

CHAPTER III

METHOD OF THE RESEARCH

A. Research Method

The writer took Pre – experiment research as one of the instrument used. According to Nunan that” Pre-experiment may have pre and post test, but Lacks a control group “.¹

In doing so, I intend to use quantitative research to complete this study. such as explained by Nunan that “ Quantitative research is obtrusive and controlled, objective, generalizable, outcome oriented, and assumes the existence of facts which are somehow external to and independent of the observer or research”.² It’s means that writer uses this method to analyze the collected data from the field and must go to the place of research, while to test using the pronunciation bingo game. In this research there are two variables used there are: The effect of Scientific based learning as a variable X while Improve Students’ English Subject Achievement as variable Y.

¹ David Nunan, *Research Methode in Language Learning*, (Newyork : Cambridge University Press,1992), p. 41

²David Nunan, *Research Methode.....* , p. 3

The writer took Pre – experiment research as one of the instrument used. According to Nunan that” Pre-experiment may have pre and post test, but Lacks a control group.

In this experiment, the researcher use one class for experiment. the researcher giving the pre-test before treatment, and giving post-test after treatment by using scientific based learning in tenth grade of MA Nurul Abror Pamarayan.

B. Place and Times of Research

This research will be conducted at MA Nurul Abror, this school located in Pamarayan-Serang. The reason of choose this school are easy to be reached and the researcher want to give contribution to this school. The research take time to this research on july 2019 until this research finished.

C. Population and Sample

1. Population

The definition of population According to Encyclopedia of education evaluation which quoted by Suharsimi Arikunto that “Population is a set (or collection) of all elements processing one or more attribute of interest.

2. Sample

If the researcher researches part of the population. It's mean that the research called by sample research. And the definition of Sample according to Arikunto that is sample is a part or representative of the population under study.

The methods of data research used in these studies are quantitative method. At the end of this study, an observe result of statistical analysis. In related with this research the writer will take sample . This is according to Arikunto's argument that "if the population is lack of 100, it is better to take the entire population and the research is named research population. However, if the population is more than 100, the sample can be taken 10-15 % or 20 – 25 %".³

D. Instrument

The instruments use for this research is form of test. Pre-test will give to the students before they have learning reading. Furthermore, other post-test will give after the teacher teaching reading skill. The result of the post-test will shown any effect of using scientific based learning on students' reading skill.

³ Suharsimi Arikunto,.....p.130

This instrument uses in this research is reading skill. The researcher will give the 25 questions to try out students for knowing the validity test. The researcher uses multiple choice tests,

1. Multiple choice

The researcher uses multiple choice test consists of 25 of questions about reading skill. The form of multiple choice test is constructed with four option (a, b, c, and d) that scores are (4) for the right answer and zero (0) for the wrong answer.

Calibration of the instruments is using validity and reliability test.

a. Test Validity

The writer used Point Bi- Serial correlation to get the validity of the question.

$$r_{pbis} = \frac{Mp - Mt}{St} \sqrt{\frac{p}{q}}$$

Where

Mp : Score mean of correct answer of respondent

Mt : Total score mean of all respondent

Sdt : Total score of standard deviation

P : Proportion of respondent with correct answer

Q : $1 - p$

The next step was comparing r_{pbis} of each question with r_{table} . If $r_{pbis} > r_{table}$, so the question was valid (could be used in the post test).

2. Test Reliability

Test reliability coefficient of the scores is calculated by using the Kuder Richardson Formula 20, $(KR - 20)^2$:

$$r_{pq} = \left[\frac{k}{k-1} \right] \frac{Vt^2 - \sum pq}{Vt^2}$$

Where:

r_{pq} : Kuder Richardson Reliability Coefficient

k : The number of items in the test

V_t : The sum of variant

p : The proportion subject with correct answer the item

q : $1 - P$

$\sum pq$: Number multiplication proportion who correct and in correct answer.

E. Data Collection and Data Analysis

1. Data Collection

As the study is intended to know the effect of scientific based learning on students' reading skill achievement, there are three techniques to get valid and objective information.

a. Observation

During the research, the writer takes observation about:

1) Situation of teaching and learning process during English class

Based on observation, teacher teaches students according to syllabus and textbook as main references. Some material from workbook self-study has taken in teaching. teacher is use to using some technique such as scientific based learning. Sometime teacher also uses at least four things in nonverbal communication with students, those are : eye contact, face expression, tone, gesture, and posture. In general, process teaching and learning is goes well except limit of duration time of learning. They only have two / week while target is too much.

2. Textbook

Teacher and students are using textbook and workbook for self – study (LKS – red) as basic source.

3. Infrastructure

There are 3 classes at MA Nurul Abror Pamarayan Kab. Serang and every class consist of 30 students, one office, one public library and some proponent building. Unfortunately, there is no language laboratory.

4. Test

The writer takes the objective test as one of this instruments used. It was the questions were used to measure students' ability before and after they study and know their skill in English subject.

