CHAPTER III

RESEARCH METHOD

In this chapter the writer explains about the research methodology. This chapter consists of approach and type of the study, place and time of the study, the population and sample of the study, research instrument try out, research instrument validity, research instrument reliability, the data collecting procedure and the data analysis procedure.

A. Method of the Study

The method in the study was Quantitative method. The writer used this method because the writer wanted to measure the effect of hot-seating technique on vocabulary size by test pretest and posttest. Quantitative research Inquiry employed operational definitions to generate numeric data to answer predetermined hypotheses or questions.¹

B. Research Design

The design of this study was experimental design. 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.² The writer used the experimental design because the writer wanted to measure the effect of hot-seating technique on vocabulary size.

The type of this study was Pre-experimental design. Pre-experimental designs do not have random assignment of subjects to groups or other strategies to

²Donal Ary, *Introduction to Research in Education (Eight edition)*, United State: Wadsworth (engage learning), 2010,p. 641

control extraneous variables.³ The writer used Pre-experimental by One-Group Pre test–Post test Design, The one-group pre test–post test design usually involves three steps: (1) administering a pre test measuring the dependent variable; (2) applying the experimental treatment *X* to the subjects; and (3) administering a post test, again measuring the dependent variable. Differences attributed to application of the experimental treatment are then evaluated by comparing the pre test and post test scores. There is no control group. The writer gave pre-test to students, and then, gave them treatment. After treatment was given, the writer gave students post-test. The writer used Pre-experimental design because the writer was not the teacher of that school, so that the writer was not have the authority to arrange the students into new groups such as the true experimental study. In this experiment the writer taught the students directly, firstly the writer to measure the students' ability in vocabulary using hot-seating technique. The writer taught the students for five times by using hot-seating technique and then there was post test in order to measure the students' ability after treatment.

Table 3.1 One-Group Pretest–Posttest Design

Pretest	Independent	Posttest
Y ₁	Х	Y ₂

Notes:

 Y_1 : Pre-test.

X : Independent variable (hot-seating technique)

 Y_2 : Post-test.

C. Time and Place of the study

The place study was of MA Muslimat NU Palangka Raya. It located at Jl. Lawu. In this study, the writer conducted the study two months to collect the data.

D. **Population and Sample of the Study**

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 eleventh grade students at MA Muhuslimat NU of Palangka Raya, there were two classes and the number of students were:

NO	CLASSES	NUMBER OF STUDENTS
1	XI-IPA	32
2	XI-IPS	20
	Total	52

Table 3.2 Populations

2. Sample

A sample is a portion of a population.⁵ The techniques used in this study subjects are not randomly assign. In this study, the writer used cluster sample for the study. Cluster sampling according to Donal Ary is the unit chosen is not an individual but a group of individual who are naturally together.⁶ Then the writer took one class it was XI IPA which consisted of 32 students. In this study the writer taught by using hot-seating technique.

⁴ *Ibid*, p. 148 ⁵ *Ibid*, p. 148

⁶ *Ibid*, p. 154

E. Research Instruments

1. Research Instrument

To get the data, the writer used test in this study.

a. Test

A test is a set of stimuli presented to an individual in order to elicit responses on the basis of which a numerical score can be assigned.⁷ According to H Brown Douglas, test is method of measuring a person's ability or knowledge in a given domain.⁸ To get the data, the writer gave the test; it consists of pre test and post test. The function of pre test was to know pre-ability students' vocabulary size before they used hot-seating technique. And the function of post test was to know post-ability students vocabulary size after they used hot-seating technique. The test was used to see the result of students' vocabulary size. The score of the test was used to measure the effect of hot-seating technique.

The writer made test based on the material and be appropriated with syllabus that used by the school. In this study the writer used multiple-choices especially multiple-choices completion to check the student's vocabulary size. As Madsen's suggestion that a good vocabulary test type for students who can read in the foreign language is multiple-choice completion because it makes the students depend on the context clues and sentences meaning.⁹

⁷ *Ibid*, p. 201.

⁸ H Brown Douglas, *Teaching by Principles*, p. 384

⁹ Harold S. Madsen, technique in testing, New York: Oxford University Press, 1983, p.16

The test was constructed in the form of multiple choices which consisted of 50 items test. 16 items test of noun, 12 items test of adjectives, and 21 items test of verb, and 1 item test of adverb, there are showed in table 1.3.

Table 3.3

The Content Specification of Test Items

No	Indicators	Number
1	Noun	16 Items
2	Adjectives	12 Items
3	Verb	21 Items
4	Adverb	1 Items
	Total	50 Items

1. Research Instrument Try Out

The writer gave test of try out to eleventh grade students of MA Muslimat NU Palangka Raya (XI IPS). It was conducted on Wednesday, April 13^{th} , 2016, at 07.00 – 08.30 am; in XI IPS room with the number of student were 20 students which consisted of 100 item test. To get the data of try out, the writer used some procedures as follows:

- a. The writer made and prepare test of try out.
- b. The writer gave test of try out to the students
- c. The writer asked the students to do test of try out.
- d. The writer collected the student's answer.
- e. The writer calculated and gave score to the students' answer.
- f. The writer analyzed the result of try out to know valid of test try out.

g. If the results were valid, it means that the test items as the instrument of this study was suitable to be give.

