CHAPTER III

RESEARCH METHOD

A. Research Method

1. Research Design

This study is quantitative research. Quantitative research deals with questions of relationship, cause and effect, or current status that researchers can answer by gathering and statistically analyzing numeric data.[1] A typical experimental study usually uses comparison or control groups to investigate research questions. Many second language research studies involve a comparison between two or more groups. This is known as a between-groups design. This comparison can be made in one of two ways: two or more groups with different treatments; or two or more groups, one of which, the control group, receives no treatment.[2]

The type of this study is Quasi-Experimental design that was not based on the random assignment of subject to the experiment group and control group. This design was chosen based the situation of the subject of the study.

---

[1] Donald Ary, *Introduction to Research in Education*, Wadsworth, 2006. p. 39

[2] Alison Mackey and susan M.Gass, *Second Language Research Methodology and design*, London, 2005, P. 146.

2. Time and Place of The Study

The study conducted in academic year 2014. It's been conducted until found the complete data from students and to support the data from the English teacher at SMAN 3 of Palangka Raya. To collect all the data accurately and briefly, all the data got. This study begin on 04 August- 04 October 2014. The study is about the effect of mnemonic technique on vocabulary recall of the tenth grade students of SMAN 3 Palangka Raya. The place is in SMAN 3 of Palangka Raya on G. Oboz street.

B. Population and Sample of the Research

1. Population of the study

According to Ary stated that population is defined as all members of any well-defined class of people, events or object.[3] The population in the present study in tenth grade students of SMAN 3 Palangka Raya. There are 300 of tenth grade students that devided into tenth classes. As a result the some of the population were XIIS 3 and XMIA 1 students class because no all of tenth grade students have criterion as a for mentioned. The population are X-1 MIA 1, X-2 MIA 2, X-3MIA 3, X-4 MIA 4, X-5 IIS 1, X-6 IIS 2, X-7 IIS 3, X-8 IIS 4, X-9 IIS 5, X-10 IBU. The writer choose tenth grade students as the sample because in this grade vocabulary as verb, noun and adjective has been taught.

[3]Donald Ary et. Al, *Introduction to Research in Education*, 2010, p. 138.

2. Sample of the study

According to Arikunto, sample is some or represent of population that is researched.[4] It is a group selected from population for observation in a study.

It have been class XIIS 3 and XMIA 1 students as the sample. There is a condition to take a sample for this research. That is the teaching of vocabulary of content words of noun, verb and adjective words. In the tenth grades, the students have been taught about vocabulary content words material, the students' have been taught about the tense simple present tense, simple past tense, simple future tense, simple continous tense, and they were learned about simple sentences of descriptive text. It would be concluded that all students of tenth grade were suitable to be sample of this study.

It is time consuming to conduct a research to all of the students of tenth classes as the sample. Then, in this study it was used purposive sampling technique to select group of sample.

Purposive sampling is also known as judgment sampling. This sampling technique allows the researcher to choose a sample from the

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

population, and judge that the sample is representing and the typical of the population[5].

Based on the explain above, the writer takes two classes XIIS 3 and XMIA 1 which will be related to this study. Because the teaching vocabulary of mnemonic technique memorizing ability would be useful to increase the standard of the vocabulary's students in English.The sample of the study is as shown in the following table:

Table 3.2
The sample of the Study

No	**Group**	**Class of student**	**Number of student**
1	E	XIIS 3	30 students
	C	XMIA 1	30 students
The Total Number of Sample			60 students

(Source: Documents of SMAN 3 Palangka Raya)

E : Experiment Group

C : Control

Based on the table above, there should be compare able 30 students in class Experiment that were taught using Mnemonic Technique, and there compare able 30 students to in class control that were taught without using Mnemonic technique.

[5]Donal Ary et al, *Introduction To Research In Education*, Eight Edition, Canada, 2006, p.156.

C. Quasi -Experimental study

1. Nonrandomized Control Group, Pretest-Posttest Design

In a typical group situation, schedules cannot be disturbed nor classes reorganized to accommodate a research study. In such a case, one uses groups already organized into classes or other pre-existing intact groups.

The nonrandomized control group, pretest-postest design is one of the most widely used quasi-experimental designs in educational research.

