

CHAPTER III

RESEARCH METHODOLOGY

A. RESEARCH DESIGN

This study is conducted to be an experimental research. Experimental research is research activity that aims to find out the effect of treatment in condition as an effect of treatment.³¹

The researcher uses two classes; they are experiment class and control class. Experiment class is a class that is given treatment by using pictures, and control class is a class that is given treatment but without using pictures.

The researcher can draw as follow:

Class	Dependent Variable	Independent variable
Experiment Class	X	T
Control Class	Y	T

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³¹Tim Penyusun Buku Pedoman Penulisan Skripsi, *Pedoman Panduan Skripsi Edisi Revisi*,(Surabaya, 2008),P. 08

³² Indah Tri Yuliati, *Studi Perbandingan Hasil Belajar Matematika Siswa Dengan Dan Tanpa Pemberian Tes Formatif Setiap Akhir Pertemuan Pada Materi Pokok Bangun Ruang Sisi Lengkung Di Kelas VII SMP Negeri 19 Surabaya*, Mathematic and Science Faculty, (Surabaya: UNESA Library, 2008), P. 31

Information:

X : Using pictures

Y : Without using pictures

T : Treatment

The researcher will do the research by:

1. Giving treatment to experiment class and control class
2. Looking for the result of experiment class and control class
3. Comparison the result of T in experiment class and T in control class

B. POPULATION AND SAMPLE OF THE STUDY

Population is a set (or collection) of all elements processing one or more attribute of interested.³³

The population of this study is at seventh grade of Mts Babussalam Mojoagung Jombang, it is divided into five classes (A, B, C, D classes), and there also differentiation of level, for A class, B class, and C class are students who have good intelligence. Therefore a researcher takes sample by researching two classes that have good intelligence. Why a researcher takes sample? Because a class consists of 30 students, therefore the population of classes is more than 100 students, this sample of this study is using cluster random sampling; it means that students selection of first grade of Mts Babussalam is, by knowing the level

³³ Suharsimi Arikunto, *Prosedur Penelitian*, (Jakarta PT. Rieneka Cipta: 1998) P. 339

and considering well.³⁴ This technique is based on the explanation of the teachers.

C. RESEARCH INSTRUMENT

In this research instrument is a final test. A test is an exercise that is used to measure skill, characteristic, and intelligence that have been had by individual or group.³⁵ This test is aimed to know the development of students' vocabulary by and without using pictures. This test includes five of multiple choices, five of essays, and six of blank spaces and for the items of each test has different score. The item of multiple choices is 15, it means that one item is 3 score, the items of essays is 55, it means that one item is 11, and the items of blank spaces is 30, it means that one item is 5, Sets of learning are used lesson plan.

D. DATA COLLECTION OF THE STUDY

a. The Procedure of Data Collection of the Study

In this study, the data is from quantitative data namely test score; this is used to know students' mastery in vocabulary by and without using pictures. This analysis is used statistic by using T- test.

To know whether or not the pictures can support students' vocabulary mastery, the researcher uses T test by differences between means. Before examining it, first of all it has to examine normality test and homogeneity test.

³⁴ Suharsimi Arikunto, P. 130

³⁵ Dr. Yatim Riyanto, *Metodologi Penelitian Pendidikan Kualitatif dan Kuantitatif*, (Surabaya: UNESA University Press, 2007), P. 90

1. Normality Test

It is a test to measure whether or not the data (sample) from the population distributes normal. In this research she use the formula of Chi- Square

The procedure of this test is as follow:

- a. *Making distribution frequency list of each group*
- b. *Determining alpha of each class*
- c. *Calculating mean*

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n} \quad 36$$

- d. *Calculating standard deviation*

$$S^2 = \frac{\sum (x_i - \bar{x})^2}{n-1} \quad 37$$

Information:

\bar{x} : Final score of mean

x_i : mean score

n : many data

- e. *Calculating list of expectation frequency*

The procedure is as follow:

- 1) Determining interval class is from lowest score + high class

³⁶ This information was given by Maunah Setyowati, M.Si in her course called “ statistic method” taught in sixth semester

³⁷ Maunah Setyowati, M.Si in her course called “ Statistic Method” taught in sixth semester, ibid.

