CHAPTER III
METHOD OF RESEARCH

This chapter discussed sources of data, such as design, time and setting of research, subject of research, variables and indicators of research, instruments, procedures of experimentation, scoring technique, method of data analysis, and research procedures.

A. Research Design

A research design is a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems.[1] It plays an important role in a research because the quality of research greatly depends on the design. In this research, the writer used the quantitative form approach to analyze the data. As micheal J Wallace said that "Quantitative is broadly used to describe what can be counted or measured and can therefore be considered objective".[2]

The method in this research is experimental research. Experimental method is a scientific method. It is oriented to the future in the sense that the researcher is seeking to

[1] Ranjit Kumar, *Research Methodology a step-by-step guide for beginners*, 3rd edition, (London: Sage, 2011), p. 109.

[2] Michael J Wallace, *Action Research for Language Teacher*, (Cambridge: Cambridge University Press, 1998), p.38.

evaluate something new.[3] In this way we study some variables by controlling some variables affecting the previous one. When certain variables can be controlled or manipulated directly in research problem by the investigator, the research procedure is often described as an experiment.[4]

In this study, the researcher used an experimental research with the form of true experimental design. An experimental research involved two groups; experimental group and control group.

In this study, the writer used pre-test and post-test control group design.

E= O_1 X O_2
C= 0_3 Y O_4

Adopted from Arikunto.[5]

Where:

E = experimental group

C = control group

O_1 = pre-test for experimental group

O_2 = post-test for experimental group

[3] Yogesh kumar singh, *Fundamental of Research Methodology and Statistics*, (New delhi: New Age International (P) Ltd., 2006), p. 134.

[4] Yogesh kumar singh, *Fundamental of Research Methodology and Statistics*, (New delhi: New Age International (P) Ltd., 2006), p. 170.

[5] Suharsimi Arikunto, *Prosedur penelitian Suatu Pendekatan Praktik* ,(Jakarta: Rineka Cipta, 2006), p.86.

O_3 = pre-test for control group

O_4 = post-test for control group

X = treatment by using word wall

Y = treatment without using word wall

B. Research Setting

1. Subject and place of the research

   This research was conducted in MTs. Nahdlatul Muslimin Undaan Kudus. The subjects of this study were the eighth grade students of MTs. Nahdlatul Muslimin Undaan Kudus in the academic year of 2015/2016.

2. Time of the research

   This study conducted for about three weeks begin from 1 February 2016, counted since the proposal was submitted until the end of the research.

Table 3.1

Research Schedule

NO	Class	Activity	Month/week		
			February		
			1st	2nd	3rd
1	Experimental Class VIII B	Pre-test	V		
		Treatment		V	
		Treatment		V	
		Post-test			V
2	Control class VIII C	Pre-test	V		
		Treatment		V	

		Treatment		V	
		Post-test			V

C. The Subject of The Research

1. Population

   Population is all the data that become attention of us in a place and time that determine.[6] The population of the research was the eighth grade students of MTs Nahdlatul Muslimin Undaan Kudus in the academic year 2015/2016 which consisting of eight classes. Class VIII A consisted of 46 students, VIII B consisted of 46 students, VIII C consisted of 46 students, VIII D consisted of 45 students. VIII E consisted of 45 students. VIII F consisted of 45 students. VIII G consisted of 47 students. The total population was 320 students.

2. Sample

   Sample is representative of population that will be observed.[7] The writer took sample in this research because the respondents were more than 100. If the respondents are less than 100, it is better to take them all

[6] S. Margono, *Metodologi Penelitian Pendidikan*, (Jakarta: PT. Rineka Cipta, 2010), p. 118.

[7] Suharsimi Arikunto, *Prosedur Penelitian : Suatu Pendekatan Praktik*, (Jakarta : PT. Rineka Cipta, 2006), p. 131.

as sample.[8] The important thing in this study is the aim of sampling, that is to construct a sample that can represent the entire population. It means that sample must be able to represent the whole data of population.

The researcher selected two groups of students from the population as sample of research. In this study, there were two classes as sample, where VIII B as the experiment class that consist of 46 students and VIII C as the control class that consist of 46 students.

3. Sampling Technique

In this research, the writer used simple random sampling technique. It is simple because the way of taking sample from population is done randomly without considering the strata or level of the population. Simple random sampling technique is used if the member of population is homogeny. The researcher chose two classes as sample in this research, they are class VIII C as the control class and VIII B as the experimental class.