Table 3.3

The Design Nonrandomized Control Group, Pretest-Posttest Design

Group	**Pretest**	**Treatment**	**Posttests**
E	Y_1	X	Y_2
C	Y_1	-	Y_2

The researcher uses the Quasi-Experimental design in this study. Because this study will compare with two ways and the writer wants to measure the effectiveness of teaching vocabulary mnemonic technique using that ways.

D. Instruments of the Study

Instrument of the study was very needed in the research. It was because the instrument was tool to get the data of study, in which the data

was 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 was to measure the effect of mnemonic technique on vocabulary recall the students' score of the tenth grade students at SMAN 3 Palangka Raya. In collecting the data, the writer used instruments as follows:

1. Test

The writer collect the data of this study by using a test. The result of test was measure the students' vocabulary score about Mnemonic technique. The test was vocabulary test. According to Heaton, a test of vocabulary measures the students' knowledge of the meaning of certain words and word group.[6] In this study, the writer use multiple-choice to check the students vocabulary recall, as Madsen's suggestion that a good vocabulary test type for students who can read in the foreign language is multiple – choice because it makes the students depend on the context clues and word meaning.[7] The test format similarly modified from the Nelson Test which had been validated by Tyler Burden.[8]

---

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

[7] Harold S. Madsen, Technique in Testing, New York: Oxford University Press, 1983, p. 16.

[8] Tyler Burden, *An Investigation into the Effectiveness of the Keyword Method for a group of Japanese EFL Learners*, Japanese: 2011.

The researcher give pre test and post test to the both experimental and control group. Pre test is a test given before the writer gives treatment. The purpose of pre test is to measure the students' vocabulary recall before giving treatment. Post test is a test given after a lesson or a period of instruction. The purpose of post test is to measure the difference of students' vocabulary recall between experimental group that is taught using Mnemonic technique and control group that is taught without using Mnemonic technique (Conventional technique).

Table 3.4

The Compability Between Research Intrument and the Test Content Specification for post test

Types of Question			The total of the test item
Verb	Noun	Adjective	
Item no. (1,7,9,12, 13,14,25, 29)	Item no. (2,3,4,5,6,11, 16,17,18,19,20,21,22,23,24 ,27,28)	Item no. (8,10,15,26,30)	
8	17	5	30

Test instruments of try out and pre test:

1. I have……... It is beautiful for me. (a big house)
   a. the big house.
   b. an big house.
   c. All of is correct
   d. an house that big.
   e. a big house

Test instrument of post test:

1. There are many events that held in Malioboro, too. Every day, Malioboro is…..by tourists. (visited)
   a. coming.
   b. Come
   c. Visited
   d. Visit
   e. Came

a. Instrument Validity

Validity is the extent to which theory and evidence support the proposed interpretations of test scores for an intended purpose.[9] The test must aim to provide a true measure of the particular skill which it is intended to measure.[10] So, the writer used test which validity. Validity, on the other hand, involves the degree to which we are measuring what we are supposed to, more simply, the accuracy of the measurement does not accurately measure what is it supposed to, there is no reason to use it even if it measures consistently (reliably). The test can be said valid if it is able to measure what it is suppose to be measure.

To measure the validity of the instrument, the writer used the formulation of Product Moment by Pearson as follow.[11]

$$r_{xy} = \frac{N\sum XY-(\sum X)(\sum Y)}{\sqrt{\{N\sum X^2-(\sum X)^2\}\{N\sum Y^2-(\sum Y)^2\}}}$$

[9] *Ibid*, p. 258
[10] *Ibid*, p. 258
[11] Anas Sudijono, Pengantar Statistik Pendidikan, (Jakarta: PT. Raja Grafindo Persada, 2008), P. 206.

Where:

r_{xy} : Total coefficient of correlation

∑X: Total Value of Score X

∑Y: Total Value of Score Y

∑XY : Multiplication Result between Score X and Y

N : Number of students

Furthermore, it was calculated using Test-t calculation below:

$$t_{observed} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

Where:

t = The value of $t_{observed}$

r = The coefficient of correlation of the result of $r_{observed}$

n = Number of students. [12]

Validity is divided into *face validity*, *content validity*, *construct validity*, and *empirical validity*. Here, only the first two have been dealt with.[13]

With the measurement of validity using this criteria:

---

[12]Riduwan, 2004, *Metode dan teknik Menyusun Tesis*, Bandung: Alfabeta, p.110.

