CHAPTER III

RESEARCH METHODS

In this chapter the writer describes the research methodology; it consists of research design, population, sample and sampling, research instrument, validity, reliability testing, data collecting method, and data analysis.

A. Research Design

The research approach used by researchers is the quantitative approach. Where quantitative approach is research data in the form of figures and analyzed with analysis statistics to seek answers from the formulation of a research problem. As for the methods used by researchers is the experimental method. . The experimental research is a scientific investigation in which the researcher manipulates one or more independent variable, control any other relevant variables, and observe the effect of the manipulation on the variables (Ary et al, 2002:276). This research chooses pre-experimental design with one group pretest and posttest. This research is intended to investigate the improving of word wall as media in teaching vocabulary for the eight year students of MTs Negeri Bandung. The research design used by the researcher is pre-experimental design in the form of one-group, pretest-posttest design.

A diagram of One Group Pretest and Posttest design:

Y1 Pre-test	X Treatment (Independent variable)	Y1 Post-test (Dependent variable)

A variable is a general class of objects, events, situations, characteristics and attributes that are of interest to the researcher (Balnaves and Caputi, 2001:46). The variables there are two variables of the research. The dependent variable and independent variable.

1. Independent Variable

Independent variable is a variable which influence dependent variable, in order words independent variable is causes variable. In this research independent variable is word wall media.

2. Dependent Variable

Dependent variable is the consequence of or dependent variable upon antecedent variables. The dependent variable in this research is the students' vocabulary.

The procedures of experimental research that use One group Pretest Posttest design:

1. Administering a pretest before applying strategy with a purpose of measuring vocabulary mastery of eight grade students at MTs Negeri Bandung.
2. Applying the experimental teaching vocabulary by using Word Wall Media as a strategy to the subjects (eight grade students at MTs Negeri Bandung).
3. Administering a post-test after applying strategy with a purpose of measuring vocabulary mastery of eight grade students at MTs Negeri Bandung.

The reasons the researcher chooses experimental research because this research design is simple. We can use one class to carry out research and use two treatments. The effectiveness of the strategy is known from differentiate score between pre-test and post-test, if the post-test score higher than pre-test score the strategy is effective.

B. Population, Sample and Sampling

1) Population

Population is all of subject in research that before founding from the interesting researcher to the region that occupy the subject. More technically, the population is a sample space of elementary event. Another way to think of the population is a set of units from which the researcher will sample. The units need not to be restricted to people; researchers may be interested in animals or objects (Wampold, 1990:84)

The population is totality samples or research subjects. The populations in this research are all students of class VIII MTs Negeri Bandung Tulungagung. The number of population 388 students consisted of nine classes; each class consisted of 34-46 sudents.

2) Sample

Sample is part or representative of population that will be research (Arikunto, 2013: 174). In this study, the researcher took the VIII-I class as a sample of this research. This class consisted of 46 students of first grade at MTs Negeri Bandung Tulungagung. The sample consisted of 24 boys and 22 girls.

3) Sampling

The technique of sampling or sampling technique used in this research in purposive sampling. Purposive sampling is a sampling technique with particular consideration (Sugiyono, 2011). Can also be interpreted determine the sample with particular consideration that deemed to provide the data to the fullest.

Often many restrictions that prevent researchers took samples at random (random). So if using random sampling (random sampling), will complicate the researcher. By using purposive sampling, the expected criteria for samples obtained completely in accordance with the research to be conducted.

Choosing the sample is based on purposive sampling depends on what criteria are used. So first determined what criteria samples taken researchers took samples of class VIII. The researcher choose the class VIII-I at the sample because among other classes the students of the class VIII-I had average proficiency.

C. Research Instrument

Instrument has important function in this research. Using an instrument is one of the significant steps in conducting this research. The researcher used one kind of instrument that was vocabulary test. The aim to do test is to know Word Wall Media effective or not for the students to learn vocabulary. The material of the test will be taken from English book and other resources to add more vocabularies which related to their subject and based on Junior High School curriculum.

The researcher applied two kinds of test, there were pre-test and post-test. The tests form of close test and word in the blanket. Between pretest and posttest the students are growing mentally and physically and they may have learning experiences that could affect the dependent variable. The test items for pretest consist of 25 questions.

The pretest is given to students before the teacher teaches them by using word wall. While the post test is given to the students after they are given the treatment. The format tests are made in the following form:

a. Close test that consist of 10 items. The student must choose the answer. The score for item is, so all scores are 10.
b. Word in the blanket consist of 15 items. The students must choose the correct answer.