- 2) Calculating limit class is from interval class
- 3) Calculating standard number (Z_i) of each interval

$$Z_i = \frac{X_i - \bar{x}}{s} ; \text{ For } i= 1, 2, 3 \dots n^{38}$$

Information:

Z_i : standard number

X_i : under limits I class

\bar{x} : mean of score (from frequency distribution)

S : standard deviation (from frequency distribution)

- 4) Determining Z limit class
- 5) Calculating area of Z table
- 6) Calculating expectation frequency (E_i)

$$E_i = L \cdot n$$

Information:

E_i : expectation frequency

L : area of each interval class

N : many data

- 7) Calculating $\frac{(O_i - E_i)^2}{E_i}$

f. Determining Hypothesis

H_0 : Sample is from population distributes normal

³⁸ Nana Sujana, Metoda Statistika, (Bandung: Tarsiti, 1996), P. 99

H_i : Sample is from population does not distribute normal

g. *Determining alpha (α)*

h. *Calculating the value of χ^2 by chi square, the formula is as follow:*

$$\chi^2 = \sum_{i=1}^k \frac{(O_i - E_i)^2}{E_i} \text{ }^{39}$$

Information:

K : many interval classes

O_i : research frequency

E_i : expectation frequency

i. *Looking for the value from $\chi^2(1-\alpha)(k-3)$*

j. *Determining criteria:*

H_0 is received if $\chi_{hit}^2 < \chi^2(1-\alpha)(k-3)$ therefore sample distributes normal

H_0 is refused if $\chi_{hit}^2 \geq \chi^2(1-\alpha)(k-3)$ therefore sample does not distribute normal⁴⁰

k. *Conclusion*

2. Homogeneity Test

Homogeneity test is comparison biggest variants and smallest variants. The researcher uses variants homogeneity test by Hartley test, the formula is:

³⁹ Nana Sujana, *Metoda Statistika*, ibid, P.273

⁴⁰ Nana Sujana, *Op.Cit.*, P.273

$$F = \frac{S_{big}^2}{S_{small}^2} \text{ }^{41}$$

Before she calculates homogeneity test, she calculates by the formula 2 population test. The procedure is as follow:

- (1) Calculating mean
- (2) Calculating standard deviation

The procedure of calculating homogeneity test is as follow:

a. *Arranging Hypothesis*

Ho : sample is from population that has variants homogeneity

Hi : sample is from population that has not variants homogeneity

b. *Determining alpha*

c. *Test statistic*

$$F_{hit} = \frac{S_{big}^2}{S_{small}^2}$$

F_{tabel} ; F; n big, n small

$F_{hit} > F_{tabel} = Ho$ is refused ⁴²

d. *Conclusion*

3. Differences between Means

The procedure is as follow:

- 1) Determining hypothesis

⁴¹ This information was given by Maunah Styowati in her course called “*Statistic Pendidikan*” taught in sixth semester

⁴² Maunah styowati, Ibid.

H_0 : Students who are using pictures can master their Vocabulary are worse than students who are without using pictures can master their vocabulary

H_1 : Students who are using pictures can master their vocabulary are better than students who are without using pictures can master their vocabulary.

- 2) Determining alpha
- 3) Calculating test statistic, the formula is

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$\text{With } V = \frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\frac{\left(\frac{s_1^2}{n_1}\right)^2}{n_1 - 1} + \frac{\left(\frac{s_2^2}{n_2}\right)^2}{n_2 - 1}} \quad 43$$

Information:

\bar{x}_1 : mean score sample 1

\bar{x}_2 : mean score sample 2

⁴³ This information was given by Maunah Styowati, M.Si in consultation on Tuesday, 28 June 2009 at 03.00 P.M

n_1 : Many of sample data 1

n_2 : Many of sample data 2

s_1^2 : sample variants 1

s_2^2 : sample variants 2

v : db

4) Conclusion

b. Qualification and Involvement in Data Collection of the Study

As the researcher researches in school of Mts Babussalam, she involves many people, they are;

- a) Head master
- b) Vice of head master
- c) Teachers
- d) Head of administration
- e) Students of first class of Mts Babussalam