3. Research Instrument Validity

a. Instrument Validity

Validity of a test is the extent to which the test measures what is intended to measure.¹⁰ There are some types of validity:

a) Face Validity

Face validity is if a test item looks right to other testers, teachers, moderators, and testes.¹¹ In my opinion was the learning material in the second semester at Senior High School. The writer made the type of test items suitable at MA Musliamt NU of Palangka Raya. The face validity of the test items as follow:

- 1. The kind of test was Vocabulary Test.
- 2. The form of test items was Multiple Choices.
- 3. The languages of items used English.
- 4. The test items were suitable to the Senior High School.

b. Content Validity

This kind of validity depends on a careful analysis of the language being tested and of the particular course objectives. The test should be so constructed as to contain a representative sample of the course, the relationship between the test items and the course objectives always

¹⁰Norman E. Gronlund, *Measurement And Evaluation In Teaching (Fifth Edition)*, New York: Macmilan Publishing Company, 1985, p. 11

¹¹ J. B. Heaton, Writing English Language Tests, Longman, 1975, p. 153

being apparent. ¹² In making the test, the writer tried to match each of the test items with the syllabus and English book that used by MA Muslimat NU Palangka Raya. The writer made the test content (question) was related with material was taught to the students.

Table 3.4

Specification of Content Validity

No	Contents	Type of test	Items
2	In my opinion	Multiple Choice	50

c. Construct Validity

If a test has construct validity, it is capable of measuring certain specific characteristics in accordance with a theory of language behaviour and learning.¹³ Type of test was multiple choices test, and the test was written test.

To measure the validity of the instrument, the writer used software ANATES. Anates is software for the analysis item using Indonesian developed by Drs. Karnato, Pd, and Yudi Wibisono, ST., Registration number copyright in the director general IPR: C00200400291-338.¹⁴

The distribution of t table at alpha 5% and degree of freedom (n-2) with the measurement of validity using these criteria:

t observed > t table = valid

t observed < t table = invalid

¹² *Ibid*, p. 154.

¹³ *Ibid*, p. 154.

¹⁴ Syahabuddin Nur, Analisis Kualitas Butir Soal Mata Pelajaran Bahasa Arab Kelas V Di Madrasah Ibtidaiyah Negeri Tempel Sleman Yogakarta Tahun Ajaran 2011-2012, Yogakarta: Universitas Islam Negeri Sunan Kalijaga Yogyakarta, 2012, P. 38

To know the validity level of the instrument, the result of the test was interprets to the criteria below:¹⁵

0,800 - 1000	= very high validity
0,600 - 0,799	= high validity
0,200 - 0,399	= poor validity
0,00 - 0,199	= very poor validity

From the measurement of validity of the try out that was consisted 100 items was known that there were 50 valid items (item 1, 2, 3, 5, 7, 8, 10, 12, 14, 15, 16, 18, 22, 23, 24, 27, 32, 34, 35, 37, 39, 42, 43, 44, 47, 48, 50, 52, 55, 58, 63, 64, 66, 67, 68, 72, 74, 75, 77, 79, 80, 81, 86, 87, 90, 91, 93, 97, 98, and 99), and there were 50 invalid items (item 4, 6, 9, 11, 13, 17, 19, 20, 21, 25, 26, 28, 29, 30, 31, 33, 36, 38, 40, 41, 45, 46, 49, 51, 53, 54, 56, 57, 59, 60, 61, 62, 65, 69, 70, 71, 73, 76, 78, 82, 83, 84, 85, 88, 89, 92, 94, 95, 96, and 100). For the detail explanation, it could was saw at appendix 8 for the measurement of validity of the try out.

d. Index difficulty

The index of difficulty (or the facility value) of an item simply shows how easy or difficulty the particular item proved in the test. The index of difficulty is generally expressed as the fraction (or percentage) of the students who answered the item correctly. It was calculated by using ANATES software.

¹⁵*Ibid*, p. 76.

The result of the test was interpreted to the criteria below:¹⁶

$$0,00 - 0,30 = \text{Difficult}$$

$$0,31 - 0,70 =$$
Fair

0,71 - 1,00 = Easy

The result of index difficulty measurement of the try out showed that there were 8 difficult items (item 28, 40, 62, 76, 82, 89, 92, and 100), there were 8 easy items (item 13, 21, 26, 31, 38, 54, 56, and 94), and there were 84 fair items (item 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 27, 29, 30, 32, 33, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 55, 57, 58, 59, 60, 61, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 83, 84, 85, 86, 87, 88, 90, 91, 93, 95, 96, 97, 98, and 99). For the detail explanation, it could was saw at appendix 8 for the measurement of validity of the try out.

