CHAPTER III
RESEARCH METHOD

This chapter was going to discuss research time and place of the study, research design and approach, population and sample, research instrument, instruments try out (research instruments reliability, research instruments validity, index of difficulty), data collection, data analysis procedures.

A. Time and Place of The Study

The study was conducted at the MTs Islamiyah which located on Jl. Dr. Murdjani Palangka Raya.

B. Research Design and Approach

This study uses quantitative design. It is quantitative design because quantitative is the data that from of number using statistic data. According to Donald Ary "Quantitave research a ginnery employing operational definitions to generate numeric data to answer predator mined hypotheses or questions."[1] Creswell states that a quantitative study, consistent with the quantitative paradigm, is an inquiry into social or human problems based on testing a theory composed of variables, measured with numbers, and analyzed with statistical procedures, in order to determine whether predictive generalization of the theory hold true.[2]

The writer applied the quasi experiment approach. Experimental design is a study design in which the researcher imposes some artifical constraints in the setting, manipulates the indepedent variable to establish cause-effect relationship or both.

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[1]Ary Donal, et…all. *Introduction To Research In Education Ceight,* Canada: Wadsworth Engage Learning, 2010,p. 648.

[2] John W.Creswell, *Qualitative And Quantitative Approach*, 1994, california: SAGE Publications, inc, 1994, p.2

Experimental design is a plan for an experiment that specifies what independent variables will be applied, the number of levels of each, how subjects are assigned to groups, and the dependent variable. In the present study, the writer typically compare two groups, one of which (the experimental group) receives the treatment, while the other (the control group) does not. The *nonrandomized control group, pretest–posttest design* is one of the most widely used quasi-experimental designs in educational research. The design is as follow :[3]

Tabel 3.1

Nonrandomized Control Group, Pretest–Posttest Design

Subject	Pre test	Treatment	Post test
E	Y_1	X	Y_2
C	Y_1	-	Y_2

Where are:

E   : Experimental group will use anagram

C   : Control group will use traditional method

Y_1 : Pre – test

X   : Treatment

Y_2 : Post – test

Because both of experiment group and control group take some pre test and post test, and the study has done at the same time. The experiment group just learning english and apply the anagram (the threatment) and the control group was taught using traditional method.

C. Population and Sample of the Study

1. Population

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[3] Donald Ary, et...all, *Introduction to Research in Educations*, Wardsworth: USA, 2010, p.317

Population is the whole of research subject, if someone wants to research all of the elements in research area his research is called population research on survey study.[4]

A population is defined as all members of any well defined class of people, events, or objects.[5] The population in this study was all students of eight grade of MTs Islamiyah of Palangka Raya. There are four classes in the eight grade of MTs Islamiyah of Palangka Raya. There were 97 of the eight grade students that divided into three classes.

Table 3.2
The Population Number of Students

NO	CLASSES	NUMBER OF STUDENTS
1	VIII A	22
2	VIII B	22
3	VIII C	24
4	VIII D	25
Total		93

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2. **Sample**

Sample is a part of population. According to Arikunto, sample is some or represent of population that is researched.[6] It is a group selected from population for observation in a study. The writer takes two classes of MTs Islamiyah of Palangka Raya will be the sample, the first class is experiment group use

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[4] Suharsimi Arikunto, *Procedure Penelitian : Suatu Pendekatan Praktek.* Jakarta : PT. Rineka Cipta, 2000,p.108

[30]David Nunan, *Research Methods in Language Learning*,Cambridge: Cambridge University Press,1992 , p. 232

[6] Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktek*, Jakarta: PT. Rineka Cipta, 2002. p. 131.

Anagram and the second class is control group non-use Anagram. Due to the intact class, the writer cannot use simple random sampling to select the sample. According to Ary, it is very difficult, if not possible to list all the members of a target population and select the sample from among them.[7] Therefore, the writer used cluster sample sampling. Because the unit chosen is not an individual but a group of individuals who are naturally together or grouped by the school.[8] Those are all the Students of VIII A and VIII B of MTs Islamiyah Palangka Raya.