D. Validity and Reliability Testing

In quantitative research is always depends on measuring instrument that used in research, to measure the instrument through two concepts that must understand when the researcher measuring test. They are validity and reliability.

1. Validity

Validity is the degree to which a test measure what it is supposed to measure. Ary, Jacobes and Sorensen (2010: 224-225) states that validity is the most important consideration in developing and evaluating measuring instruments. It is the extent to which inferences made from assessment result are appropriate, meaningful, and useful in terms of the purpose of the assessment. A test should test what the writer wants to test. There are four different types of validity; they are content, construct, concurrent; and predictive. This research measure test to be a good validity by analyzed the test from content validity and construct validity.

a. Content validity is a kind of validity which depends on careful analysis of the language being tested and particular test. Test content must be seen by the expert that can be covered of all subjects in content area. L.R. Gay (1992: 156-157) states that content validity is the degree to which a test measures an intended content area. A test with good content validity adequately samples the appropriate content area. So, content validity is appropriate with the instrument that used the researcher because it correspondence between curriculum objectives and objectives being assessed. The researcher made vocabulary test which consist of close test and word in the blanket. In this

test, the students' are asked to answer the test to measure their vocabulary achievement.

b. Construct validity is testing that done to measure the behavior of students. Brown (2004:25) mentioned that a construct is any theory, hypothesis, or model that attempts to explain observed phenomena in our universe of perception. Based on the theory above, in the test, the researcher asked the students to answer the question based on recount text to measure to the students' vocabulary mastery and fulfill the construct of vocabulary test and therefore valid in the term of construct validity.

2. Reliability

Reliability is a necessary characteristic of any good test for it to be valid at all and test must be reliable as measuring instrument. The researcher gives test 25 questions for students of MTs Negeri Bandung to know the reliability of test.

The researcher used KR-20 formula to measure the test to be a reliable, most of them used this formula because not crucial and requires test administration only once (Fraenkel and Wallen, 2005:156)

KR-20 formula

$$r11 = \left[\frac{n}{n-1}\right]\left[\frac{s_t^2 - \sum p1 - q1}{s_t^2}\right]$$

where,

r11 = reliability coefficient

n = number of test items

s_t^2 = standard deviation

p1 = the right response

q1 = the wrong response

Based on the coefficient of correlation, the class of reliability test can show in the criteria of coefficient of correlation below:

No	Criteria	Score of Coefficient
1.	Very High	Between 0.90 and 1.00
2.	High	Between 0.70 and 0.89
3.	Sufficient	Between 0.50 and 0.69
4.	Low	Between 0.30 and 1.49
5.	Very Low	≤ 0.30

Therefore, it can be inferred that both the test have a high scores of reliability. In tryout test, the researcher asks the students to answer the questions for pre-test and post-test as follows:

Table 3.1. The preparatory to compute the standard deviation

1. Pre-test

No.	Name	Xt	Xt^2
1.	AFT	20	400
2.	AGM	21	441
3.	AYP	19	361
4.	AEU	23	529
5.	BEP	18	324
6.	BY	21	441
7.	BRS	21	441
8.	DPS	22	484
9.	DRS	20	400
10.	DAR	18	324
11.	EWT	18	324

Next table ...

Next table ...

12.	EHA	17	289
13.	FRA	19	361
14.	FIN	20	400
15.	JMDS	21	441
16.	JKS	22	484
17.	HS	19	361
18.	SRA	17	189
19.	SIS	20	400
20.	SW	21	441
21.	MAF	18	324
22.	MAT	20	400
23.	NTF	21	441
24.	YM	20	400
25.	YAD	18	324
		$\sum xt = 494$	$\sum Xt^2 = 9824$

$$S_t^2 = \frac{\sum x_t^2}{N}$$

To know $\sum X_t^2$ the formula below was used:

$$\sum X_t^2 = \sum X_t^2 - \left(\frac{\sum Xt}{N}\right)^2$$

$$= 11802 - \left(\frac{542}{25}\right)^2$$

$$= 11802 - 470{,}02$$

$$= 11331{,}98$$

Table 3.2 The preparatory to compute the standard deviation

2. Post-test

No.	Name	Xt	Xt^2
1.	AFT	23	529
2.	AGM	21	441
3.	AYP	22	484
4.	AEU	23	529
5.	BEP	19	361
6.	BY	20	400
7.	BRS	22	484

Next table ...

Next table ...