[13] Lotfollah Karimi and Ali Gholami Mehrdad, *Investigating Administered Essay and Multiple-choice Tests in the English Department of Islamic Azad University*, Hamedan Branch, Iran: Canadian Center of Science and Education, 2012, P. 70.

$t_{observed} > t_{table}$ = Valid

$t_{observed} < t_{table}$ = Invalid

1) Face Validity

If a test item looks right to other testers, teachers, moderators, and testees.[14] It can be described as having face validity. The test used by the writer was suitable to others and at the same level that is secondary school level. The face validity of the test items as follow:

a) The kind of test was vocabulary test "which was about nouns, verbs and adjectives".
b) The forms of test items was multiple choice.
c) The language of item used English.
d) 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 sic well thought-out format, its items are clear and

[14] J. B. Heaton, *Language Testing*, (Published Tests, May 1989), P. 153.

uncomplicated, its difficulty level is appropriate for students, and the condition for all students is the same.

2) Content Validity

Content validity may be defined as the extent to which a test measures a representative sample of the content to be tested at the intended level of learning. In other words, content validity refers to the degree of correspondence between the test content and the content of the materials to be tested Farhadi, Jafarpoor & Birjandi. Content validity is a professional judgment, that of the teacher or testers. They rely on their knowledge of the language to judge to what extent the test provides a satisfactory sample of the syllabus, whether real (for achievement testing) or imagined (for proficiency testing) or of the theory or model (for aptitude testing). Similarly, Heaton states that content validity depends on a careful analysis of language being tested and of the particular course objectives. The test should contain a representative sample of the course.

A test is said to be content valid if its content constitutes a representative sample of the language skills, structures, etc. with which it is meant to be concerned. Other terms used for *content validity* are *curricular validity, course validity,* and, *text validity* (Ibid).

According to Gronlund “content validity is the process of determining the extent to which a set of test task provides relevant and

representative sample of the domain of tasks under consideration."[15] To fulfil the content validity, the test content is directly related with have been taught to the student that have two ways namely using mnemonic technique like the method of loci and without using mnemonic technique.

To know the level of test validity, the result was correlated to criteria of r value they are:

0,800 - 1,000 : very high validity

0,600 - 0,799 : high validity

0,400 – 0,599: fair validity

0,200 – 0,399: low validity

0,000 – 0,199: very poor validity.[16]

The result of validity measurement of tesst instrument based on the criteria as follows:

(a) If the value of $t_{observed}$ is greater than t_{table} , it means that the test item is valid and it can be used as the instrument of the study.

[15] Norman E. Gronlund, *Measurement and Evaluations in Teaching*, New York: Macmillan Publishing Company, P. 83.

[16] Riduwan, *Metode & Teknik Menyusun Thesis*, Bandung: ALFABETA, 2004, P.110

(b) If the value of $t_{observed}$ is lower than t_{table} , it means that the test item is invalid and it cannot be used as the instrument of the study.

From the measurement of validity of the try out that was contained 30 items were known that there were 18 valid items and 12 invalid items. For the detail explanation, it can be seen at appendix.

b. Instrument of reliability

Reliability is the extent to which the test is consistent in measuring whatever and to which an individual scores nearly the same in repeated measurements, as indicated by a high reliability coefficient.[17] Reliability also means the consistency with which a test measures the same thing all the time. Test should not be elastic in their measurements: that is, if a student takes a test at the beginning of a course and again at the end, any improvement in his score should be the result of differences in his skill and not of inaccuracies in the test.[18]

In addition to validity test to measurement the reliability of the whole test can be estimated by using the formula of Kuder and Richardson (KR 21). Here the reliability calculations of vocabulary:

---

[17] Donald Ary, *Introduction to Research in Education*, Wadsworth, 2006, p. 259

[18] Norman E. Gronlund, *Measurement and Evaluation in Teaching*, New York: Macmillan Publishing Company, 1985, p.14.

