CHAPTER III
RESEARCH METHOD

This chapter discussed sources of data, subject and setting of research, variable of research, research design, instruments, and procedures of experimentation, scoring technique, and method of data analysis.

A. Setting of The Study

This research was conducted on the second semester in the academic year of 2010/2011 for about 21 days, began from February 21st up to March 14th 2011. It was conducted in MTs. Mafatihut Thullab An-Nawawy Surodadi Jepara located at Jalan Jepara-Bugel Kode Pos 59463.

Table 1. List of time of the study

Number	Activity	Month/Date					
		February				March	
		20th	22nd	27th	29th	3rd	5th
1.	Try out	-					
2.	Pre test		-				
3.	Treatment 1			-			
4.	Treatment 2				-		
5.	Treatment 3					-	
6.	Post test						-

B. Subject of The Study

This study was conducted in MTs. Mafatihut Thullab An-Nawawy Surodadi Jepara located at Jalan Jepara-Bugel Kode Pos 59463. The subjects of this study were the eight grade students of MTs. Mafatihut Thullab An-Nawawy Surodadi Jepara in the academic year of 2010/2011. This study was conducted in second semester. Due to limitation of time, the writer did not take all students as the subjects of the study, but drew a sample.

1. Population

"Population is the entire research subject".[1] The population of the research was the eighth grade students of MTs. Mafatihut Thullab An-Nawawy Surodadi Jepara in the academic year of 2010/2011 which consisting of three class. Each class consists of forty, forty, and thirty six students. The total population was 116 students.

2. Sample

"Sample is a part of population to be researched".[2] "Sample is a subset of individuals from a given population".[3] Sample must be reflective with the true example in the field. Because the population of the study is very big, the researcher did not take all the subject of the population. The researcher took some subjects from the population. The research is an experimental research, so the researcher needs to take two classes that will be an experimental and control class as the sample from three classes of the population.

3. Sampling Technique

In this research, the writer used purposive random sampling technique. According to Suharsimi Arikunto "sample was done by taking the subject/sample which is not based on strata, random or area but it is based on the consideration of a certain purpose".[4] The consideration that the researcher tried to complete in preliminary research was the sample that will be chosen has to be homogeny, so that the research will be a good and valid research. Because we know that something that can be compared is something that has the similar characteristic. The researcher took class VIII A and VIII B, because based on the result of the pre test, these two classes gained similar average achievements and considered as homogeneous class. Each class consisted of 40 and 40 students. Students

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[1]Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktek*, (Jakarta: Rineka Cipta, 2006), p. 130.

[2]*Ibid.*, p. 131.

[3]David Nunan, *Research Methods in Language Learning*, (New York: Cambridge University Press, 1992), p. 27.

[4]Suharsimi Arikunto, *op.cit.,* p. 139

in class VIII A was taught by using picture message and considered as experimental group. While students in class VIII B was taught without using picture message and considered as control group.

C. Variable of The Research

Variable refers to the object of the research that becomes the research focus. According to Suharsimi Arikunto "variable is a variation object of the study. There are two types of variables: dependent variable (y) and independent variable (x). The dependent variable is the variable of focus or the central variable on which other variables will act if there is any relationship. The independent variable is selected by researcher to determine the relationship with the dependent variable".[5] So, the variables in this study are:

1. Independent Variable (x).

According to David Nunan "independent variable is variable that the experimenter expects to influence the other".[6] Independent variable in this research is the use of picture message in mastering vocabulary of noun.

2. Dependent Variable (y).

"Dependent variable is the variable upon which the independent variable in acting".[7] Dependent variable in this study is students' achievement in the vocabulary test score of students at the eight grades of MTs. Mafatihut Thullab An-nawawy Surodadi Jepara.

D. Research Method

In this study, the method used was experimental research. An experimental is the way to find the causal relationship between two factors which are raised by the researcher in purpose by reducing or eliminating any distracting factors.[8]

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[5] Suharsimi Arikunto, *op,cit.,*, p. 118-119.
[6] David Nunan, *op, cit.,* p. 25.
[7] *Ibid.,* p.119.
[8] Suharsimi Arikunto, *Prosedure Penelitian Suatu Pendekatan Praktik,* (Jakarta : PT Rineka Cipta, 2006), p.3

The writer used pre test – post test control group design with one treatment as the design for this study.

This is the scheme:

$$E = O_1 \ X \ O_2$$
$$C = O_3 \quad O_4$$

Where:

E: the symbol for experiment class

C: the symbol for control class

O_1 : Pre test for experiment class

O_2 : Post test for experiment class

O_3 : Pre test for control class

O_4 : Post test for control class

There are two groups in this model of experimental research. First is experimental group and the second is control group. The writer decided to choose class VIII A as the experimental class and class VIII B as the control class. The experimental class received a new treatment. It was taught by using picture message in vocabulary. While, the control class taught by using conventional learning or lecturing. It was not receive a new treatment.