8.	DPS	18	324
9.	DRS	20	400
10.	DAR	20	400
11.	EWT	19	361
12.	EHA	23	529
13.	FRA	18	324
14.	FIN	22	484
15.	JMDS	22	484
16.	JKS	19	361
17.	HS	22	484
18.	SRA	22	484
19.	SIS	21	441
20.	SW	24	576
21.	MAF	21	441
22.	MAT	20	400
23.	NTF	20	400
24.	YM	22	484
25.	YAD	22	484
		$\sum x = 525$	$\sum Xt^2 = 11089$

$$S_t^2 = \frac{\sum X_t^2}{N}$$

To know $\sum X_t^2$ the formula below was used:

$$\sum X_t^2 = \sum X_t^2 - \left(\frac{\sum Xt}{N}\right)^2$$

$$= 11089 - \left(\frac{525}{25}\right)^2$$

$$= 11089 - 441$$

$$= 10648$$

Therefore, the standard deviation is

$$\sqrt{S_t^2} = \sqrt{\frac{10648}{25}} = 20{,}6$$

After finding the result of standard deviation, the reliability can be computed by using Kuder Richardson formula (KR-20).

3.3 The table to compote the reliability by using Kuder Richardson formula (KR-20)

Item	Np	P1	Nq	Q1	P1Q1
1.	24	0,96	1	0,04	0,038
2.	25	1	0	0	0
3.	19	0,76	6	0,24	0,182
4.	20	0,	5	0,2	0,16
5.	21	0,84	4	0,16	0,134
6.	25	1	0	0	0
7.	18	0,72	7	0,28	0,202
8.	23	0,92	2	0,08	0,074
9.	23	0,92	2	0,08	0,074
10.	17	0,68	8	0,32	0,218
11.	25	1	0	0	0
12.	19	0,76	6	0,24	0,182
13.	16	0,64	9	0,36	0,23
14.	21	0,84	4	0,16	0,134
15.	22	0,88	3	0,12	0,106
16.	22	0,88	3	0,12	0,106
17.	24	0,96	1	0,04	0,038
18.	18	0,72	7	0,28	0,202
19.	19	0,76	6	0,24	0,182
20.	25	1	0	0	0
21.	16	0,64	9	0,36	0,23
22.	21	0,84	4	0,16	0,134
23.	18	0,72	7	0,28	0,202
24.	18	0,72	7	0,28	0,202
25.	23	0,92	2	0,08	0,202
					$\sum p1q1$= 3,1344

Therefore, the reliability is:

$$r\ 11 = \left[\frac{n}{n-1}\right]\left[\frac{s_t^2 - \sum p1q1}{s_t^2}\right]$$

$$r\ 11 = \left[\frac{25}{25-1}\right]\left[\frac{20,6-3,1344}{20,6}\right]$$

$$r\ 11 = \left[\frac{25}{24}\right]\left[\frac{17,4656}{20,6}\right]$$

$$r\ 11 = [1.0416666667]\ [0.8478446]$$

$$r\ 11 = 0.883$$

The result shows that the test was reliable with the reliability coefficient of 0.88 or 88%, it means that the reliability of test is high.

E. Normality Testing

Normality testing is used to know whether the data is normal distribution or not. It is important to get the normality data because the data can be considered to represent to population when it is in normal distribution (Priyatno, 2012:33). In this research, the researcher intended to test the normality of the data by using SPSS 16.0 with One-Sample Kolmogorov-Smirnov method. The normality testing was done toward the pre-test and post-test score.

The hypotheses for testing normality are:

a. H_o: Data is in normal distribution

b. H_a: Data is not in normal distribution

The hypotheses for normality testing say that the data is in normal distribution if H_o is accepted and it is automatically, the data is not in normal distribution if H_a is accepted. The H_o is rejected when the significance value is lower than 0,05 ($\alpha = 5\%$), while H_o is accepted if the significance value is higher than 0,05 ($\alpha = 5\%$). The result analysis for normality testing can be seen in table 3.3, as follow:

Table 3.4 The Result of Pre-test and Post-test Normality Testing

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		46
Normal Parameters[a]	Mean	.0000000
	Std. Deviation	7.75560257
Most Extreme Differences	Absolute	.145
	Positive	.143
	Negative	-.145
Kolmogorov-Smirnov Z		.982
Asymp. Sig. (2-tailed)		.290

a. Test distribution is Normal.