$$\Gamma_{11} = \frac{©}{© - 1} x \left(1 - \frac{M(k - M}{k.Vt} \right)$$

Γ_{11} = Reliability of instrument

k = the number of items

M = the mean score for all the testers

Vt = the total variants

The steps in determining the reliability of the test were:

1) Making tabulating of testees's scores.
2) Measuring the mean of the testees's scores with the formula :

M== $\frac{\sum Y}{N}$

3) Measuring the total variants with the formula:

Vt= $\frac{\sum Y^2 \quad \frac{\Sigma(Y)^2}{N}}{N}$

Where:

Vt = the total variants

$\sum$Yq = the total of score

$\sum Y^2$ = the square of score total

N = the number of testes

4) Calculating the instrument reliability using KR-21.

5) The last decision is comparing the value of Γ_{11} and Γ_t

$\Gamma_{11} > \Gamma_{table}$ = Reliable
$\Gamma_{11} <$ Γ_{table} = Not Reliable

6) To know the level of reliability of instrument, the value of Γ_{11} was interpreted based on the qualification of reliability as follows:

0.800- 1.000 : Very High Reliability

0.600-0.799 : High Reliability

0.400-0.599 : Fair Reliability

0.200-0.399 : Poor Reliability

0.000-.0199 : Very Poor Reliability

From the measurement of instrument try out reliability it is known that the whole numbers of test items are reliable and can be used as the instrument of the study.

From the measurement of instrument try out reliability was found that the r_{11} value = 0.831 was greater than r_{table} = 0.739 > 0.369. It meant the whole numbers of test items were reliable and it was determined as high reliability. For the detail explanation of the instrument reliability calculation could be seen in the appendix.

c. Index of Difficulty

According to Healton the index of difficulty or facility value is the fraction or percentage of the students who answer the item correctly.[19] 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 classification:

F.V 0.00-0.30 = Difficult

F.V 0.30-0.70 = Fair

F.V 0.70-1.00 = Easy

[19] J.B Heaton, *Language Testing,* 1974, P. 172.

The result of index difficulty measurement of the try out showed that there were 4 difficult items, 25 fair items, and 1 easy items. For the detail, see appendix.

d. Instrument Try Out

Instrument try out is define important before the instrument tested to the real sample. The writer use the try out at SMAN 3 of Palangka Raya. The purpose of instrument try out is in order to validity and reliability of the test item.

The writer tried out the test instrument before it will be applied to the real sample in the study. It chose class XIIS 4 which consisted of 32 students as the subject of the instruments try out. The researcher held the first try out test on Monday, August 4th 2014 which followed by 32 students. The time allocation of try out test was 80 minutes. Then, the researcher gave the scores to the students' answer. Could be seen the description of try out scores on appendix. Next, it analyzed the result of instrument try out to gained the information about instrument validity, instrument reliability, and index difficulty of the test. For the detail calculation, it could be seen on appendix.

The instrument try out is important because the result of try out is used to analyze and to measure the instrument whether the test have

some criteria of qualified test or not. There were some procedures in carrying out the try out as follows:

1. The writer preparing the instrument
2. Showing to the student how they must do with the test of try out.
3. The writer tried out the test instrument to the respondents.
4. The writer gave score to the respondent's answer sheet.
5. Calculating the result of the test using formula.
6. Analyzing the result of the test and enter to the table.

Table 3.5

The score vocabulary of Mnemonic Technique

Criteria	Score	predicate
True	1	Good
Fals	0	Poor

E. Data Collection Procedures

To get the data that is need in the research, there are few of ways to do it, they are :

1. The researcher will do the observation. Observation is a technique in collecting data where the researcher does the observation directly to the teaching activities in class, they are included:

a) Location

The location of SMAN 3 Palangkaraya is Jalan G. Obos no. 12.

b) The number of class

The total number of class for tenth grade is 366 students. The writer chose 2 class (XIIS-3 and XMIA-1) as the experiment class and control group. The class E has 30 students and class C also has 30 students.

c) The number of teachers

SMAN 3 of Palangkaraya has 30 teachers.