E. Technique of Data Collection

Instrument that are used to collect the date as follows:

1. Test

Test is a question which is used to measure competence, knowledge, intelligence, and ability of talent which is possessed by individual or group to collect data.[9] In this research, the test was given to tryout class, control class and experimental class.

The instrument of the test in this research is objective test. Objective test is frequently criticized on the grounds that they are simpler

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[9] M. Chabib Thoha, *Teknik Evaluasi Pendidikan* (Jakarta: PT Raja Grafindo Persada, 2001), p. 43.

to answer than subjective test. Objective tests are divided into transformation, completion, combination, addition, rearrangement, matching, correct and incorrect (true/false) and multiple choice.[10] The writer used multiple choice forms and matching items form. The choice of the test type is based on the consideration that multiple choice test are:

a. Easier to be scored and it does not take much time to score

b. More objective to score because it just has one correct answer.

c. Not subjectivities to score

J.B. Heaton states "although it is among the most difficult of all objective item types to construct, it is simple to score and administer".[11]

In this research, the writer used pre test and post test, they are:

a. Pre-test

Before the teacher taught new material by using short stories, the teacher gave vocabulary test to the students. Pre-test was given to the experimental and control classes in same way. This test was given before the experiment was run.

b. Post-test

Post-test was given to the experiment class and control class. It was given in order to know the score of students' achievement after they were taught using picture message (experimental class) and without using picture message (control class).

2. Documentation

Another data is needed to help the researcher run the research. In addition to do that, data will be collected through documentation of the students' previous examination score from the school. It will be used to

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[10] J.B Heaton, *Writing English Language Tests* (London: Longman, 1975), p. 12-13.
[11] *Ibid,* p. 14.

validate the sample. "Documentation is anything printed, written, etc., upon to record or prove something".[12]

The researcher function the document related to the object research such as students' name list and the English subject schedule. The instruments here are documents. Documents are used to get the information about the students' achievement there.

F. Technique of Data Analysis

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

1. Try-out instrument of the test

The writer prepared 25 items as the instrument of the test. Before the items were given to the students, the writer gave tryout test to analyze validity, reliability, difficulty level and also the discrimination power of each item. The tryout was given to VIII C of the students of MTs. Mafatihut Thullab An-Nawawy Surodadi Jepara. After finishing the test, the answer sheets were collected in order to be scored. An analysis was made based on the result of test by using the formula of validity, reliability, the degree of test difficulty and discriminating power.

From 5 test text items of tryout, some items were chosen as the instrument of the test. The choosing of the instrument had been done by considering: validity, reliability, the degree of test difficulty and discriminating power.

a. The Validity

The validity is an important quality of any test. It is a condition in which a test can measure what is supposed to be measured.

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[12]David B. Guralnik, *Webster's New World Dictionary of The American Language*, (New York: Warner Books, 1983), p, 182.

According to Arikunto, a test is valid if it measures what it purpose to be measured.[13]

Is measurement that shows the validity of instrument? The validity of an item can be known by doing item analysis. It is counted using *Product – Moment* correlation formula:

$$r_{xy} = \frac{N\sum XY - \sum(X)\sum(Y)}{\sqrt{\left\{N\sum X^2 - \left(\sum X\right)^2\right\}\left\{N\sum Y^2 - \left(\sum Y\right)^2\right\}}}$$

r_{xy} : The correlation coefficient between X variable and Y variable

N   : The number of students

X   : The number of each item score

Y   : The number of total score

Calculation result of r_{xy} is compared with r_{table} of product moment by 5% degree of significance. If r_{xy} is higher than r_{table}, the item of question is valid.[14]

b. **Reliability**

It means "consistent".[15] Reliability refers to the consistency of test scores. Besides having high validity, a good test should have high reliability too. Alpha formula is used to know reliability of test is:

$$r_{11} = \left(\frac{n}{n-1}\right)\left(\frac{S - \sum pq}{S^2}\right)$$

Where:

r_{11} : The reliability coefficient of items

n   : The number of item in the test

P   : The proportion of students who give the right answer

q   : The proportion of students who give the wrong answer

S^2 : The standard deviation of the test

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[13] Suharsimi Arikunto, *op cit*, p. 65.
[14] Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan* (Jakarta: Bumi Aksara, 2007) 7th Ed, p. 78.
[15] J.B. Heaton, *op cit,*. p. 155.

