

CHAPTER III

RESEARCH METHOD

This chapter discusses methodology that is used by the researcher in the research. It deals with the type of research, research design, place and time of the Research, population, variables, instruments, technique of collecting data, and technique of data analysis.

A. Type of Research

Research is defined as “the systematic and objective analysis and recording of controlled observations that may lead to the development of generalization, principles, or theories, resulting in prediction and possibly ultimate control of events”.¹ In this research, the researcher uses experimental quantitative research. According to Best experimental quantitative research is “a systematic and logical method to find out cause and effect relationship”.²

B. Research Design

Before doing the research, the researcher arranged a research design. Research design refers to the outline, plan, or strategy specifying the procedure to be used in collecting data in a research.³ In this research, the researcher used experimental design.

In control group pretest-posttest design, the students as the sample were divided into two groups: the experimental and control group and then they were given pretest on both groups. After giving treatment to the experimental group, two groups were given posttest. The differences between the pretest and posttest scores for two groups were tested statistically to assess the effect of independent variable.

¹John W. Best, *Research in Education*, (Prentice-Hall, Inc: London, 1981), p. 18.

²John W. Best, *Research in Education*, p. 55.

³Bambang Setiyadi, *Metode Penelitian Pengajaran Bahasa Asing*, (Yogyakarta : Graha Ilmu, 2006), 1st Ed, p. 125.

measure	Pre-test measure		Post-test Treatment
Experimental group	O ₁	X	O ₃
Control Group	O ₂	-	O ₄

Figure3.1: pretest-posttest design of control and experiment group.⁴

There are two groups in this model of experiment research. First is experiment group and the second is control group. The writer decided to choose class VII B as the try out class, VII E as experiment class and class VIII C as the control class. The experiment class received a new treatment. It was taught by Picture Word Inductive Model. While, the control class taught by using conventional learning or lecturing. It was not receive a new treatment.

C. Research Setting

The researcher would like to choose the seventh grade of MTs Sunan Kalijaga Bawang Batang which is located in Jl. Sunan Kalijaga Blok II Bawang Batang,. The researcher has done the research on February 7th – March 7th 2011.

D. Subject of the Research

a. Population

Population is all the subject of the research.⁵ In this study, the population or the subjects of research are the seventh grade students at MTs Sunan Kalijaga Bawang Batang in the academic year of 2010/2011.

⁴ Sugiyono, *Metode Penelitian Pendidikan, Pendekatan Kuantitatif, Kualitatif , R & D*, (Bandung : CV. Alfabeta, 2008), 6th Ed. p. 112.

⁵ Sugiyono, *Metode Penelitian Pendidikan, Pendekatan Kuantitatif, Kualitatif , R & D*, p. 117.

The number of the population is 182 students. They are divided into VII A, B, C, D, and E.

The choice of the subjects of the study was based on the following considerations:

1. The students needed an interesting and enjoyable technique in learning English in general and specifically in vocabulary.
2. Picture word inductive model was never introduced to the students when learning English.

b. Sample

Sample is part of population.⁶ In this study, there are two class as sample. Where class VII B as the try out class that consist of 30 students, VII E as the experiment class that consist of 38 students and class VII C as the control class that consist of 38 students.

c. Sampling

Sampling is a technique to take a sample⁷. In this study, the writer used cluster random sampling technique. Finally, chosen class VII B as the try out class that consist of 30 students, VII E as the experiment class that consist of 38 students and class VII C as the control class that consist of 38 students.

E. Variable

Variable is the object of research or something that become the concern of research.⁸ In this study there are two variable.

1. Independent Variable

It is a variable that influences or causes of change or emergence of the dependent variable.⁹ Independent variable in this research is the use of

⁶ Sudjana, *Metoda Statistika*, (Bandung : Tarsito , 1996), p. 6.

⁷ Sugiyono, *Metode Penelitian Pendidikan, Pendekatan Kuantitatif, Kualitatif, R & D*, p. 118.

⁸ Sugiyono, *Statistika Untuk Penelitian*, (Bandung : CV. Alfabeta , 2005), p. 3

⁹ Sugiyono, *Statistika Untuk Penelitian*, p.4

picture word inductive model in teaching vocabulary or the method used in teaching and learning process.

