

CHAPTER III

RESEARCH METHOD

In this chapter the writer explains about research design, approach of the study, population and sample, data collection technique, data collection procedure, instruments of the study, instrument try out, instruments validity, instruments reliability, level of difficulty, and data analyze procedure.

A. Research Design

This study applied quasi-experimental design was not based on the random assignment of the subjects to the experiment group and control group.

The design was chosen on the situation of the subject of the study.¹

B. Approach of the Study

Base on the study, the writer used quantitative approach because the aim of the study to measure the effect of using multiple choice items test to the students' scores in learning vocabulary to the eighth grade students of SMP Muhammadiyah Palangka Raya.²

The writer used nonrandomized control group pre-test post-test design. The design consisted of two groups that were chose without random, they were experimental group and control group. Both of groups were given pre-test before having treatment. The experimental group was given treatment (teaching vocabulary by using multiple choice items test) and the control group was not given treatment (teaching vocabulary without using multiple choice items test).

After given the treatment for experiment class and without given the treatment for

¹Putri Dian Purnami Karang, *Improving Reading Comprehension* Denpasar : English Education Study Program Faculty of Teacher Training and Education Mahasaraswati University, p. 162

²Syamsudin,dkk.2011.*Metode Penelitian Pendidikan Bahasa*.Bandung:remaja rosdakarya. P.127

control class, both groups (experiment and control group) were given post-test.

Finally, the result of post-test was compare used T-test.

The scheme of experimental design can be seen in the following table.³

Table 3.1 The Design of Experimental Research

Group	Pre-test	Treatment	Post-test
Experiment Group	Y I	X	Y 2
Control Group	Y 1	-	Y 2

Where :

E : Experiment Group

C : Control Group

X : Treatment

Y 1 : Pre- Test

Y 2 : Post- Test

C. Population and Sample

1. Population

A population is defined as all members of any well-defined class of people, events, or objects.⁴ The population of this study was the students of the eight grade student of SMP Muhammadiyah Palangka Raya. There are 142 of the eighth grade students that divided into six classes.

Table 3.2 The Number of Eight Grade Students of SMP

Muhammadiyah Palangka Raya

³Donald Ary dkk, *Introduction To Research In Education*, Canada : Wadsworth, 2010

⁴ Donald Ary, Lucy Cheser Jacobs, *Chris Sorensen, Introduction to Research in Education*, Wadsworth: Cengage Learning, 2010, Student Edition, p.148

Population		
Num	Classes	Total of Students
1.	VIII/A	24
2.	VIII/B	25
3.	VIII/C	24
4.	VIII/D	20
5.	VIII/E	25
6.	VIII/F	24
Total		142

2. Sample

According to Arikunto, sample is some or represent of population that is researched.⁵ It is a group selected from population for observation in a study.

On this study, the writer determined two classes into two groups. Class VIII/1 and VIII/4 were chosen as the sample. They were 24 students of VIII/1 as experiment class and 20 students of VIII/4 as control class..

Based on the explanation above, the writer took two classes VIII/1 and VIII/4 which will be related to this study. The sample of the study was chosen by using cluster sampling, cluster sampling is to list all the members of a target population and select the sample from among them.

Table 3.3 Number of Sample

NO	Group	Class of student	Number of students
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⁵ Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktek*, Jakarta: PT. Rineka Cipta, 2002. p. 131.

1	E	VIII/1	24
2	C	VIII/4	20
Total Number			44

E : Experiment Group

C : Control

D. Data Collection Technique

The technique to collecting the data, the writer used a test and documentation. The writer used a test as technique to find data of students' scores, it was consisted of 30 items of multiple choices. Documentation used to find the number of students, condition of school, condition of students and syllabus.

E. Data Collection Procedure

To get the data, the writer used some ways in this study. Those ways were:

1. The writer observed to the school and interviewed to the English teacher in SMP Muhammadiyah Palangka Raya. The interview done to get the data about the number of class, the number of students, and the teaching learning process.
2. The writer gave try out to VIII 3, where the question consisted of 50 items.
3. The writer took score the result of try out.
4. The writer analyzed validity and reliability of try out.
5. The writer chose the class of experiment and control class.