Calculation result of r_{11} is compared with r_{table} of product moment by 5% degree of significance. If r_{11} is higher than r_{table}, the item of question is reliable.[16]

c. **Item Analysis**

After scoring the try out test, item analysis was carried out to find out the effectiveness of the items. Item analysis discussed two main things:

1) Difficulty level

Heaton states that "the index of difficulty of an item simply shows how easy or difficult the particular item proved in the test".[17] If a teacher knows deeply about item difficulty in making a test, he can make his test easy, medium, or difficult. A good test is a test that is not really difficult and not really easy. Formula for degree of test difficulty is.

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

Where:

P : The difficulty's index

B : The Number of students who has right answer

JS : The number of students[18]

The criteria are:

P = $0,00 \leq p \leq 0,30$ Difficult

P = $0,30 \leq p \leq 0,70$ Sufficient

P = $0,70 \leq p \leq 1,00$ Easy.

2) Discriminating Power

Item of discrimination power used to know how accurate the question differ higher subject and lower subject.

To calculate the index of discriminating power, the writer used the formula as follow:

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[16] Suharsimi Arikunto, *op cit.*, p. 198.
[17] J.B. Heaton, op.cit,. p. 172.
[18] *Ibid,* p. 207-208.

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$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = P_A - P_B$$

Where:

D : The degree of question distinctive

J_A : The number of participant the upper group

J_B : The number of participant in the lower group

B_A : The number of participants in the upper group who answered the item correctly

B_B : The number of participants in the lower group who answered the item correctly

PA : The proportion of participants in upper group that answered true

PB : The proportion of participants in lower group that answered true.[19]

The criteria are:

$0,00 \leq p \leq 0,20$ Less

$0,20 \leq p \leq 0,40$ Enough

$0,40 \leq p \leq 0,70$ Good

$0,70 \leq p \leq 1,00$ Excellent

2. **Pre-request Test**

Before the writer determines the statistical analysis technique used, the writer examined the normality and homogeneity test of the data.

a. Normality Test

It is used to know the normality of the data that is going to be analyzed whether both groups have normal distribution or not. The normality test with Chi-square is done to find out the distribution data.

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[19] *Ibid.*, p. 213.

The writer used Chi-square formula, as follows:

$$X^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

X^2 = Chi-square

O_i = Frequency that was obtained from data

E_i = Frequency that was hoped

k = The sum of interval class

If $X^2{}_{count} > X^2{}_{table}$, the data is not normal distribution and the other way if the $X^2{}_{count} < X^2{}_{table}$, the data is normal distribution. [20]

b. Homogeneity Test

Is used to know whether experiment class and control class, that are taken from population have same variant or not. According to Nunan, a test should be given to both classes of students before the experiment just to make sure that the both classes really are the same. [21] The steps as follows:

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

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

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

Where:

Vb : Bigger Varian

Vk : Smaller Varian

Determine dk = $(n_1 - 1) : (n_2 - 1)$

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[20] Sudjana, *Metode Statistika*, (Bandung: Tarsito, 1996), p. 273.
[21] David Nunan, *Research Method in Language Learning* (Cambridge: University Press, 1992) p. 27.

If $F_{count} > F_{table}$, the data is not homogeneous and the other way if the $F_{count} < F_{table}$, the data is homogeneous.[22]

3. **Hypothesis Test**

To respond the objectives of the study, the researcher examined the data in the following steps. Firstly, the test was done in both groups, experimental and control group. Secondly, 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 result of students' taught using picture message and those taught non picture message was significant or not.

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S\sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}}$$

With

$$S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

Where:

$\overline{X}_1$: The mean score of the experimental group

$\overline{X}_2$: The mean of the control group

n_1 : The number of experiment group

n_2 : The number of control group

S_1^2 : The standard deviation of experiment group

S_2^2 : The standard deviation of both groups

If the obtained score was higher than t-table score by using 5% alpha of significance, Ho was rejected. It means that Ha was accepted.

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[22] Sudjana, *op cit*, p. 250.

G. Procedures and Timeline

1. The researcher asks permission the headmaster and English teacher at school (first week)

2. The researcher collects documentation such as list of participants' name and the previous writing score of the participant. (first week)

3. The researcher chooses two classes that will be the control and experimental class (first week)

4. The researcher conducts the try out for validating the instrument (second week)

5. The researcher conducts pre test for control and experimental class. (second week)

6. The researcher gives treatment two times a week in two weeks for experimental class. (second week)

7. The researcher conducts post test to give evaluation in control and experimental class. (third week)

8. The researcher analyzes the data collected from documentation, pre-test, and post-test. (third week)

9. The researcher concludes the research from the result of the data analysis. (third week).