Table 3.3
Number of Sample

NO	Group	Class of student	Number of students
1	E	VIII A	22
2	C	VIII B	22
Total Number			44

E   : Experiment Group

C   : Control Group

D. **Research Instrument**

Instrument of the study is very needed in the research. It is because the instrument is tool to get the data of study, in which the data is the important things to help the writer in answering the problem of the study and also to prove the hypothesis. The data also needed to find the aim of study. It is to measure the effect of using anagram in teaching English vocabulary to the eight grade students at MTs Islamiyah Palangka Raya.

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[7] Donal Ary, (et all) *Introduction To Research In Education Eight,* United state : Wadsworth (engange Learning, 2010), p. 649.
[8] *Ibid,*p.154

The writer collected the data of this study by using a test and the result of the test to measure the students' vocabulary scores about anagram. The test is vocabulary test. According to Heaton, a test of vocabulary measures the students' knowledge of the meaning of certain words and word group.[9] In this study, the writer used gap fill items to check the students' vocabulary scores and the total number of test is eighty two questions.

The categories of the specification as follows :

Table 3.4
The Content Specification of Test Items

No	Indicators	Total Items	Percentation
1	Noun	51 Items	62,20 %
2	Verb	25 Items	30,49 %
3	Adjective	6 Items	7,31 %
	Total	82 Items	100 %

Based on table above the specification for noun there are 51 items, 62,20%, verb there are 25 items, 30,49 %, and adjective there are 6 items, 7,31%, so the total items there are 82 items.

To know the compare score of test items as follows:

Table 3.5
The Compare Score of Test Items

Part of Speech	Control				Experiment			
	Pretest		Posttest		Pretest		Posttest	
	True	False	True	False	True	False	True	False
Noun	35	16	38	13	36	15	41	10
Adjective	6	0	6	0	6	0	6	0
Verb	15	10	20	5	18	7	22	3

[9] J.B. Heaton, *Writing English Language Test*, England: Longman, 1975. P. 5.

The writer make test based on the material and be appropriated with syllabus that used by the school. The writer gave pre-test and post-test to the both experimental and control group. Pre test is a test given before the writer gives treatment. The function of pre test is to know how are the students' vocabulary scores before they taught by using anagram. Post test was a test given after a lesson or a period of instruction. The function of post test was to know how are the students' vocabulary scores after they taught by using anagram.

A. **Instruments Try Out**

Instruments are a number of question to test vocabulary size. Before instruments are used to test vocabulary size, the writer took conduct try out. The porpuse is to see whether test (instruments) have fullfied characteristic of a good test. Try out is used to measure the suitable instrument and the students' vocabulary size. Instrument try out is definitely important before the instrument tested to the real sample. The try out test used to validity and reliability, so the writer conducted try out before the test given to the sample to this research. The purpose of instrument try out is in order to validity and reliability of the test item. The try out were done by 10- 20 % students of the total number of the population. The writer chose 21 the eighth grade students(VIII D) MTS Islamiyah include nine man and eleven women to follow the try out. The try out was conducted on Monday 23 September 2015, 09.00 am at MTS Islamiyah Palangka Raya. The 21 students were done the tryout of Vocabulary test. After doing try out all of item were valid and can be given as the instrument of the study. The results of try out there are 82 items valid and there are 118 items invalid.

There are the procedures that in carrying out this try out as follows:

a. Preparing the instrument

The wirter preparing the instruments vocabulary test,for the students test.

b. Telling to the students how to do

The writer telling to the students about how many test items for vocabulary test.

c. Giving the test items to students.

The writer giving test items, who is giving of the test? The test gave of the eight grade student's junior high school. Where place of test? The place of test at MTS Islamiyah Palangka Raya. What did the students of test? The students correct the answer of the question vocabulary test. How the students answer of the test? The students answer of the question based on their knowledge.

d. Collecting the students' work

The writer collecting the students' work, after the students finished the answer of the question.

e. Scoring the students' work

The writer gave score the students' work use formula.

The writer calculating the result of test use formula based on the book

f. Analyzing the result of the test and enter it in to the table

The witer analyzing the result of the vocabulary test and enter to the tabel.

g. Calculating the result

1. **Research Instruments Reliability**

Reliability is necessary characteristic of any good test: for it to be valid at all, a test must be reliable as measuring instrument.[10] According to Susan Stainback, *reliability is often defined as the consistency and stability of the data or finding. From a positivistic perspective, reliability typical is consideres to be synonimous with the consistency of the data produced by observation made by different researchers, by same researcher by the same researcher at different times, or by splitting a daa set in two parts.* To measure the reability test, the writer used SPSS 2.1. (See Appendix 7.1).