6. The writer gave pre-test to both of classes. The writer taught to the experiment class by Using Multiple choice test in two meetings.
7. The writer taught the control class by using W5+1H method based on method that usually used by English teacher in SMP Muhammadiyah Palangka Raya also in two meetings.
8. The writer gave post-test to the both of groups. It consisted of 30 items of multiple choices.
9. The writer took scores from the pre-test and post-test done and analyzed the data obtained.
10. The writer interpreted and concluded the result of data analysis.

F. Instruments of the Study

Instruments of the study are tools or facilities that was used by the writer in collecting the data. The writer used multiple choice test about descriptive text as an instrument to collect data because the students' vocabulary score is known by using the test

G. Instruments Try Out

The writer conducted try out of instrument to know the reliability, validity and level of difficulty. The try out consisted of 50 items of multiple choice items,, which was administred to the VIII/3 students of SMP Muhammadiyah Palangka Raya. The procedure of instrument try out as follows:

1. the writer conducted try out instruments to the testees.
2. The writer took score of the testees' answer.

3. The writer analyzed the obtained data to know the instrument validity, instrument reliability, and index of difficulty.

H. Instruments Validity

The validity of a test is extent to which it measures what is supposed to measure and nothing else.⁶ An instrument is considered to be a good one if it meets some requirement. One of them is validity. Provide a true measure of a particular skills it is intended to measure, to the extent that is measures external knowledge and other skills at the same time, and it will be a valid test

Validity on this study is distinguished into some kinds as follows:

1. Face Validity

Face validity is an estimate of whether a test appears to measure a certain criterion; it does not guarantes that the test actually measures phenomena in that domain. The test is intended to measure the students' vocabulary scores in the eighth grade: it should cover material in the eighth grade. It is based on syllabus and the test using English.

2. Construct Validity

This type of validity assumes the existence of certain learning theories or constructs underlying the acquisition of abilities and skills.⁷ If a test has construct validity, it is capable of measuring certain specific characteristic in accordance with a theory of language behavior and learning. Construct validity refers to the extend to which operationalization of a construct (e.g. practical test develop from a theory and syllabus) do

⁶JB. Heaton, *Writing English Language Test*, England: Longman, h.153

⁷ J. B. Heaton, *language testing*. 1989. p. 154

actually measure what the theory says they do. The question that given to the students which related to the syllabus it was consistend of 30 items were constructed base on the descriptive text to gain the students vocabulary scores.

No	Kinds of vocabulary Based on syllabus of SMP Muhammadiyah Palangka Raya	Quantification
1	Noun/Noun Phrase	7
2	Adjective/ Adjective Phrase	11
3	Verb/Verb Phrase	3
4	Adverb of Time	2
5	Adverb of Place	5
6	Preposition/Preposition Phrase	2
Total		30 Items

3. Content Validity

The content validity has something to do with questions as to how eduquately the text content sample larger domain of situation at presents. In the other words a test is supposed to be valid in terms of its content when it is developed as to contain eduquately representative sample of the course, the objective, and the items. The text is base on the material that contains short functional text about descriptive text. It was made based on the curriculum applied in SMP Muhammadiyah palangka Raya.

Based on the explanation above, in making the test the writer tried to match each of the test items with the curriculum and syllabus used by SMP Muhammadiyah Palangk Raya. The purposed was to make the test was appropriate to the lesson that the students gotten.

I. Instruments Reliability

Reliability is necessary characteristics of any good test: for it to be valid at all, a test must first be reliable as measuring instrument.⁸ If the test is administered to the same candidates on different occasions (with no language practice work taking place between these occasions), then, to the extent that it produces different results, it is not reliable.

Reliability measured in this way is commonly referred to as test/reliability. In short, in order to be reliable, a test must be consistent in its measurements. There are number of ways in estimating test reliability. In this study, the reliability of the test was measured by ANATES V4 application program. The result of the data had obtained that the result of average calculation is 28,08, the result of standard deviation calculation is 7,22, the result of correlation calculation XY is 0,71, and the result of reliability test calculation is 0,83.

J. Level of Difficulty

Arikunto state the index of difficulty is used to know whether the students can accept the test or not, whether the test are too easy, accepted or too difficult for them.

