

In this research, the researcher used pre- and posttests design. In conducting this research, the researcher took two classes; one class was as an experimental class using mind mapping technique and one other was as a control class without using mind mapping technique. In the experimental class, the students were given pre-test at the beginning of the teaching learning in order to know students' ability in writing. Then there was a treatment at the middle. After the treatment, teacher gave a post test at the end of the teaching learning processes in order to know the effect of using mind mapping technique on students' ability in writing procedure text. So, the design of this research was illustrated as follows:

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Table III.1
Pre- and Post Design

a. **Experimental Class**

Pre-test	→	Sample (Treatment)	←	Posttest

b. **Control Class**

Pre-test	→	Sample (No Treatment)	←	Posttest

B. The Location and Time of the Research

This research was conducted at Junior High School of 1 Seberida. It was conducted from February, 03 2017 to March, 31 2017.

C. The Subject and Object of the Research

The subject of the research was the seventh grade students of Junior High School of 1 Seberida. The object of this research was using mind mapping technique on students' ability in writing procedure text at seventh grade of Junior High School 1 Seberida.

D. The Population and Sample of the Research

The population of this research was the seventh grade students of Junior High School of 1 Seberida. There were 8 classes of the seventh grade in

this school. The number of the seventh grade students of Junior High School

of 1 Seberida was 239 students.

Table III.2
The Population of the Seventh Grade at Junior
High School 1 Seberida

No.	Classes	Total
1.	VII.A	31
2.	VII.B	30
3.	VII.C	30
4.	VII.D	30
5.	VII.E	29
6.	VII.F	30
7.	VII.G	31
8.	VII.H	28
Total		**239**

Arikunto (2006, p. 134) stated if the population is homogeneous

enough, for the population which less than 100 persons, the sample is all, but

if the population more than 100 persons, the sample is taken between 10-15%

or 20-25% or more than it. Considering that this population of the research

was larger, thus the researcher took the sample of the population of the

research. According to L.R Gay (2000, p. 121), sampling is a process of

selecting a number of individuals for a study in such a way that they represent

the larger group from which they are selected.

In this research, the researcher used cluster sampling technique.

According to Gay (2000, p. 129), cluster random sampling technique is most

useful when the population is very large or spread out over a wide geographic

area. It means that sampling in which intact group, not individuals. The

researcher used lottery by passing out small rolled paper marked by sequence name of the class. Then, after passing out the paper, the samples of this research were VII.C as control group and VII.B as experimental group.

Table III.3
Sample of the Research

No.	Classes	Total
1.	VII.B (Experimental Group)	30
2.	VII.C (Control Group)	30
	Total	**60**

E. The Techniques of Collecting Data

1. Observation List

In this research, observation was used to collect the data on the application of mind mapping technique in teaching learning process. The purpose of this observation was to find out whether all teaching steps of mind mapping technique had been done correctly or not by the researcher. In this research, the English teacher of Junior High School of 1 Seberida was an observer. The points that were observed by the observer stated as follows:

Table III.4
Observation Checklist

No	Procedures of using Mind Mapping Technique	Yes	No
1.	Teacher together with the students review the aspects of writing procedure text includes goal, materials, steps, the organization, and the language use of the text.		
2.	Teacher uses a plain paper that is essentially huge and brings in a collection of colored pens to draw with.		
3.	Teacher takes an example of procedure text and makes a note of the central theme in the center of the page. For example-How to make a Pizza.		
4.	Teacher starts drawing branches (each with a different color) of the components of procedure text, such as goal, materials, and steps of How to make a Pizza.		
5.	Teacher together with the students, under each points of how to make a Pizza, draws arrows to map out the basic pointers that make up this concept. For example, step by step, how to make it, the ingredients, and others.		
6.	Teacher divides students into 4 groups in which each group consists of 6 or 7 students.		
7.	Teacher asks each group to write a mind map about a simple procedure text as what teacher has already explained for approximately 20 minutes.		
8.	Teacher asks students to write a simple procedure text based on the mind map created for approximately 30 minutes.		
9.	Teacher asks students to submit the text.		
10.	Teacher together with the students discuss about students' difficulties during learning process.		
	Total		
	Percentage		

2. **Composition Test**

Pre-test and posttest were administered to the students. Pre-test was used to investigate students' writing ability before doing the treatment to the control and experimental groups. A posttest was used at the end of the research to investigate the mind mapping technique or treatment for experimental group and also to investigate the difference between taught and without being taught by using Mind Mapping Technique at seventh grade of Junior High School 1 Seberida. Both pretest and posttest either from the experimental and control group were assessed by two raters.

3. **Reliability of the Test**

The test used for testing the students' ability in writing should have reliability and validity. According to Gay (2012, p. 164), reliability is the degree to which a test consistently measures what it is measuring. It simply means that a test can be said reliable if the instrument test can result in scores of the same subject even though the test was given in different occasions. In this research, the researcher used inter reliability to find out whether the test is reliable or not.

According to Gay et al (2012, p. 168), inter rater reliability refers to the consistency of two or more independent scores, raters or observers. The researcher had two raters in order to score the students' writing ability. Then the scores of the rater 1 correlated with the scores of the rater 2. The following table is the categories of reliability in determine the reliability of the test.