2. Research Instruments Validity

The validity of a test is the extent to which measure, what is supposed to measure and nothing else.[11] According to Gronlund "content validity is the process of determining the extent to which a set of test tasks provides relevant and representative sample of the domain of tasks under consideration."[12] Instrumentation validity discuss about construct and content validities of the test which use in this research.

a. Face validity

This type of validity, in fact is often referred to as face validity : if a test item looks right to other testers, teachers, moderators, and tastes.

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[10] J.B. Heaton, *Languauge Tesingt*(Published Tests, May 1989)*,* p.155
[11]Anas Sudijono, *Pengantar evaluasi Pendidikan,* Jakarta: Raja Grafindo Persada, 2005, p. 185.
[12]Norman E. Gronlund, *Measurement and Evaluations in Teaching,* New York: Macmillan Publishing Company, t.th, p. 83.

The test used by the writer is suitable to others and the same level that is Junior High School level. So that is why, the writer makes the type of test items also suitable in the eight grade students at the MTs Islamiyah of Palangka Raya. the face validity of the test item as follows :

1) The kind of the test is vocabulary test which is about noun and verb.

2) The forms of the test items is arrangement words.

3) The language of items uses English.

4) The test items are suitable to the secondary school.

Face validity concerns the appeal of the test to the lay judgment, typically that of the candidate, the candidate's family, members of the public and so on. Sometimes the students do not know what is being tested when they tackle a test. Sometimes they feel that the test doesn't test what it is supposed to test. A test has face validity if it is carefully constructed, it has a well thought-out format, its items are clear and uncomplicated, its difficulty level is appropriate for students, and the condition for all students is the same.

b. Construct validity

Construct validity is type of validity which assumes the existence of certain learning theories or construct underlying the acquisition of abilities and skills. In this case, the test is a written test in order to measure the students' vocabulary size. It is type of validity that is essential for tests that are used to individuals on certain abilities. Then, to measure the validity of the instrument, the writer used SPSS 2.1.

c. Content validity

The test item in this research is to measure the students' English vocabulary size and base on the English teaching learning curriculum apply in MTs Islamiyah of Palangka Raya. In making the test, the writer try to match each of item test with the curriculum that is used by MTs Islamiyah of Palangka Raya.[13]

3. **Index of Difficulty**

According to Heaton the index of difficulty or facility value is the fraction or percentage of the students who answer the item correctly.[14] It is use to show how easy or difficult the particular item proved in the test. The index difficulty can be known by the formula:

$$FV = \frac{R}{N}$$

Where:

FV = facility value (index of difficulty).

R   = represent the number of correct answer.

N   = the number of students taking the test.

Then the result of the formula above is related to be value of F.V as in the following on:

F.V 0.00-0.30 = Difficult

F.V 0.30-0.70 = Fair

F.V 0.70-1.00 = Easy

[13] J.B. Heaton, *Writing Language English Test*, London: Logman 1974, p.153-154
[14] J.B Heaton, *Language Testing,* 1974, P. 172.

4. Index Homogeneity

It is used to know whether experimental group and control group, that are decided, come from population that has relatively same variant or not. The formula is: [15]

$$F = \frac{\text{Bigger Variant}}{\text{Smaller Variant}}$$

Notice:

F: Frequence

The hypothesis in homogeneity:

$F_{value} \leq F_{table}$, Means both of variant are homogeneity.

$F_{value} > F_{table}$, Both of variant are homogeneity.

If calculation result of F is lower than F table by 5% degree of significance so H_O is accepted, it means both groups have same variant.

1. Index Normality

It is used to know the normality of the data that is going to be analyzed whether both group have normal distribution or not.

Chi square is used here: [16]

$$\chi^2 = \sum [\frac{(f_o - f_h)^2}{f_h}]$$

Notice:

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[15] J.B. Heaton, *Writing English Language Test,* Longman, 1975, p. 172.
[16] Sudjana, *Metode Statistika*, (Bandung: Tarsito, 1996),p.273.