To measure the validity, reliability and level of difficulty of instruments, the writer used ANATES VERSI 4. Anater is a computer application program that function to analyze test item especially for multiple choice test. This program was

⁸(Heaton 1975:154).

developed by Karno To.⁹Based on ANATES application the significant correlation is valid items and level of difficulty is sufficient, it means the items can used for the test in pre-test and post-test between experiment and control class. The content of test items were then show in the following table:

Table 3.4. Analysis Recapitulation Items Research Instruments

Items	Differentiation of Capacity(%)	Level of Difficulty	Correlation	Significant of Correlation
1	-16,67	Easy	-0,216	-
2	50,00	Medium	0,332	Significant
3	0,00	Very Difficult	NAN	NAN
4	33,33	Medium	0,186	-
5	33,33	Medium	0,304	Significant
6	33,33	Medium	0,329	Significant
7	50,00	Medium	0,373	Very Significant
8	50,00	Medium	0,318	Significant
9	16,67	Easy	0,122	-
10	100,00	Medium	0,776	Very Significant
11	50,00	Medium	0,321	Significant
12	66,67	Medium	0,500	Very significant
13	16,67	Very Easy	0,356	Very Significant
14	83,33	Medium	0,683	Very Significant
15	16,67	Very Easy	0,283	-
16	100,00	Medium	0,783	Very Significant
17	0,00	Very Easy	NAN	NAN
18	16,67	Medium	0,149	-
19	66,67	Very Easy	0,094	-
20	16,67	Medium	0,483	Very Significant
21	50,00	Medium	0,345	Significant
22	66,67	Medium	0,471	Very Significant
23	66,67	Medium	0,496	Very Significant
24	0,00	Very Difficult	NAN	NAN
25	50,00	Medium	0,337	Significant
26	33,33	Medium	0,383	Very Significant
27	0,00	Very Difficult	NAN	NAN
28	66,67	Medium	0,608	Very Significant
29	0,00	Very Easy	NAN	NAN
30	0,00	Very Difficult	0,018	-

⁹Yudha Andana Prawiro, *Analisis Butir Soal Dengan Menggunakan Software Anates v4*, modul. Bandung : UPL.2008.td.

Items	Differentiation of Capacity(%)	Level of Difficulty	Correlation	Significant of Correlation
31	50,00	Medium	0,471	Very Significant
32	-16,67	Medium	-0,027	-
33	66,67	Medium	0,630	Very Significant
34	83,33	Medium	0,671	Very Significant
35	33,33	Medium	0,304	Significant
36	0,00	Medium	0,021	-
37	0,00	Very Easy	NAN	NAN
38	50,00	Easy	0,524	Very Significant
39	0,00	Very Easy	NAN	NAN
40	83,00	Medium	0,683	Very Significant
41	83,00	Medium	0,460	Very Significant
42	50,00	Medium	0,396	Very Significant
43	66,67	Medium	0,432	Very Significant
44	83,33	Medium	0,557	Very Significant
45	50,00	Medium	0,354	Very Significant
46	33,33	Medium	0,301	Significant
47	33,33	Medium	0,357	Very Significant
48	-33,33	Medium	-0,253	-
49	33,33	Medium	0,296	Significant
50	16,67	Very Difficult	0,263	-

Based on the table there are 33 valid items of 50 items that had given to the class VIII 3 for the try out, but the writer choose 30 items only. The writer choose the items if in each item had level of difficulty is medium. So, the writer choose items number: 2, 4, 5, 6, 7, 8, 10, 11, 12, 14, 16, 18, 20, 21, 22, 23, 25, 26, 28, 31, 32, 33, 34, 35, 40, 41, 42, 43, 44, 45, 46, 47, and 49 for the next test both of group (experiment class VIII 1 and control class VIII 4) of SMP Muhammadiyah Palangka Raya.

K. Data Analyze Procedures

To analyze the data in this study, the writer used quantitative statistical technique as follow:

1. In this study, the writer used statistical of T-test to determine the final to (t-observation). That was done to measure the last score of experiment and control group by using T-test. T-test was used to measure the differences between the mean scores of the experimental class and control class of the eight grade student's post-test of learning vocabulary in reading text.¹⁰
2. Before the writer calculated the result of both groups, sample data must have the normal frequency distribution. The writer did normality test and variance homogeneity test.
 - a. Normality Test

Test normality was needed to know whether the data that analyzed distributed normal or not. It was important to take kind of statistic used. In this study, the writer used the SPSS 20.0 for windows to analyze the normality distribution of the scores with the steps as follows: stating the hypothesis and setting the alpha level at 0,05 (sig.2-tailed) analyzing the normality distribution using Kolmogorov-Smirnov formula in SPSS for windows.

