

CHAPTER III

METHODS OF INVESTIGATION

This Chapter the writer would like to discuss the methodology used in gaining and analyzing the data of this research.

A. Setting

This research was conducted at the first grade students of MTsN Model Babakan Lebaksiu Tegal. It is located in Jl. Pon–Pes Babakan Lebaksiu Tegal. It started at 18th March 2010 until the research had finished at 10th April 2010.

This school was chosen to conduct the research since the students usually feel bored and unmotivated when they have to read an English passage. These influence their ability to read English. Therefore, it needs to create a way to increase the student's motivation through reading courseware.

B. Participants

1. Population

According to Encyclopedia of Educational Evaluation as cited by Arikunto, population is a set (or collection) of all elements possessing one or more attributes of interest.¹ The population of this research was the seventh grade students of MTsN Model Babakan Lebaksiu Tegal in academic year of 2009/2010. The number of the population is 340 students. The population of the research was distributed as follow:

- a. Class A with the number of 37 students
- b. Class B with the number of 38 students
- c. Class C with the number of 37 students
- d. Class D with the number of 37 students
- e. Class E with the number of 37 students
- f. Class F with the number of 36 students

¹ Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT Rineka Cipta, 2006), p. 130.

- g. Class G with the number of 41 students
- h. Class H with the number of 38 students
- i. Class I with the number of 39 students

2. Sample

Sample is a part of population to be researched.² Sample is a subset of individuals from a given population.³ In selecting the sample, the writer used purposive sampling. Arikunto state if the population is more than 100 persons, the writer might take 10-15% or 20-25% or more from population.⁴ Therefore, the writer took 22 % out of 340 students as the sample from this study or equal to 74 students. Then, the sample was divided into two groups, experimental group and control group. Each group consisted of 37 students. Students in class VII E was taught by using reading courseware and considered as experimental group. While students in class VII A was taught without reading courseware (using text) and considered as control group.

C. Research Variable

Variable is the object of research or something that become the concern by researcher to be studied to get any information and then make a conclusion of that object.⁵ This research, that used reading courseware as media to improve students' learning motivation in reading, had two variables. Those variables were:

1. The independent variable

Independent variable is the variable that influences the change of dependent variable.⁶ The independent variable in this research was the use of media in the teaching learning process for both groups. The experimental groups through reading courseware while the control group by using text only.

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. 134

⁵ Sugiyono, *Statistika untuk penelitian*, (Bandung : Alfabet, 2007).p.2

⁶ *Ibid.*, p. 4

2. The dependent variable

Dependent variable is variable that measures the influence of the independent variable. The dependent variable in this study was the students' motivation.

D. Research Design

The approach used in this research is quantitative. It is quantitative because it emphasizes the systematic measurement and quantification of variables, statistical analysis of the quantitative data, and the use of mathematical models.⁷ While the method in this research is through experimental research in which its purpose is to search or compare the certain treatment toward other within controlled condition.⁸ This kind of experiment is true experimental design in form of pretest-posttest control group design. The design of the experiment could be described as follows:

$$\begin{array}{c} \mathbf{E\ 01\ X\ 02} \\ \hline \mathbf{C\ 03\ Y\ 04} \end{array}$$

Adopted from Arikunto.⁹

Where:

E = experimental group

C = control group

01 = pre-test for experimental group

02 = post test for experimental group

03 = pre-test for control group

04 = post test for control group

X = treatment by using reading courseware

Y = treatment without reading courseware

⁷Ulin Ni'mah, *The Effectiveness of Using TGT to Teach Passive Voice of The Tenth graders of MA NU Banat Kudus in The Academic Year of 2009/2010* (Semarang: IAIN Walisongo) p. 28 .

⁸Sugiyono, *Metodologi Penelitian Pendidikan, (Pendekatan Kuantitatif, Kualitatif, dan R&D)*, (Bandung: Alfabeta, 2007), 3rd Ed, p. 107.

⁹ Suharsimi Arikunto, *op.cit.*, p. 86.

From the design above, subjects of research were grouped into an experimental group (top line) and a control group (bottom line). The quality of subjects was first checked by pre-testing them (01 and 03). Then, the experimental treatment (taught by using reading courseware) was applied to the experimental group, while the control group was taught using text only. The test was held in the form of composition. The results of post-test (02 and 04) were then computed statistically.

E. Data Collection Technique

In gaining the data, the researcher attempted to employ these following methods:

1. Documentation

It refers to the archival data that helps the researcher to collect the needed data. The document related to the object research such as students name list and the English subject schedule. The data was gained by the help of the English teacher the administration officer.