χ^2 = Chi square

f_o = frequency from observation

f_h = expected frequency

Calculation result of χ^2 is compared with x table by 5% degree of significance. If

χ^2 is lower than x table so the distribution list is normal.

2. The formula

They are: [17]

a. **Mean :** $M_x = \dfrac{\Sigma fx}{N}$

   Where:

   Mx: Mean

   N: Number of case

   Fx: Total result product between each score with frequency.

b. **Median :** $Mdn = 1 + \dfrac{\frac{1}{2}N - fka}{fi} Xi$

   Where:

   Mdn: Median

   N: Number of ease

   Fkb: Cumulative Frequency located in underscore content median

   Fi: Authentic frequency (frequency of score content median)

   I: interval class

c. **Modus :** $Mo = 1 + \dfrac{fa}{fa - fb} X i$

   Where:

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[17] Hartono, *Statistik Untuk Penelitian,* Yogyakarta: pustaka belajar,2011,p.33.

Mo: Modus

Fa: Frequency located in above interval content modus.

Fb: Frequency located in under content modus

d. Standard Deviation

$$SD= \sqrt{\frac{\sum fx2}{N}}$$

Where:

SD: Deviation Standard

I: interval class

Fx': total result product between frequency each interval with X

N: Number of class

e. Standard Error

$$Sem = \frac{sd}{\sqrt{n-1}}$$

B. Data Collecting Procedures

To get the data, the writer uses some ways in this study. Those ways are:

1. The writer chose the place of the study.

2. The writer make instrument try out.

3. The writer showed the try out to the class that have been determined

4. The writer gave instruction to the students to do the test of try out.

5. The writer checked the result of test of try out.

6. The writer checked the validity and reliability of test.

7. The writer gave pretest to both classes.

8. The writer checked the result of pretest.

9. The writer gave treatment to both classes. Experiment group using (anagram) and than control group using (traditional methode).

10. The writer gave posttest to both classes.

11. The writer checked the result of posttest.

12. The writer gave score to students' answer (pretest and posttest).

C. Data Analysis Procedures

The data of this study is students' vocabulary ability score. Therefore, the data are quantitative. To analyze the data has been collected; the writer used some procedures in this study:

1. The writer collected score of test (pre test and post test).

2. The writer analyzed the data have been collected.

3. The writer gave score to the students' test result by using the formula:

Score : $\frac{B}{N}$ x 100%

B: frequency of the correct answers

N: number of test item

4. Tabulating the students' score into distribution of frequency in the table, then find out the mean of students' score, standard deviation, and standard error of variable X1 (Experimental group) and X2 (Control group).

5. Calculating the data by using t-test to test the hypothesis of the study, whether the used animation pictures give effect to the students' score or not . To examine the hypothesis, the writer used *t-test*. Test "t" or "t" Test is statistical test which is used

to examine the truth or falseness of null hypotheses states that between two of Sample Mean taken randomly from the same population, there was no significant different. [18] "t test" was used to measure whether animation pictures give effect to students' english score using the formula as follows: [19]

$$t_o = \frac{M_1 - M_2}{SEm_1 - m_2}$$

Note:

$M_1 - M_2$: The difference of two means

$SEm_1 - m_2$: The standard error of the difference between two means

To know the hypothesis is accepted or rejected using the criterion:

If t-test (the value) $\geq$ 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.

Interpreting the result of t-test. Previously, the writer counted the degrees of freedom (df) with the formula: [20]

$$df = (N_1 + N_2 - 2)$$

Note : df : degrees of freedom

N$_1$: Number of subject group 1

N$_2$: Number of subject group 2

2 : Number of variables

[18] Anas Sudijono, *Pengantar Statistik Pendidikan*,Jakarta : RajaGrafindoPersada, 1987, p.278.
[19] Ibid, p 284.
[20] *Ibid*, p. 285.

After that, the value of t_{test} was consulted on the t_{table} at the level of significance 1

% and 5 %. In this research, the writer used the level of significance at 5 %. If the

result or t-test is higher than $t_{table,}$ it means Ha is accepted.

6. The writer concludes data analysis obtained.

7. Discussing and concluding the result of data analysis.