¹⁰Lia Maretnowati, *The Effectiveness of Pre-Reading Activity (Questioning and Viewing Pictures) In Student's Comprehension In Reading Recount Text*, Jakarta : English department of Syarif Hidayatullah University, 2014.t.

b. Variance Homogeneity Test

In analyzing the variance homogeneity of the scores, the writer used the Levene Test formula in SPSS 20.0 for windows. Comparing the probability with the level significance for testing the hypothesis. If the probability > the level of significance (0,05) the null hypothesis is accepted, variance of the experimental and control class are homogenous.

3. The result of between experiment and control class was calculated by T-test ondependent sample. The result of between experiment and control class is calculated by T-test formula as follows:

$$T_o = \frac{M_x - M_y}{SE M_x - M_y}$$

Where:

M = The Average of Students Score

SD = Standard Deviation

SE = Standard Error

X = Experiment Class

Y = Control Class

If t-test (the value) > t table, it means Ha is accepted and Ho is rejected.

If t-test (the value) < t table, it means Ha is rejected and Ho is Accepted.

4. Discussing and conclusion the result of data analysis.

The result of between experiment and control class was calculated by t-test independent sample with SPSS 20.0 for windows.

After collecting the data by using test, the writer analyzesthe result of the test. To find out the result of the test, the writer usesome statistic and takes steps the following:

- a. Identifying the students` mistake by reading the students worksheetone by one
- b. Giving the score, in determining this, the writer will find the percentage of each problem type.

Statistical procedures are steps that used statistically to analyze the students` scores. To interpret the result of the students` worksheet,I used statistical procedures as follows:

a. Mean

The mean is the average of group scores. It is used to determine theposition of the students in achieving or mastering the given materials.The way to compute the mean is adding all the students` scores thendividing this sum by the number of the test takers. The formula used tocompute the mean is as follows:

$$\bar{X} = \frac{\sum X}{N}$$

Where:

X : Mean

$\sum X$: Sum of Any Test Score

N : Sample

b. Mean Deviation of experimental Class

The formula is as follow:

$$\frac{Mx = \Sigma x}{N}$$

Where:

Mx : Mean of Experimental Class

Σx : Total of Deviation of Experimental Class

N : Number Students of Experiment Class

c. Mean Deviation of Control Class

The formula is as follow:

$$\frac{MY = \Sigma Y}{N}$$

Where:

MY : Mean of Control Class

ΣY : Total of Deviation of Control Class

N : Number Students of Control Class

d. To find out the deviation of each post test score from pre test score of experimental class.

The formula is as follow:

$$\Sigma \chi^2 = \Sigma x^2 - \frac{(\Sigma x)^2}{N}$$

Where:

$\Sigma \chi^2$: Deviation of Each Post Test Score from Pre Test of Experimental

Class

N : Number Students of Experimental Class

- e. To find out the deviation of each post test score from pre test score of Control class.

The formula is as follow:

$$\Sigma Y^2 = \Sigma Y^2 - \frac{(\Sigma Y)^2}{N}$$

Where:

Σy^2 : Deviation of Each Post Test Score From Pre Test of Control Class

N : Number of Students of Control Class

- f. In hypothesis testing, the writer uses T-test formula.

The T-test which is used in this research is as follows:

$$T\text{-test} = \frac{M_x - M_y}{\left(\frac{\Sigma x^2 + \Sigma y^2}{N_1 + N_2} \right)^{\frac{1}{2}} \left(\frac{1}{N_1} + \frac{1}{N_2} \right)^{\frac{1}{2}}}$$

Where:

M_x : Mean Deviation of Experimental Class

M_y : Mean Deviation of Control Class

Σx^2 : Deviation of Each Post Test Score from Pre Test of Experimental Class

Σy^2 : Deviation of Each Post Test Score from Pre Test of Control Class

Then the writer looked for the degree (df) and the level of significance to consult the result to the T-test. If the t- obtained value higher or same t- table ($t\text{- obtained} > t\text{- table}$) H_0 is refuse, and t- obtained value is lower or same t-table ($t\text{- obtained} \leq t\text{-table}$) is rejected.