2. Questionnaire

Questionnaire refers to an achievement or ability test, where the respondent directly supplies his or her own answer to set of question. The writer use questionnaire to measure the students' motivation condition before and after the treatment.

3. Test

It is a set of questions and exercises used to measure the achievement or capability of the individual or group. In this research, there were two kinds of test, pre-test and post-test that was 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 in order to make sure that the two groups have similar and equal level of proficiencies. The post-test was given to the experimental group after being taught by reading courseware and was given to the control group after being taught without reading courseware.

F. Instruments

The instruments used here are test and questionnaire

1. Questionnaire

Arikunto defines that a questionnaire is a number of within question, which are used to gain information from respondent about respondent them selves, or their knowledge, belief, etc.¹⁰

In this research, the writer used the closed questionnaire to measure the student's motivation in learning reading. The characteristics of questionnaires measured are related to be able to read English text, having a good mark, reading for fun, reading is compulsory subject, attitudes, desire and efforts. Each item is followed by four options, namely absolutely agree, agree, disagree, and absolutely disagree. Therefore, the writer uses this form because it is simple, easily administrated and analyzed.

2. Test

Arikunto explained that a test is sequences of question or exercise are often used to measure skill, knowledge, intelligent, or talent of individual group.¹¹

The instrument of the test took from exercises in reading courseware. In this research the writer use reading courseware series "Basic English Junior 3". In it there are five reading texts, each of the text there are exercises that related to the text.

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

a. Pre-test

Pre-test was given to the experimental group and the control group in the same way. The writer took one of reading text from reading courseware, and rewrote the text and the exercises. This test was given before the experiment was run.

¹⁰ *Ibid* p. 151

¹¹ *Ibid*, p 150

b. Post-test

Post-test was given to the experiment group and the control group. It was given in order to know the improvement of students' achievement in reading. To the experiment group, this test was given after the students were taught by using reading courseware. To the control group, it was given after the students were taught without reading courseware.

G. Technique of Instrument Analysis

1. Method of Analyzing Questionnaire

The analyzing is going to find out the student's motivation in learning reading before and after the treatment. The data comes from the questionnaire using likert scales. Likert scales are used to measure attitude, opinion, and perception of someone about social phenomenon. Instruments which use likert scale have value from positive to negative. It can be from absolutely agree to absolutely disagree statements. To score scale, the response options are credited 4, 3, 2, and 1.¹²

The writer prepared 20 items as the instrument of the questionnaire. Before the items were given to the students, the writer gave tryout questionnaire to analyze validity and reliability. The tryout was given to VII C students of MTsN Model Babakan Lebaksiu Tegal. After finishing the questionnaire, the answer sheets were collected in order to be scored. An analysis was made based on the result of questionnaire by using the formula of validity and reliability.

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. According to Arikunto, a test is valid if it measures what it purposes to

¹² Sugiyono, op.cit., p 134

be measured.¹³ The validity of an item can be known by doing item analysis. It is counted using product – moment correlation formula:

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

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”. 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

K - R. 20 using alpha formula.

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

with

$$\sigma^2 = \frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N}$$

Where:

r_{11} = The reliability coefficient of item

$\sum \sigma_i^2$ = Total variance of each item

σ_t^2 = Total of variance

¹³ Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan* (Jakarta: Bumi Aksara, 1996) 12th Ed, p. 63.

¹⁴ *ibid*, p. 69.

- n = Total of item
 N = Total of students¹⁵

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

The result of tryout had been analyzing using validity and reliability formula. All of 20 items of questionnaire are valid and reliable. For further computation, see the appendix 1 and 2.

H. Analyzing the Result

a. Normality

It is used to know the normality of the data that is going to be analyzed whether both groups have normal distribution or not. To find out the distribution data, normality test is done using the Chi-square formula. Steps of Chi-square test are as follows:¹⁷

- 1) Determine the range (R); the highest score - the lowest score.
- 2) Determine the class interval (K) with formula:

$$K = 1 + (3,3) \log n$$

- 3) Determine the length of the class, using the formula:

$$P = \frac{R}{K}$$

- 4) Make a frequency distribution table
- 5) Determines the class boundaries (bc) of each class interval
- 6) Calculating the average Xi (\bar{X}), with the formula:

$$\bar{X} = \frac{\sum f_i \cdot x_i}{\sum f_i}$$

- 7) Calculate variants, with the formula:

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

- 8) Calculate the value of Z, with the formula:

¹⁵*Ibid.*, hlm 97-106.