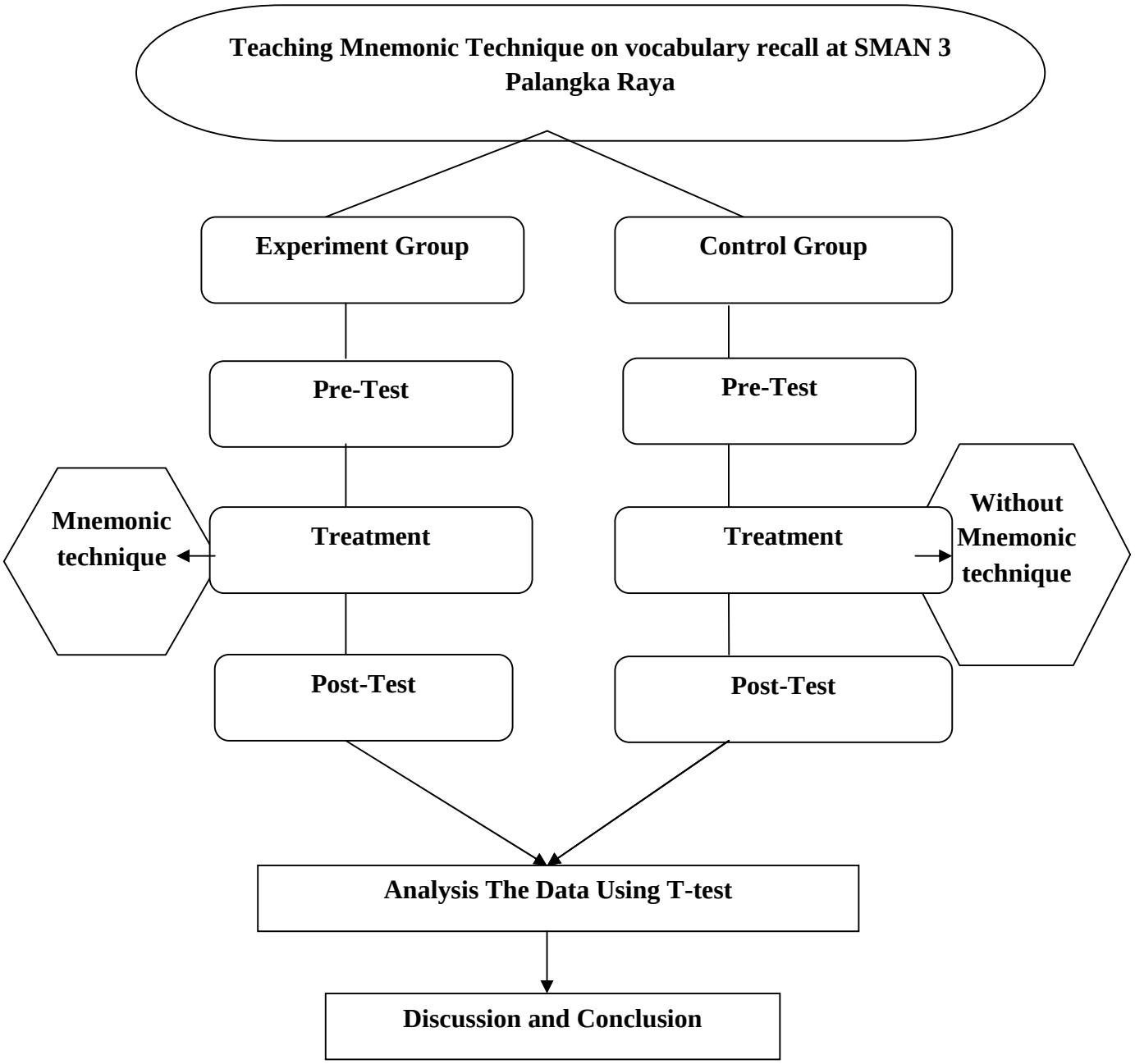
d) The number of students

The total number of students is 983 students. For the total number of tenth grade is 366 students.

