

CHAPTER III

METHOD OF INVESTIGATION

This chapter discusses about sources of data, research design, research setting, population and sample of research, variables and indicators of research, methods of data collection, and methods of data analysis.

A. Research Method

Research is about inquiry. It has two components: process and product. The process is about an area of inquiry and how it is pursued. The product is the knowledge generated from the process as well as the initial area to be presented.¹ According to Sugiyono (2009) from purpose aspect, research can divide into two parts, qualitative and quantitative research.² Design of this research was quantitative in nature, because the result of the students' achievement in pretest and post-test. This research showed in language of mathematic and interpreted by statistical procedures. In this research, quantitative data obtained from the used of T-test.

The researcher used experimental design to identify the effectiveness of using Two-stay Two-stray method to teach students' reading skill in recount text of MTs Nurul Huda Banyuputih at the eighth grade in the academic year 2015/2016.

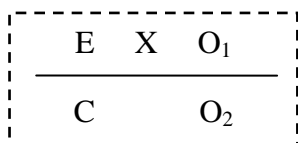
¹ David Nunan, *Research Methods in Language Learning*, (USA: Cambridge University Press, 1992), p. 2

² Sugiyono, *Metode Penelitian Kuantitatif Pendidikan (Pendekatan Kuantitatif, Kualitatif dan R & D)*, (Bandung: Alfabeta, 2009), p. 6

Subject of this research are students of VIII A (34 students) and VIII B (32 students).

According to Nunan experiments are designed to collect data in such a way that threats to the reliability and validity of the research are minimized. Experimental researchers are particularly concerned with the issue of external validity, and the formal experiment is specifically designed to enable the researcher to extrapolate the outcomes of the research from the sample to the broader population.³

Based on that statement above, the writer will use post-test only which implements for each control and experiment class in this study. While pre-test took from their daily test of each class.



Where:

E : The symbol for experiment class

C : The symbol for control class

O₁ : Post-test for experiment class

O₂ : Post-test for control class

X : The new treatment which used in experimental class

³ David Nunan, *Research Methods in Language Learning*, (USA: Cambridge University Press, 1992) p. 47

There are two groups in experimental of this research. First is experimental group and the second is control group. The writer decides to choose VIII A as the experimental class and VIII B as the control class. The experimental class will receive a new treatment. It is taught using Two-stay Two-stray method in reading recount text. While, the control class will be taught using conventional learning or lecturing. It does not receive a new treatment.

B. Subject and Setting of The Study

This research conducted at second semester in the academic year of 2015/2016. It is conducted in MTs Nurul Huda Banyuputih located at Jalan Lapangan Banyuputih Kecamatan Banyuputih Kabupaten Batang 51271. The subjects of the study are eighth grade of MTs Nurul Huda Banyuputih in the academic year of 2015/2016. Because limitation of the time, the researcher not take all students as the subjects of the study, but draw or choose the sample. The researcher chooses class VIII A and VIII B class become the sample of its population.

This research involved two classes that have an equal achievement based on the teachers' data. This homogeneity also based on the result of pre-test. Students of both classes which consist of 34 students at VIII A class and 32 students at VIII B class will be the sample. Researcher defined the function of each class and also gives a new treatment for experiment class after pre-test. A class became experimental class and the other was

control class. At the end of this research, both of the class or groups were given a post-test. Source data was taken from the school documentation and the test that will be conducted later. This research began from February 8th until February 20th 2016 in the second semester in the academic year 2015/2016.

C. Population and Sample

Arikunto stated that population is the entire research subject.⁴ The population of the research are the eighth grade students of MTs Nurul Huda in the academic year of 2015/2016 which consisting of five classes. Each class consist of 34 students for VIII A, 32 students for VIII B, 34 students for VIII C, 32 students for VIII D, 32 students for VIII E on the second semester in the academic year 2015/2016.

According to Sugiyono sample is a part of population.⁵ And Arikunto also stated that sample is representative of the population observed.⁶ The sample will be chosen has to be homogeneous, so the research will be valid. Because the classes easy to compared each other which have similar characteristic. In this study, the writer uses simple random sampling technique. It is

⁴ Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT. RinekaCipta, 2010) p. 173

⁵ Sugiyono, *Metode Penelitian Kuantitatif Pendidikan (Pendekatan Kuantitatif, Kualitatif dan R & D)*, (Bandung: Alfabeta, 2009), p. 118

⁶ Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT. RinekaCipta, 2010) p. 174

simple because the way of taking sample from population is done randomly without considering the strata or level of the population. The researcher choose two classes as sample in this research, they are VIII A as the experimental class and VIII B as the control class.

D. Variable of Research

According to Fred D. Kerlinger as cited by Arikunto, that all experiments have one fundamental idea behind them; to test the effect of one or more independent variables on a dependent variable (it is possible to have more than one dependent variable in experiments).⁷

Theoretically, variable can be defined as an attribute of someone or object which has variation between one and another. 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. Independent variable is selected by writer to determine the relationship with the dependent variable. The variable in this study are:

⁷Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT. RinekaCipta, 2010) p. 162

1. Independent Variable (X)

According to David Nunan independent variable is variable that the experimenter expects to influence the other.⁸ Independent variable also called as stimulus, predicator, and antecedent. It is a variable that influence or become to be cause of dependent variable happened.