2. Dependent Variable

It is variable that is affected resulting, because of the existence of the independent variable. Dependent variable in this research is the achievement of the students of the seventh grade of MTs Sunan Kalijaga Bawang Batang in vocabulary.

F. Technique of Data Collection

In gaining the data, the researcher attempts to employ these following techniques:

1. Test

Test is a set of questions and exercises used to measure the achievement or capacity of the individual or group. The participant of the test was the students at the seventh grade of MTs Sunan Kalijaga Bawang Batang that are consist of 182 students. The purposes of the test were to know students' vocabulary achievement in grammar, aspect of meaning (denotation, connotation) and meaning relationship (synonyms, antonyms and hyponyms) both the students who have been taught using Picture word inductive model those who have been taught using traditional technique (explanation only). There are two kinds of test, pre test and post test that were given to the students as participants, either the experimental or the control group. Before carrying out the teaching, the pre test was given to both groups to make sure that two groups had similar and equal level proficiencies. The post test was given to the experimental group after being taught using the Picture word inductive model and was given to the control group being taught using the traditional technique.

In this research, the researcher used multiple choice items. Multiple choice items have two parts: the stem, which identifies the question or problem, and the response alternatives. Students are asked to

select the one alternative that best completes the statement or answers the questions.

2. Documentation

The documentation method is used to look for the data concerning matters or the variable that took the form of the note, transcript, book, newspaper, magazine, inscription, ledger, agenda, etc. It refers to the archival data that helps the writer to collect the data needed. In this research, this method will use to get the data of students' name list that become respondents, syllabus, lesson plan, etc. The data will gain by the help of the English teacher.

G. Instrument

Test measurement is said well if it has good validity, reliability, degree of test difficult and degree of question distinction.

a. Validity of the Test

It is measurement that shows the validity of instrument. It is counted using product moment formula.¹⁰

$$r_{xy} = \frac{N\sum_{xy} - (\sum_x)(\sum_y)}{\sqrt{\{N\sum x^2 - (\sum x)^2\}\{N\sum y^2 - (\sum y)^2\}}}$$

Notice:

r_{xy} : question correlation coefficient

N : number of students

X : number of each item score

Y : 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.

b. Reliability of the Test

It means can be believed. Besides having high validity, a good test

¹⁰Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan*, (Jakarta : PT. Bumi Aksara, 2002), p. 72.

should have high reliability too. Sperman Brown formula is used to know reliability of test.¹¹

$$r_{11} = \frac{2xr_{1/21/2}}{(1+r_{1/21/2})}$$

r_{11} : correlation index

$r_{1/2}^{1/2}$: r_{Xy} that has been said as correlation index between instrument

c. Degree of Test Difficulty

A good question is a question 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 students¹²

The criteria are:

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

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

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

d. Discriminating Power

It is used to know how accurate the question differ higher subject and lower subject. The formula is.¹³

$$DB : P_T - P_R$$

Notice

D : degree of question

P_T : degree of difficulty from higher group

P_R : degree of difficulty from lower group

¹¹ Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan*, p. 90.

¹² Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan*,, p. 207-208.

¹³ Purwanto, *Evaluasi Hasil Belajar*,(Jogjakarta : pustaka pelajar, 2009). P.102

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

H. Techniques of Data Analysis

The following steps had been taken by the researcher to analyze the data taken from the observation and test.

1. Pre requisite test

Before the writer determines the sample, the writer should conduct a homogeneity test by choosing 2 classes with cluster random sampling. 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 homogeneity of the sample. Here, homogeneity test are employed.

- Homogeneity Test

It is used to know whether experimental group and control group, that are decided, come from population that has relatively same variant or not. It was meant to get the assumption that sample of research came from a same condition or homogenous. The writer used the formula as follows:¹⁴

$$F = \frac{\text{Biggest Variance}}{\text{Smallest Variance}}$$

The hypothesis in homogeneity test are:

$$H_0: \text{homogeny variance} = \sigma_1^2 = \sigma_2^2$$

$$H_a: \text{non homogeny variance} = \sigma_1^2 \neq \sigma_2^2$$

¹⁴ Tulus Winarsunu, *Statistik Dalam Penelitian Psikologi Dan Pendidikan*, (Malang: UMM Press 2002) cet.1 p.106

If the calculation result of F_{count} is lower than F_{table} ($F_{count} < F_{table}$) by

5% degree of significant so H_0 is accepted, it means the data is homogeneous or both of groups have the same variance.