In getting sample of the research, the writer took some procedures. There were seven classes at eighth grade of MTs. Nahdlatul Muslimin Undaan Kudus, The researcher wrote down number 1 to 7 on small piece of paper. The small piece of paper was placed in a box and

[8] Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktik*, (Jakarta : PT. Rineka Cipta, 2006), p. 134.

mixed, and a sample of the required size was selected. So, the researcher got class VIII B and VIII C as a sample. The class VIII B was as experimental class and VIII C was as control class.

D. Variable and Indicator

According to Fred N. Kerlingert as cited by Arikunto, that all experiments have one fundamental idea behind them; to test the effect of one or more independent variables on a dependent variable (it is possible to have more than one dependent variables in experiments).[9] In this study, there were two variables, those variables as follows:

1. The independent variable (X)

   Independent variable is variable that influences or those to be cause of change the dependent variable.[10] The independent variable in this research was the use word wall. The experimental class taught speaking descriptive text using word wall while the control class taught speaking descriptive text without word wall.

2. The dependent variable (Y)

   Dependent variable is the conditions or characteristics that appear, disappear, or change as the researcher

[9] Suharsimi Arikunto, *Prosedur penelitian Suatu Pendekatan Praktik,* (Jakarta: Rineka Cipta, 2006), p. 119.

[10] Sugiyono, *Statistika Untuk Penelitian*, (Bandung: Alfabeta, 2010), p.4.

introduces, removes, or changes independent variable.[11] The dependent variable of this research was speaking descriptive achievement score of students for the eighth grade students of MTs. Nahdlatul Muslimin Undaan Kudus.

3. The indicators are as follows:
   a. The students are able to identify the generic structure and language feature of descriptive text.
   b. The students are able to describe about animal orally.

E. Instruments

Instrument is a tool to collect data. Commonly, it can be distinguished between non test, scale, and test.[12] The researcher used test to collect data in this research. The researcher conducted the test to measure students' achievement. The test, which is conducted before the treatments, called pre-test. It is used to find out the initial condition of students before treatment. And the test which is done after all treatments is post-test.

F. The Technique of Collecting Data

The researcher must know how much and what kind of data collection will take place and when. He must also be sure

[11] John W. Best, *Research in Education, fourth edition,* (London: Practice-Hall International, Inc., 2010), p. 60.

[12] Mohammad Ali, *Strategi Penelitian Pendidikan*, (Bandung: Angkasa, 1993), p. 91.

that the types of data obtainable from the selected instruments will be usable in whatever statistical model he will latter use to bring out the significance of the study.

The data collection is the accumulation of specific evidence that will enable the researcher to properly analyze the results of all activities by his research design and procedures. The main purpose of data collection is to verify the research hypotheses.[13]

To get the accurate data, in this study the researcher used two ways in collecting the data as follows:

1. Test

   In this research, the researcher used test to collect data. Brown states that a test is a method of measuring a person's ability, knowledge, or performance in a given domain.[14] Test is an examination or trial to find its quality, value, composition, etc.[15] In conducting this study, the researcher used test as the first method of collecting the data. The test was used to collect the students' speaking that must be analyzed to identify the students' understanding in descriptive text. The form of

[13] Yogesh kumar singh, *Fundamental of Research Methodology and Statistics*, (New delhi: New Age International (P) Ltd., 2006), p. 212.

[14] Douglas Brown, *Language assessment Principles and Classroom Practices*, (San Francisco: Longman, 2004), p.3.

[15] Suharsimi arikunto, *Prosedur penelitian Suatu Pendekatan Praktik*, (Jakarta: Rineka Cipta, 2006), p.223.

test in this study was a subjective test based on the instruction. In this case, the students was given to freedom chance to teach as much as possible. They can freely express and organize their ideas in spoken form related to the material of descriptive text.

In this research, the writer used pre-test and post-test as follows:

a. Pre-test

Before the teacher taught new material by using word wall, the teacher gave the pre-test to the students. Pre-test was given to the experimental class and the control class before the treatments was run.

b. Post-test

Post-test was held after all treatments were conducted. Post-test was given to the experimental class and control class after received treatments. Post-test was used to measure the improvement of students' speaking skill in descriptive text after being taught by using word wall in experimental class, and without using word wall in the control class.

2. Documentation

It refers to the archival data that helps the researcher to collect the needed data. The researcher

collected the document related to the object research such as students name list and the English subject schedule.