1. Research Instrument Reliability

Reliability also means the consistency with which a test measures the same thing all the time. Reliability of a test refers to its consistency with which it yields the same rank for an individual taking the test several times.¹⁷ The reliability of the whole test can be estimated by using ANATES software.

¹⁶Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendektan Praktek*, Jakarta: Rineka Cipta, 1999, p. 210.

¹⁷Norman E. Gronlund, *Measurement And Evaluation In Teaching (Fifth Edition)*, New York: Macmilan Publishing Company, 1985, p. 14

The steps in determining the reliability of the test were: ¹⁸

- a. Oppen ANATEST inc. Click ANATEST
- b. Enter data, click New File, enter the data as follows:
 Number of Subjects, Number of items, and the Number of Answers, Click OK.
- c. Enter the answer key to the first line
- d. Enter the students name on the column name or subject
- e. Enter the students' answers on the cell / column is white, if the student not answering fill in the asterisks (*)
- f. Click reliability, the output of result reliability is processed.

The result showed that the instrument was reliable. The reliability score was 0.76 while the standard of reliable is 0.88. Hence, it can be concluded that is reliable. At last, the writer limited the questions into 50 from 100 questions that were tested, with 50 questions were eliminated and some others were chosen as the questions after edited.

F. Data Collection Procedure

To get the data, the writer used some procedures as follows:

- 1. The writer chose the place of the study.
- 2. The writer determined one group, it was experiment group.
- 3. The writer gave pre test to experiment classes.
- 4. The writer checked the result of pre test.

¹⁸ Yudha Andana Prawira, *Analisis Butir Soal Dengan Menggunakan Software Anatesv4*, Bandung: Universitas Pendidikan Indonesia , 2008, P. 1

- 5. The writer gave treatment to the experiment group using hot-seating technique, Such as:
 - a. The teacher greets the students.
 - b. The teacher checks the attendance list.
 - c. The teacher motivates the students by asking some question.
 - a. The teacher explained about vocabularies related to "In my opinion".
 - b. The teacher teaches vocabularies with the theme of "In my opinion and what do you recommend" by using hot-seating technique.
 - c. The teacher gave some repetition to the students related to the teaching of vocabulary by hot-seating technique. To make students more creative and motivated in learning English, especially in learning vocabulary by using hot-seating technique. Can make students easy to remember the word.
 - d. The teacher gave some question to the students about vocabulary "In my opinion and what do you recommend"
 - e. The teacher repeats the material briefly that is related to vocabulary with the theme of "In my opinion and what do you recommend".
 - f. The teacher evaluated for the students achievement by analyzing the score and exercise to the students.
- 6. The writer gave post test to experiment classes.
- 7. The writer checked the result of post test.
- 8. The writer gave score to students' answer (pre test and post test).

G. Data Analysis procedure

To analyze the data collected; the writer used some procedures in this study:

- 1. The writer gave collected the students score of pre test and post test of the eleventh grade students of MA Muslimat NU Palangka Raya.
- 2. The writer collected the data of the students' test result.
- 3. The writer gave score the students' test result by using the formula:

Score =
$$\frac{B}{N} \times 100\%$$

Where:

B: Frequency of the correct answer

N: Number of test items

4. The writer calculated mean, median and modus of students' score, standard deviation, and standard error of experiment group by using SPSS 20.

Formula of mean, median and modus: ¹⁹

- 5. The writer calculated normality and homogeneity.
 - a. The writer calculated normality by using SPSS 20

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

b. Homogeneity

It was used to know whether experimental group, that are decided, come from population that has relatively same variant or not. The formula is:²⁰

¹⁹ Hartono, Statistik Untuk Penelitian, Yogyakarta: Pustaka Belajar, 2011, p. 33.

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

Where:

F: Frequence

The hypotheses in homogeneity:

 $F_{value} \le F_{table}$, means both of variants are homogeneity.

 $F_{value} > F_{table}$, both of variants are homogeneity.

If calculation result of F was lower than F table by 5% degree of significance so H_o was accepted, it meant that group have same variant.

6. The writer calculated the data by using statistical t-test to answer the problem of the study.

To analyze the data, the writer used "t" test. "t" Test to test the hypothesis of the study. To examine the hypothesis, the writer used t-test formula as follows:

$$t_0 = \frac{M_D}{SEM_D}$$

: Mean of difference M_{D}

: The standard error of the mean difference. SEM_D

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

- a) If t-test (the value) \geq t_{table} it means Ha is accepted and Ho is rejected.
- b) If t-test (the value) \leq t_{table} it means Ha is rejected and Ho is accepted.²¹

²⁰*Ibid*, p. 280 ²¹*Ibid*, p. 284

7. The writer calculate the degree of freedom by using the following formula:

Df = N - 1

- 8. The writer determined the level of significant of $t_{observed}$ by comparing the $t_{observed}$ with the t_{table} .
- 9. The writer interpreted the result of analyzing.
- 10. The writer discussed and concluded the result of the data analysis.