2. After doing the observation, the researcher determined the class into experiment group and control group.
3. The researcher gave try out test to another class before testing for pre test and post test. The try out test was given to class XIIS-4 on Monday 4, 2014. For the detail, see the appendix.
4. The researcher gave the pretest to the experiment group (class E= XIIS-3) and control group (class C= XMIA-1) on August 8 and 9, 2014.
5. The researcher taught the experiment group using Mnemonic technique on vocabulary recall for six meeting from August 22 – Sept 12, 2014.

6. The researcher taught the control group using without mnemonic technique on vocabulary recall also for six meeting from August 23 – Sept 13, 2014.
7. Then, the researcher gave score to the data from the experiment group and the control group.
8. The researcher analyzed the obtained data from the mean of the post test score of the experiment group and control group.
9. The researcher also concluded the effect size of the treatment given.
10. The researcher interpreted the statistical result.
11. The researcher concluded the activity of the study based on the data obtained from the measurement.

Figure 3.6 Data Collection Procedure



a. Teaching Procedures for Experiment

The First Meeting, the teacher introduces the material will be discussed. And the teacher asks the students about the topic. Next, the teacher give the ficture related the material. The teacher asks the students about what they see from the ficture or what they know about the ficture. If the students are confused, the teacher gives some clues. After the students answer or give their opinions about theficture, the teacher writes their answers and gives a little of explanation about the ficture.The teacher asks the students about the formula of descriptive text. Then, the teacher gives handout of the descriptive text. The text is about simple present tense. And the last, the teachers asks the students to find of simple word in the descriptive text. The teacher asks the students to write in their book. For example about noun, adjective and verb. The teacher asks the students to memorize of the simple word and give them 5 minutes. Then, the teacher asks them to memorize of simple word in front of the class. And the second meeting-fourth meeting the detail explanation, it can be seen of lesson plan at appendix.

b. Teaching Procedures for Control Group

The First Meeting, the teacher introduces the material will discus. The teacher asks the students about the topic. And the teacher explains the material about descriptive text. The teacher writes the formulas in the whiteboard and explains it.Then the teacher explains about it and give

some examples. The Second Meeting, the teacher write the descriptive text in whiteboard. The teacher ask the student to translate the text in bahasa. The teacher ask the students to write in their book. Next, the teacher gives some examples. And the last, the teacher asks them to do some assignment. And the third meeting-fourth meeting the detail explanation, it can be seen of lesson plan at appendix.

F. Data Analysis procedure

The writer analysis the data with a few of way, they :

1. After doing research for two months, the writer collected the obtained scores from experiment and control group.
2. The writer arranged the obtained scores into the ditribution of prequency both pre test and post test result.
3. The writer calculated the mean, median, modus, standard deviation, and standard error of variable X1 from the experiment group.
4. The writer calculated the mean, median, modus, standard deviation, and standard error of variable X2 from the control group.
5. The writer calculated the standard error for the difference mean between variable X1 and X2.
6. The writer used t-test to answer the problem of the study, whether there was difference on Mnemonic technique on vocabulary recall and without mnemonic technique , with the formula:

$$t_o = \frac{M_{x-} M_y}{\sqrt{\left(\frac{SD_x}{\sqrt{N-1}}\right)^2 + \left(\frac{SD_y}{\sqrt{N-1}}\right)^2}}$$

Where:

Mx – My = Differentiation of Two Means

$SD_X + SD_y$ = The standard error of the difference between two means[20]

With the criteria :

If $t_{test} > t_{table}$ = Ha is accepted and Ho is rejected

If $t_{test} < t_{table}$ = Ha is rejected and Ho is accepted

7. The writer used SPSS 16 program after using t-test to answer the problem of the study, whether there was difference between Mnemonic technique or without another technique.

8. The writer calculated the degree of freedom with this formula :

$df = (N_1 + N_2) - 2$

Where :

df : Degree of Freedom

[20] Suharsimi Arikunto, *Managemen Penelitian*, Jakarta: Rineka Cipta, 2003, p. 507-508.

N_1 : Number of subject 1

N_2 : Number of subject 2

2 : Number of Variables

9. The writer determined the significant level of t observed by comparing the t observed and t table.

10. The writer interpreted the result of the data analysis.

11. Giving discussion to clarify the research finding about result of this study. For the detail information, go to chapter 4.