In this case, the data was gained by the help of the English teacher and the administration officer.

G. Scoring Technique

The researcher gave speaking test to the students to analyze their scores on pronunciation, grammar, vocabulary, fluency, and comprehension. In giving scores to the students, the researcher used analytic scale which categorized by some categories and the researcher follows these scoring criteria for each category. This analytic score has five items and each item scores five. So, the maximum score is 25. But it will be multiplied with 4, so the final maximum score will be 100.

Table 3.2

Analytic Scoring of Speaking

Aspects	score	Description
Pronunciation	5	Have few traces of foreign accent.
	4	Always intelligible, though one is conscious of a definite accent.
	3	Pronunciation problem necessitate concentrated listening and occasionally lead to misunderstanding.
	2	Very hard to understand because of

		pronunciation problems, must frequently be asked to repeat.
	1	Pronunciation problems so severe as to make speech virtually unintelligible.
Grammar	5	Makes few (if any) noticeable errors of grammar and word order.
	4	Occasionally makes grammatical and/or word order errors which do not, however obscure the meaning.
	3	Make frequent errors of grammar and word order which occasionally obscure meaning.
	2	Grammar and word order errors make comprehension difficult. Must often rephrase sentences and/or restrict him to basic patterns.
	1	Errors in grammar and word order so severe as to make speech virtually unintelligible.
Vocabulary	5	Use of vocabulary and idioms is virtually that of a native speaker.
	4	Sometime uses inappropriate terms and/or must rephrase the idea

		because of lexical inadequate
	3	Frequently uses the wrong words; conversation somewhat limited because of inadequate vocabulary.
	2	Misuse of word and very limited vocabulary make comprehension quite difficult.
	1	Vocabulary limitations so extreme as to make conversation virtually impossible.
Fluency	5	Speed as fluent and effortless as that of a native speaker.
	4	Speed of the speech seems to be slightly affected by language problem.
	3	Speed and fluency are rather strongly affected by language problems.
	2	Usually hesitant; often forced into silent by language limitations.
	1	Speech is as halting and fragmentary as to make conversation virtually impossible.
Comprehension	5	Appears to understand everything without difficulty

	4	Understand nearly everything at normal speed, although occasional repetition may be necessary.
	3	Understand most of what is said at slower than normal speed with repetition.
	2	Has great difficulty following what is said. Can comprehend only "social conversation" spoken slowly with frequently repetitions.
	1	Cannot be said to understand even simple conversation virtually impossible.

Based on "*Testing English as a Second Language*"[16]

H. Technique of Data Analysis

After conducting the study and gathering the data, the next step involves analyzing the data, which generally calls for the use of statistical techniques. The type of statistical techniques used by a researcher depends on the design of the study, the type of data being gathered, and the questions being asked. Although a detailed discussion of statistics is beyond the scope of this text, it is important to be aware of the role of statistics in conducting a research study. In short,

[16] David P. Haris, *Testing English as a Second Language*, (Washington DC: Georgetown University, 1969). p. 84.

statistics help researchers minimize the likelihood of reaching an erroneous conclusion about the relationship between the variables being studied.[17]

There are two kinds of test that was held in experimental research**,** they are pre-requisite test and hypothesis test. So there must be two process of analyzing the data collected from test.

1. Pre-requisite Test

   Before the researcher determines the sample, the researcher should conduct a homogeneity test by choosing two classes with cluster random sampling. Before testing the hypothesis that is to compare the difference of students' academic achievement using t-test formula, there is a prerequisite test to know the legality of sample. Here, the normality and homogeneity test are employed.

   This test conducted to determine whether the data are homogenous or not. After conducted the test, data analysis was carried out to find out the data normality and the homogeneity of sample. It was meant to check if the research result met the requirement of good research or not. Data analysis discussed two main things:

[17] Geoffrey Marczyk, et.all, *Essentials of Research Design and Methodology,* (Canada: John Wiley & Sons, Inc., 2005), p. 11

a. Test of normality

The first step that had to be done before doing the research was to test the data normality. It was aimed to know whether the data came from normal distribution or not. The researcher used Chi-Square formula. The normality test using Chi-square was done to find out the distribution data. Step by step Chi-square test is as a follow:

1) Determine the range (R); the largest data reduces the smallest.
2) Determine the many class interval (K) with formula:

   K= 1 + (3,3) log n
3) Determine the length of class, using formula:

   $P = \frac{range}{member\ of\ class}$
4) Make a frequency distribution table
5) Determines the class boundaries (bc) of each class interval.
6) Calculating the average ($\bar{x}$), with the formula:

   $\bar{x} = \frac{\sum xi}{n}$
7) Calculate variants, with formula:

   $$s = \sqrt{\frac{\sum(x_1 - \bar{x}\,)}{n-1}}$$
8) Calculate the value of Z, with formula:

$Z = \frac{x - \bar{x}}{S}$

x = limit class

$\bar{x}$ = average

S = standard deviation

9) Define the wide area of each interval.

10) Calculate the frequency expository (Ei), with the formula:

Ei = *n x* wide area with the *n* number of sample.

11) Make a list of frequency of observation (Oi), with the frequency expository as follows:

Class	Bk	Zi	P(Zi)	Ld	Oi	Ei	$\frac{Oi - Ei}{Ei}$

12) Calculate the Chi-Square, with the formula:

$$\chi^2 = \sum_{i=1}^{k} \frac{(Oi - Ei)^2}{Ei}$$

χ^2 = Chi-Square

Oi = frequency from sample

Ei = frequency which hoped from sample

k = Number of class interval

13) Determine df = k – 3 and α = 5 %

14) Determine the value of χ^2_{table}

15) Determine the distribution normality with test criteria:

If $\chi^2_{count} > \chi^2_{table}$ so the data is not normal distribution and the other way if $\chi^2_{count} < \chi^2_{table}$ so the data is normal distribution.[18]

b. Test of homogeneity

It was meant to get the assumption that sample of research came from a same condition or homogenous. It is used to know whether experimental and control class, that are taken from population have same or not. The steps are follows:

1) Calculate variants both class (experimental and control class), with the formula:

$S_1^2 = \frac{\sum(x-\bar{x})2}{n_1-1}$ and $S_2^2 = \frac{\sum(x-\bar{x})2}{n_2-1}$

2) Determine F = $\frac{Vb}{Vk}$

Where:

Vb = bigger varian

Vk = smaller varian

3) Determine df $(n_1 - 1) : (n_2 - 1)$

4) Determine the distribution data is not homogeneity with test criteria:

If $F_{count} > F_{table,}$ the data is not homogeneous and other way if the if $F_{count} < F_{table}$, the data is homogeneous.[19]

[18] Sudjana, *Metoda Statistika*, (Bandung: Tarsito, 2002). p. 272.

c. Average Test

It is used to examine average whether experimental and control group have been decided having different average.[20] After, the test was done in both groups, experimental and control group. The result of the test was scored by using analytic scale. Thirdly, the means score of the two groups were determined. Finally, the two means were compared by applying t-test formula. T-test was used to differentiate if the students' result of students using word wall and without using word wall was significant or not.

$$t = \frac{\overline{X_1} - \overline{X_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad \text{with} \quad s = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Cited from Sudjana.[21]

Where:

t: statistical

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[19] Sugiyono, *Statistika Untuk Penelitian*, (Bandung: Alfabeta, 2010), p. 140.

[20] Sudijono, Anas, *Pengantar Statistik Pendidikan*, *6th Ed.* (Jakarta: PT. Raja Grafindo Persada, 1995), p. 326-327.

[21] Sudjana, *Metoda Statistika*, *6th edition*, (Bandung: Tarsito, 1996). p, 239.

$\overline{X_1}$: average results of tests of students in the class experiment

$\overline{X_2}$: average results of tests of students in the class control

S_1^2 : variant class experiment

S_2^2 : variant control class

n_1 : number of subject-class experiment

n_2 : the number of control subjects class

If the obtained score was higher than t-table score by using 5% alpha of significance, Ho was rejected. It meant that Ha was accepted: "there will be difference between students who taught descriptive text by using word wall and the students who taught without word wall."

2. Post-test

Post-test was held after all treatments were conducted. This test was used to measure students' achievement after experimental and control classes were given treatments and explanations. The result of test was analyzed statistically. There are types of post-test, as follows:

a. Normality Test

Normality second step was the same as the normality test on the initial data.

b. Homogeneity Test

Homogeneity second step was the same as the homogeneity test on the initial data.

c. Average Test (Right-hand Test)

This test proposed that hypothesis test in average differentiate with the right test as the steps right-hand test the initial data.