¹⁶*Ibid.*, p. 98.

¹⁷Sudjana, *Metode Statistika*, (Bandung: Tarsito, 1996), p. 273.

$$Z = \frac{x_i - \bar{x}}{s}$$

x_i = limit class

\bar{x} = Average

S = Standard Deviation

9) Define the wide area of each class interval

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

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

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

Class	Bc	Z	P	Ld	Ei	$\frac{O_i - E_i}{E_i}$

12) Calculate the chi-square (X^2), with the formula:

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

13) Determine the degree of freedom (df). In the calculation of this data is arranged in list of frequency distribution consisting of k pieces so that the interval to determine the criteria test used formula $dk = k-3$, where k is the number of class intervals and $\alpha = 5\%$

14) Determining the value of X^2 table

15) Determining the distribution normality with test criteria:

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

b. Homogeneity

It 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.¹⁸

The steps as follows:

¹⁸ David Nunan, *loc.cit.*

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

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

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

Where:

Vb : Bigger Varian

Vk : Smaller Varian

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

- 3) Determine F_{table} with $\alpha = 5\%$

- 4) Determining the distribution homogeneity with test criteria:

If $F_{count} > F_{table}$, the data is not homogeneous and the other way if the

$F_{count} < F_{table}$, the data is homogeneous.¹⁹

- c. Test Average (t-test)

T-test was used to differentiate if the students' result of questionnaire and test by using reading courseware and without using reading courseware was significant or not. The two means were compared by applying t-test formula

Hypothesis:

Ho : $\mu_1 = \mu_2$

Ha : $\mu_1 > \mu_2$ or $\mu_1 < \mu_2$

Where:

μ_1 = The average of experiment class

μ_2 = The average of control class

For statistical test above, t-test formula as follows:

- a) If $\sigma_1^2 = \sigma_2^2$ homogeneity test of the experimental class and control class have same variant (homogeny), so, the t-test formula:

¹⁹ Sudjana, *op.cit.*, p. 250.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where:

$$s = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Cited from Sudjana.²⁰

Where:

\bar{x}_1 = the mean score of the experimental group

\bar{x}_2 = the mean score of control group

n_1 = the number of the experimental group

n_2 = the number of the control group

s = standard deviation

s^2 = variance

- b) If $\sigma_1^2 \neq \sigma_2^2$ the homogeneity test the experiment class and control class have different variant (heterogenic), so, the t-test formula:

$$t' = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left(\frac{s_1^2}{n_1}\right) + \left(\frac{s_2^2}{n_2}\right)}}$$

Cited from Sudjana.²¹

If the obtained score was higher than t-table score by using 5% alpha of significance, H_0 was rejected. It meant that H_a was accepted: "There was significant difference students' motivation and students' achievement between the experimental and control group.

²⁰ *Ibid.*, p. 239.

²¹ *Ibid.*, p. 239.

I. Procedure and Timeline

The data collection started at 18th March 2010 until 10th April 2010. That can be written the details of timeline as follows:

1. The writer asked permission to headmaster MTsN Model Babakan Lebaksiu Tegal in the end of February 2010. After giving research permission letter to the headmaster of that school, the writer met the English teacher (Mrs. Chusnul Chotimah) to ask the information of students' motivation condition in learning reading. She gave good respond about the research and after she watched the reading courseware, she gave suggestion to the writer came into the seventh grade to observe them.
2. The writer did tryout at 18th March 2010. Before carried out the pre-test, the writer did tryout in VII C. The purpose of try out test is necessary since the result will be used to make sure that the measuring instrument has such characteristics as validity and reliability.
3. The writer gave pre-test to experiment class (VII E) at 22nd March 2010 and control class (VII A) at 23rd March 2010. Before carrying out the treatment. The pre test gave to both classes in order to make sure that the two classes had similar motivation condition and similar level. In this session, the writer asked students to answer the questionnaire and did the test. The writer took one of five themes from reading courseware in title "To the Zoo". The writer rewrote the text and exercises.
4. The writer gave treatment to experiment class and control class at 24th, 25th, 27th March 5th, 6th, 7th April 2010. The students in both classes got same materials but they were taught by different media. The writer used conventional method in teaching control class and used reading courseware in teaching experiment class.
5. The writer gave post-test to experiment class at 8th April 2010 and control class at 10th April 2010. The writer asked students to answer the questionnaire and did the test.