Independent variable in this research is Two-stay Two-stray method as kinds of cooperative teaching learning process and conventional method. There are two kinds of independent variable in this research:

- a. Variable of experiment class, it is learning process by using Two-stay Two-stray method in reading recount text.
- b. Variable of control class, it is learning process by using conventional method like discussion and speech.

The indicators of independent variable are as follows:

- a. Students are divided into groups and work in group.
- b. Students conduct table around during activity.
- c. Preparing piece of papers and pens.
- d. Using two-stay two-stray method.

2. Dependent Variable (Y)

In other dependent variable has same mention with output variable. Dependent variable is a variable which influenced or become effect because of independent variable.

⁸ David Nunan, *Research Methods in Language Learning*, (New York: Cambridge University Press, 1992), p. 25

Dependent variable in this research is students' achievement in language learning reading recount text. The indicators of dependent variable are as follows:

- a. The students are able to identify the generic structure and language feature of recount text.
- b. The students are able to identify main idea of paragraph recount text.
- c. The students are able to identify sequence events and setting of the recount text.

E. Data Collection Technique

Instrument that are used to collect the data as follows:

1. Observation

Observation refers to the activity of giving total concern to research object of the sense. In this research, the concern of research focused on the students' observable behavior pertaining to their understanding on reading recount text. It used to know the condition of class and the obstacles happened during teaching learning process and it also used to see students' difficulties, problems and understanding about material given.

2. Test

Test in simple terms, is method of measuring a person's ability, knowledge, or performance in a given

domain.⁹ In the experimental research test will be conducted for both of sample class, experiment class and control class. The instrument of test in this research is objective test. It is more objective than subjective test. "Objective tests are divided into true-false test, multiple choice test, matching test, and completion test."¹⁰ The writer will use multiple choice forms.

In this research, the writer will use post-test only. Post-test will be given to experiment class and control class. It is given order to know the score of students' achievement after they taught by using two-stay two-stray (experiment class) and without two-stay two-stray (control class).

3. Documentation

Before do the research, the writer has to know the students' ability and mastery of reading recount text. 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 validate the sample. Documentation of students' written test is used to evaluate students' reading skill.

⁹ H. Douglas Brown, *Language Assessment: Principles and Classroom Practices*, (New York: Pearson Education, 2004), p. 3

¹⁰ Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan*, (Jakarta: BumiAksara, 2002), p. 164

F. Data Analysis Technique

In the data analysis technique, there are three kinds of tests that will be done in experimental research; there are try-out test, pre-requisite test, and hypothesis test.

There are three steps of process to analysis instrument of test. We called it with try-out instrument test. An analysis is made based on the result of test by using formula of validity, reliability, the degree of test difficulty and discriminating power.

1. The Validity

According to Arikunto (2010) validity is a measurement that show the levels of validity based instrument. The valid instrument if it has a high validity and unvalid instrument if it has low validity.¹¹ We can call it with valid instrument if an instrument can measure something that measured.¹²

The measure instrument to count coefficient of question validity use product moment correlation formula are:

$$\gamma_{pbi} = \frac{Mp - Mt}{st} \sqrt{\frac{p}{q}}$$

Where:

γ_{pbi} = Correlation coefficient biserial

¹¹ Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT. Rineka Cipta, 2010) p. 211

¹² Sukardi, *Metodologi Penelitian Pendidikan Kompetensi dan Praktiknya*, (Jakarta: PT. Bumi Aksara, 2009) p. 122

- Mp = The sum of object item
- Mt = The average of total score
- St = Result value of test item
- p = Students proportion that answer true in question
- q = Students proportion that answer false in question¹³

Result of r_{xy} which get from calculation that formula compare with r table *product moment*. Value of r_{table} calculated with standard of signification 5% then n appropriate with sum of respondent. If $r_{xy} > r_{table}$ we can clarify each item of question is valid. Then if $r_{xy} < r_{table}$ we also clarify the correlation there is not significant.

2. Analysis Reliability

Reliability refers to the nation that an instrument can be trusted enough to be used as data collection tool for instrument which has been already good.¹⁴ An instrument in this research has reliability value if the result of test has consistent to measure an object. It means reliable test make the researcher sure about research result that has same result

¹³ Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, (Jakarta: Bumi Aksara, 2002) p. 79

¹⁴ Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT Rineka Cipta, 2010), p. 221

when test was run.¹⁵ In this research the writer uses internal reliability. Internal reliability was obtained by analyzing data from a one-time test result. The researcher uses the K – R20 formula to measure the reliability of the instrument:¹⁶

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

Notes:

r_{11} = Reliability of the instrument

k = Sum of questions

S^2 = Varian

p = Subject proportion that answer true in questions

$\sum pq$ = Sum between cross of variable p and q

S = Standard deviation from the test

3. Difficult Level Analysis

Beside use validity and reliability, to get good and balance questions the researcher also use difficult level analysis. Balance means some questions have category begin from easy, medium and difficult appropriate with the portion.