To get data of students' reading skill, the writer carries out pre-test before giving treatment, the types of the test that is given to students is reading test by using scientific based learning. The writer gives pre-test before treatment and post-test after giving treatment. The correct answer get 4 score whereas the incorrect answer get 0 score.

5. Data Analysis

a. Tabulation of data

It is constructed into the printed column in keeping which is kind namely

- 1) The column of number
- 2) The column of name
- 3) The column of total score pre-test and post-test

b. Computation

- 1) To compute the test of normality the writer use X^2 (chi square) .

The steps for statistical analyze are :

- a) Find out range, with formula :

$$R = H - L^4$$

- b) Looking for the class interval, with formula :

$$K = 1 + 3,3 \log n^5$$

- c) Looking for the long class, with formula :

$$i = \frac{R}{K}^6$$

⁴ Anas Sudijono, *Pengantar Statistik Pendidikan*, (Jakarta: Raja Grafindo Persada.2005)p.144

⁵ Darwyan Syah, Et All, *Pengantar Statistic Pendidikan*, (Jakarata : Uin Jakarat Press, 2009)p.18

⁶. Anas Sudijono, *Pengantar Statistik....*p.144

- d) Use distribution table
- e) Make graphic polygon and histogram
- f) Making tendency distribution table to find out :

- Mean, with formula :

$$\bar{X} = \frac{\sum FX}{\sum F} \quad 7$$

- Median, with formula:

$$Me = b + p \left\{ \frac{\frac{1}{2}N - Fka}{F} \right\} \quad 8$$

- Modus, with formula :

$$Mo = b + p \left[\frac{bi}{b1 + b2} \right] \quad 9$$

- g) Determine deviation standard, with formula :

$$SD = \sqrt{\frac{\sum f(x - \bar{x})^2}{N}} \quad 10$$

- h) Test of normality, with formula :

- Accounting Z score, with formula :

$$Z = \frac{BK - \bar{X}}{SD}$$

⁷ , Anas Sudijono, *Pengantar Statistik...*p. 38

⁸ Syah, *Pengantar Statistic.....* , p.43

⁹ Syah, *Pengantar Statistic...*, p.42

¹⁰ Syah, *Pengantar Statistic...*, p.70

- Accounting X² (Chi square), with formula:

$$X^2_{\text{account}} = \sum \frac{(O_i - E_i)^2}{E_i} \quad 11$$

- i) Determining degree of freedom (df), with formula :

$$Df = k - 3^{12}$$

- j) Determining X²_{table} with signification 5 % and df (5)

$$X^2_{\text{table}} = (1 - \alpha) (df)$$

- k) After collecting data, the writer then processed the data, analyzed the data. The writer analyzed the data with formula:

- l) Investigating student's worksheet gives describe score in table.

$$\text{Student's Final Score} = \frac{\text{Student's Raw Score}}{\text{Ideal Maximum Score}(30)} \times 100$$

- m) Determine mean variable X₁ with formula :

$$M_1 = \frac{\sum X_1}{N_1}$$

- n) Determine of variable X₂

$$M_1 = \frac{\sum X_2}{N_2}$$

¹¹ M. Subana & Sudrajat, *Dasar – Dasar Penelitian Ilmiah*, (Bandung : Pustaka Setia, 2006),p.151

¹²Sudrajat, *Dasar – Dasar Penelitian* , p.152

- o) Analyzing the result by using calculation of the *t*-test as follow :

To analysis data, the writer use *t*-test. the *t*-test is the most frequently used measure in second language research when comparing mean scores for two groups. It supposed to know whether experimental group versus control group when taking the same test have the same score or not.

The *t*-test represented with the symbol *t*. the adjustment for group size made by using a table that shows different values for various group sizes. Group size is roughly adjusted fir by degrees of freedom. Degrees of freedom for *t*-test determine by subtracting one from the number of participant in each group and then two resulting together.

In this case, the formula for computing the *t*-value¹³ would look like this:

$$t_o = \frac{M_1 - M_2}{\sqrt{\left\{ \frac{\Sigma \chi_1^2 + \Sigma \chi_2^2}{N_1 + N_2 - 2} \right\} \left\{ \frac{N_1 + N_2}{N_1 \cdot N_2} \right\}}}$$

¹³ Syah, *op.cit.*p.132

M_1 = The average score of experiment class

M_2 = The average score of control class

X_1 = Sum of the squared deviation score of experiment class

X_2 = Sum of the squared deviation score of control class

N_1 = The numbers of student of experiment class

N_2 = The numbers of student of control class

2 = constant number

F. Research Procedur

| No | Activity | Month | | | |
|----|------------------------|-------|-----|------|-------|
| | | Jan | Feb | Marc | April |
| 1 | Survey | V | | | |
| 2 | Proposal | | V | | |
| 3 | Seminar Proposal | | | V | |
| 4 | Collecting & Analyzing | | | | V |
| 5 | Seminar Scrift | | | | V |