From the table 3.3, it can be know that the significance value of pre-test and post-test. As stated before, the hypotheses for normality testing say that the data is in normal distribution if H_0 is accepted and it is automatically, the data is not in normal distribution if H_a is accepted. The H_0 is rejected when the significance value is lower than 0,05 ($\alpha = 5\%$). Based on the data above, it is show that the significance value of the pre-test and post-test is 0,290 and it is higher than 0,05 (0,290>0,05). It means that H_0 accepted and H_a is rejected. It can be interpreted that the data is in normal distribution. It shows that the instruments in this research are in normal distribution.

F. Homogeneity Testing

Homogeneity testing is used to know whether the data is homogeny or not. When homogeny fulfilled, so the research can do next analysis data stage. In this research, the researcher intended to test the homogeneity of the data by using SPSS 16.0 with One-way ANOVA method. The homogeneity testing was done toward the pre-test and post-test score. The formula from homogeneity (Tulus, 2006:100) is:

$$F_{\max} = \frac{high\ variance}{low\ varience}$$

Table 3.5 The Result of Homogeneity Testing

Test of Homogeneity of Variances

value

Levene Statistic	df1	df2	Sig.
1.554	7	36	.181

From the table 3.4, it can be know that the significance value of homogeneity test is 0,181. So, result from the accounting use SPSS is homogeny.

G. Data Collecting Method

The collection of data is systematic and standardized procedures to obtain the necessary data. In this research the researcher is going to use the test method, the test method in this case is used to get data of students' vocabulary mastery in reading. The method of data collection this study is test method.

The test will be used by researchers here contains about tests increase vocabulary. The shape of the test is written, because it can be used to determine how much increase student's vocabulary of the material that has been taught by the teacher.

In order to get the good quality of data, the researcher must choose the good instrument that used in research. In this research, the researcher used test as instrument they were pre-test and post-test. Before doing treatment, the researcher applied a pretest. It lasted in 60 minutes. The test consists of 25 questions. The items were 10 questions for close test, 15 items for word in the blanket. The researcher wants to know how far the vocabulary mastery of the students is before they use of word wall.

After doing pretest the researcher gave treatment for the students'. Is this step the researcher choosing Word wall media in teaching simple past tense. In this research, the researcher focused the vocabulary. At the first the treatment, the researcher first introduced what Word wall media. After that, the students' understand what Word wall media the researcher divided into seven groups. Then, the researcher gave light reading to they discussion in the groups. The researcher wants the students look for vocabulary in the text. After that, the researcher writes

the word in the colours sheet to can interesting when the vocabulary read. Finished write the vocabulary in the colours sheet the researcher patch the sheet in the wall or blackboard. The researcher requests the students to remember the vocabulary. After the students remembers the vocabulary. The researcher in the next meeting requests the group to make a sentence from the vocabulary. Then, the students' in front of the class to write result from the discussions. The researcher crosschecks the work every groups.

Finished doing treatments the researcher doing posttest. It lasted for 60 minutes. The students must answer the questions as many 25 question. Posttest is known the increasing of vocabulary mastery after they have use word wall. Pretest and Posttest are to knowing the differences of the students' ability before and after the teacher use the method. Before the researcher applying the pre-test, the researcher conducted tryout of the test in other class to know the tests are valid and reliable or not. The researcher chooses high-level than sample that given treatment because the high-level certainly know test was appropriate with the seventh class or not because before that they never accept that materials.

H. Data Analysis

Data analysis is a review of a series of activities, grouping, systematization, interpretation, and verification of data that a phenomenon has social, academic, and scientific. This study uses pre-experimental in quantitative data analysis. In this study, pre-experimental are processed by comparing the two test (pre-test and post-test). The first data is data of student score before taught

using Word wall media (pre-test). The data result is after using Word wall media (post-test). If the post-test of using Word wall media score test is higher than pre-test, it means that the method is effective.

The test statistic used is t-test. The requirement that the test for normality, homogeneity test, hypothesis testing. To get the achievement of vocabulary mastery in reading, the researcher is going to give the students a test after get treatment teaching vocabulary mastery by Word Wall Media. To know the significant difference of the vocabulary mastery between taught by using Word Wall Media between taught without Word Wall Media, the researcher in this research uses t-test at SPSS 16.0 for windows.

$$t = \frac{\bar{D}}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}}$$

where:

t = t ratio (t score)

$\bar{D}$ = different scores squared, the summed

ΣD^2 = different scores summed then squared

N = number of pairs (number of samples)

Uses sample T-test at SPSS 16.0 for windows:

Set 2 of variable ⟶ Klik Analyze⟶ Compare means ⟶ Choose Paired Samples T- Test ⟶ Put variables in each position ⟶ OK.