¹⁵ Sukardi, *Metodologi Penelitian Pendidikan Kompetensi dan Praktiknya*, (Jakarta: PT Bumi Aksara, 2009), p. 127

¹⁶ Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, (Jakarta: Bumi Aksara, 2002), p. 101

Here, researcher uses difficult level analysis formula as follow:¹⁷

$$P = \frac{N_p}{N}$$

Notes:

P = Difficulty's index

N_p = Number of students who have right answer

N = Number of students

Criteria:

- a. 0.00 – 0.30 (difficult category)
- b. 0.31 – 0.70 (medium category)
- c. 0.71 – 1.00 (easy category)

4. Discriminating Power Analysis

Discriminating Power is used to know how accurate the question differ higher subject and lower subject. It is an ability of questions to know and distinguish students who have higher achievement and lower achievement. According to Arikunto (2002) calculate the index of discriminating power, the writer will use the formula as follow:¹⁸

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

Notes:

¹⁷ Anas Sudjino, *Pengantar Evaluasi Pendidikan*, (Jakarta: Rajawali Press, 2009), p. 372-373

¹⁸ Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, (Jakarta: Bumi Aksara, 2002), p. 213-214

D	= Discriminating power questions.
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.
J_A	= The number of participants the upper group.
J_B	= The number of participants the lower group.
P_A	= The proportion of participants in upper group that answered true.
P_B	= The proportion of participants in lower group that answered true.

Arikunto state that criteria of discriminating power (D) to two kinds of this questions are:

- a. $D \leq 0.00$ (Least)
- b. $0.00 \leq D \leq 0.20$ (Less)
- c. $0.20 \leq D \leq 0.40$ (Enough)
- d. $0.40 \leq D \leq 0.70$ (Good)
- e. $0.70 \leq D \leq 1.00$ (Excellent)

Analysis result of data to know the influence of teaching learning using Two-stay Two-stray technique to improve students' achievement at eighth grade of MTs Nurul Huda Banyuputih. Here the researcher uses pre-requisite and hypothesis tests where this technique can be held with steps are:

1. Normality test

The researcher did normality test in this research to know the normality distribution of class or not. The normality test with Liliefors is done to find out distribution data. The steps of normality test use Liliefors test:¹⁹

a. Hypothesis

Ho : the sample was from population which normal distributed.

H₁ : the sample was not from population which normal distributed.

b. Statistical Test

$$L_o = \max |F(z_i) - s(z_i)|$$

$$\text{Where } z_i = \frac{x_i - \bar{x}}{s}$$

Explanation:

z_i = standard value (i)

x_i = sample of data (i)

$$F(z_i) = P(z \leq z_i)$$

$$F(z_i) = \frac{\text{Total } Z_1, Z_2, \dots, Z_n \leq Z}{n}$$

c. Level significant (α) = 0,05

d. Critical Area (CA) = $\{L | L > L_{\alpha; n}\}$ with n is size of sample.

¹⁹ Mikha Agus Widyanto, *Statistika; Untuk Penelitian Bidang Teologi; Pendidikan Agama Kristen; & Pelayanan Gereja* (Bandung: Kalam Hidup, 2014), p.130-133

e. Test decision

Ho rejected if Lo in critical area.

f. Conclusion

1) Sample was from population that normal distributed, if Ho accepted.

2) Sample was not from population that normal distributed, if Ho rejected.

2. Homogeneity test

The purpose of test is to know homogeneity sample in research. If sample is homogeny, so this research can implement to all of population. It means researcher can use at all of students.

To know the homogeny of data, researcher uses two variant similarity tests, are:

$$F_{hitung} = \frac{\text{Biggest Variants}}{\text{Smallest Variants}}$$

The couple of hypothesis test are:

$$H_0: \sigma_1^2 = \sigma_2^2$$

$$H_a: \sigma_1^2 \neq \sigma_2^2$$

Criteria of trial is Ho accepted if $F_{hitung} < F_{table}$ with $\alpha = 5\%$.

3. Hypothesis test

The researcher will examine the data to respond the objectives of the study. First, the test will be done in both groups, experimental and control group. Next, the result of the test will be scored using analytic scale. Then, the means score of two groups is determined. Last, the two means are

compared by applying t-test. “T-test is one of the statistic experiments which are used to know whether there is significance difference between the two variables or not”. The formula is:²⁰

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

With,

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

Notes:

\bar{X}_1 =The mean score of the experiment group

\bar{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 of deviation of experimentgroup

s_2^2 = The standard of deviation of control group

S = The standard of deviation of both groups

If the obtained score is higher than t-table score by using 5% alpha of significance, H_0 will be rejected, It means that H_a will be accepted.

²⁰ Sugiyono, *Statistika Untuk Penelitian*, (Bandung: Alfabeta, 2010), p.138