Table III.5
The Categories of Reliability

No	Reliability	Level of Reliability
1	>0.90	Very High
2	0.80-0.90	High
3	0.70-0.79	Reliable
4	0.60-0.69	Marginally/Minimally
5	<0.60	Unacceptably Low

The following table describes the correlation between the scores given by rater 1 and rater 2 by using *Pearson Product Moment* formula through SPSS 22 version.

Table III.6
The Score Correlation between 2 Raters

Correlations

		Rater1	Rater2
Rater1	Pearson Correlation	1	.729**
	Sig. (2-tailed)		.000
	N	30	30
Rater2	Pearson Correlation	.729**	1
	Sig. (2-tailed)	.000	
	N	30	30

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

From the output above, it was obtained that the coefficient of correlation product moment $r_{obtained}$ (r_o) between scores given by rater 1 and rater 2 was 0.729. Before comparing it to r_{table} (r_t), the researcher obtained the df (degree of freedom).

Df : N-nr

N : Number of cases

Nr : Number of correlated variable

Df = 30-2

After obtaining the degree of freedom (df) = 28, the coefficient product moment $r_{obtained\ (r_o)}$ was compared to $r_{table}\ (r_t)$ either at level of 5% or 1%. At level of 5% r_{table} is 0.361; while at level of 1% is 0.463. Based on $r_{table}\ (r_t)$, it could be analyzed that (r_o) was higher than (r_t) either at level of 5% and 1%. It was clear that 0.362<0.729>0.463. So, that the researcher concluded that Ho was rejected and Ha was accepted. It means that there was a significant correlation between the scores given by rater 1 and rater 2. In order words, the writing test was reliable. Then, $r_{obtained\ (r_o)}$ is adjusted by the *Spearman-Brown Prophecy* formula below:

$$r_{tt} = \frac{nrA,B}{1+(n-1)rA,B}$$

$$r_{tt} = \frac{(2)(0.729)}{1+(2-1)(0.729)}$$

$$r_{tt} = \frac{1.458}{1+0.729}$$

$$= 0.84$$

Based on the calculation above, the researcher obtained that inter rater reliability was 0.84. So, it could be concluded that the reliability of writing test included was high level.

4. Validity of the Test

Gay and Airasian (2000, p. 161) define that validity is concerned with the appropriateness of the interpretations made from test scores. According to Arikunto (2010, p. 67), a test is considered has content validity if measures the certain purposes that is appropriate with the given students' material. Thus, the test was given based on the material studied

by the students. The material of the test was taken from the textbook used by the seventh grade students at Junior High School of 1 Seberida.

5. Homogeneity of the Test

According to Siregar (2014, p. 167), the purpose of homogeneity test is to know whether the objects of the research have the same variance or not. The technique used in this test was comparing the biggest variance to the smallest one. In this research, the researcher assessed the data by using one way Anova through SPSS 22 version. The result of the test can be seen as follows:

Table III.7
Test of Homogeneity Variance

		Levene Statistic	df1	df2	Sig.
Score	Based on Mean	1.353	1	58	.250
	Based on Median	.032	1	58	.860
	Based on Median and with adjusted df	.032	1	52.279	.860
	Based on trimmed mean	1.126	1	58	.293

Based on the table above, the probability (sig) based on trimmed mean was 0.293. It was higher than 0.05 (0.293 > 0.05). It can be concluded that the data were homogenous.

6. Normality of the Test

The objective of the normality test is to find out whether the population of the data has normal distribution or not. If the data are normal, the statistical parametric test can be used. In this research, the researcher used Kolmogorov-Smirnov method through SPSS 22 version.

Table III.8

Tests of Normality

	Group	Kolmogorov-Smirnov[a]		
Score	1	.180	30	.140
	2	.100	30	.200[*]

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

According to Priyatno (2012, p. 36), if the "Sig" column of either test is higher than 0.05, the data are normally distributed. From the table above, the significant value of post-test experimental and control classes were 0.200 and 0.140. Because of sig >0.05 (0.200 > 0.05) and (0.140 > 0.05), the initial data of experimental and control classes were normally distributed. Therefore, the researcher used Independent Sample T-test.

F. The Technique of Data Analysis

1. Observation Data

In analyzing observation data, the researcher used the following formula to get the percentage of the observation (Sudjiono, 2007):

$$P = \frac{F}{N} X 100\%$$

Where : P : Percentage

F : Frequency of the score

N : Number of case

To see the level of success in implementing learning process, there are five categories that can be seen in the following table:

Table III.9

The Level of Success in Implementing Learning Process

No	Percentage	Categories
1	86 – 100%	Very High
2	71 – 85%	High
3	56 – 70%	Average
4	41 – 55%	Low
5	< 40%	Very Low

(adapted from Aqib:2009)

2. Independent Sample T-test

In addition, to investigate whether there is a significant difference of using and without using mind mapping technique on students' ability in writing procedure text at the seventh grade of Junior High School of 1 Seberida. The data were analyzed by using the statistical analysis and the collective data were analyzed by using T-test on SPSS 22 Version.

3. Effect Size

To determine effect size of the result, the researcher used Eta Squared formula. Pallant (2005, p. 208) mentions the formula of Eta Squared as presented below:

$$\eta^2 = \frac{t^2}{t^2 + (N1 + N2 - 2)}$$

Where:

η = eta squared

t^2 = t_o

N = number of students

The guidelines proposed by Cohen (1988, pp. 284-287) as quoted in

Pallant for interpreting these values are:

.01 = small effect

.06 = moderate effect

.14 = large effect