2. Hypothesis Test

To respond to the objectives of the study, the researcher examined the data in the following steps that was to prove the researcher hypothesis about the difference of students' vocabulary achievement between students who had been taught using picture word inductive model and those who had been taught using the traditional technique (explanation only).

- a. Score the post test. After giving the post test to the students, the researcher scored its result.
- b. Compare the result of the test of the two groups. This step was done to prove the research hypothesis. Here, the t-test formula is used. In this case, because the group size is the same, the formula for computing the t-test value is like this.¹⁵

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

In which

t : t - value

$\bar{X}_1$: Average score of experimental group

$\bar{X}_2$: Average score of control group

N_1 : Number of students of experimental group

N_2 : Number of students of control group

S_1^2 : Standard deviation for experimental group

¹⁵James Dean Brown and Theodore S. Rodger, *Doing Second Language Research*, (British: Oxford Press, 2002), p. 208.

S_2^2 : Standard deviation for control groups

The test criterion is : H_a is accepted if $t_{calculated} > t_{table}$ by degrees of freedom of $df = (n_1 + n_2 - 2)$ and by the chance of 0.05 level of significance.

I. Research Procedure

In collecting data, there are some steps was taken by the writer, they are as follows:

1. Preliminary visit (meet the administration officer)

The writer visited the school to get information about teacher and students as participants. To gain the information, the writer asked the administration officer.

2. Contact the headmaster

The writer asked permission to the headmaster of MTs Sunan Kalijaga Bawang Batang by giving the permission letter.

3. Contact the English teacher

After getting permission from the headmaster, the writer met the English teacher for asking his help and guidance for the writer conducted research. And the writer explains about test and material to students.

4. Give pre requisite test

Before the writer determines the sample, the writer should conduct a homogeneity test by choosing 2 classes with cluster random sampling. 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 homogeneity of the sample. It was meant to check if the research result met the requirement of good research or not. The pre requisite test was conducted on February 9th 2011.

5. Give Try Out test

To get good instruments are used for collecting the data, the test was chosen as the instrument tried out beforehand. The result of the try-

out test was analyzed statistically to know the validity, reliability, degree of test difficulty, and degree of question distinction. It was conducted on February 11th 2011.

6. Give pre test

The writer gave the pre test to experiment and control class. They asked to answer the pictures and key words as guide given. The pre test was conducted on February 14th, 2011 for experiment class and for control class.

7. Give the treatment

The activities of the experiment and control class were started on February 21st, 26th, 28th 2011. The experiment class was given the treatment by using picture word inductive model as a media in teaching vocabulary. The control class only gave a verbal explanation without picture word inductive model as a media in teaching vocabulary.

8. Give post test

The post test was conducted after treatment for three times, it was given to test their understanding on vocabulary. It was held on March 7th, 2011.

The procedures of collecting the data could be seen in the following table.

Table 3.1.The sequences of administration of the data collection

No.	Task	What to prepare	Date
1.	Preliminary visit (meet the administration officer)	-	Friday, February 4 th 2011
2.	Contact the headmaster	Research permission letter	Monday, February 7 th 2011
3.	Contact the English teacher to ask data of data of students' as participants	-	Tuesday, February 8 th 2011

4.	Give pre requisite test	pre requisite test worksheet	Wednesday, February 9 th 2011
5.	Give Try out test	Try out test worksheet	Friday, February 11 th 2011
6.	Give pre-test	pre-test worksheet	Thrusday, February 14 th 2011
7.	Give treatment	Lesson plan, handbook, worksheets, observation checklist,	February 21 st , 26 th , 28 th , 2011
8.	Give Post-test	Post-test worksheet,	Monday, March 7 th 2011