

## CHAPTER III

### RESEARCH METHODOLOGY

#### A. Research Type

This study used quantitative approach. It is using quantitative approach because Quantitative is the data that from of number using statistic data. According to Donald Ary “Quantitative research a ginnery employing operational definitions to generate numeric data to answer predator mined hypotheses or questions.”<sup>55</sup>

#### B. Research Design

This research study used quasi-experimental design. Quasi-experimental designs are similar to randomized experimental designs in that they involved manipulation of an independent variable but differ in those subjects in that they involve manipulation of an independent variable but differ in that subjects are not randomly assigned to treatment groups. Because the quasi-experimental design does not provide full control, it is extremely important that researchers be aware of the threats to both internal and external validity and considers those factors in their interpretation. Although true experiments are preferred, quasi-experimental designs are considered worthwhile because they permit researchers to reach reasonable conclusions even though full control is not possible.

The type of this study was Quasi-experimental study by the nonrandomized control group; pretest-posttest design is one of the most widely

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<sup>55</sup>Donal Ary, Lucy Cheser Jacobs, Chris Sorensen, and Asghar Razavieh, *Introduction to Research in Education Ceight*, Canada: Wadsworth Engage Learning, 2010, p. 648.

used quasi-experimental designs in educational research.<sup>56</sup> The writer chose this design. The design is made since the study works to measure the effect of using crossword puzzle to enhance vocabulary mastery of the eighth grade students at Mts An-Nur Palangka Raya.

The writer used nonrandomized control group pre-test post test design with a kind of treatment. There were two groups in this model, control group and experimental group. Both of groups were given pre-test to measure the score of students before the treatment is given (Y1 and Y2). The treatment was given for experiment group only (X). Post-test were given for both of groups to measure the score of students after the treatment was given (Y1 and Y2). The scheme of this model is:<sup>57</sup>

**Table 3.1**

**The scheme of Quasi Experimental Design Non Randomized Control  
Group, Pretest-Posttest Design**

Subject	Pretest	Treatment	Posttest
E	Y <sub>1</sub>	X	Y <sub>2</sub>
C	Y <sub>1</sub>	–	Y <sub>2</sub>

Where :

E : Experimental Group

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<sup>56</sup>*Ibid*, p. 316

<sup>57</sup>*Ibid*

C : Control Group

X : Treatment

Y1 : Pre-test

Y2 : Post-test

The students were divided into two group, experimental and control group. In this experimental, the writer taught students directly with the same material. Therefore, the used of the crossword puzzle as a teaching media to teach vocabulary is apply on experimental group only, and the control group was not given the treatment.

### **C. Population and Sample**

#### **1. Population of the study**

According Vicente, a population is nothing but a group of a particular concept that has something common to each other. Population depends on the experiment conducted. It can be a group of people, a group of books, a group of journals, etc. mostly it happens, when an experimant is conducted, the researcher want to get data from the whole population but it becomes very tedious to do so.

In such cases we make use of a small group of members of the same population, called the sample of the population. As we use statistics to learn about the characteristics of the population, the sample chosen must be randomly selected.

Hence, a random sample can be defined as a sample in which each member of the population has equal possibilities of being selected.

The population of this study is all the eight year students of Mts An-Nur Palangka Raya in academic year 2014/2015, both male and female. “If the sample really represent of population, what is known about the sample is our knowledge of the population.”<sup>58</sup>

The implication is, if the research which used really represent of population, so done generally to the population. While according to Arikunto, states that: “Population is the whole of research subject, where as sample is a part of population.”

The population of this study is all of students at the eight year of Mts An-Nur Palangka Raya and consisted of two classes, there are: VIII A, VIII B, and VIII C. the number of population Mts An-Nur can be seen in the following table

**Table 3.2**

**The Number of The Eight Grade Students at MTs An-Nur Palangka Raya**

NO	Grade	The Number of The Students
1	VIII-A	30
2	VIII-B	33
3	VIII-C	18
The total of students		<b>81</b>

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<sup>58</sup>Muhammad Ali, *population*, 1992, p.5.

## 2. Sample of the study

The population of the study is second grade students of MTs An-Nur Palangka Raya. In this case, the sample of this study is all the VIII-A class consists 30 students as experiment group where the writer will implement the using crossword puzzle and the second group is VIII-B class consists 33 students as control group who are will teach by using book (LKS bahasa Inggris). The population is not consist of individuals, but rather consists of individual groups.

**Table 3.3**

### **The Number of Sample**

NO	Grade	Groups	The Number of The Students
1	VIII-A	Experiment	30
2	VIII-B	Control	33
The total of students			63

#### D. Research Instruments

This research uses the test as instrument. Test is a short examination of knowledge or ability, consisting of questions that must be answered.<sup>59</sup>

Instrument of the study was very needed in the research. It was because the instrument was tool to get the data of study, the data was the important things to help the writer in answering the problem of the study and also to prove the hypotheses. It was to measure the effectiveness of using crossword puzzle teaching English toward the students' score of the eight grade at MTs An-Nur Palangka Raya. There was one instrument that used in this study to get the data, as follow:

##### 1. Instrument Test

Test are valuable measuring instrument for educational research. A test is a set of stimuli presented to an individual in order to elicit responses on the basis of which numerical score assigned.<sup>60</sup>

To Instrumentation of this study will be takes from the test will gave to the student before and after treatment as long as five times. From the test, the writer will know the result of students' test and this result will gave description where is more effective between teaching using crossword puzzle and without

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<sup>59</sup>Hornby, AS., *Oxford Advanced Learner's Dictionary*, New York: Oxford University Press, 1984, p. 1233.

<sup>60</sup>Donal Ary, Lucy Cheser Jacobs, Chris Sorensen, and Asghar Razavieh, *Introduction to Research in Education Ceight*, Canada: Wadsworth Engage Learning, 2010, p.201

crossword puzzle. Like Gronlund statement “test is an instrument in systematic procedure for measuring a sample of behaviour”.<sup>61</sup>

The writer gave the test instrument. First, pre-test for control group class VIII-B was held on Monday, March 23<sup>th</sup> 2015 period 08.30-10.10 which followed by 33 students. Then the writer gave pre-test for experiment class VIII-A was held on Tuesday, March 24<sup>th</sup> 2015 period 10.10-11.30 which followed by 30 students. Last the writer gave post-test for experimental group class VIII-A was held on Wednesday April 15<sup>th</sup> 2015 period 09.30-10.50 which followed by 30 students. Then the writer gave post-test for control class VIII-B on Saturday, April 18<sup>th</sup> 2015 period 10.10-11.30 which followed by 33 students. The time allocation of each test process was 80 minutes.

Related to the study, test was used to get data for measuring the students' ability in vocabulary mastery. The major data in the study were the data of the students' English score those were taken from pre-test and post-test. The test was constructed in the multiple choice test form which consists of 50 items.

## 2. Instrument Try Out

Instrumentation try out is used to identify whether the instrument can be used to find out the effect of crossword puzzle to the results of the try out serve and important evaluation for the writer to consider what items were valid or not, the test were reliable or not. It is also to find which items were considered to be revised and to measure time allocation for the data collecting.

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<sup>61</sup>Norman L.Gronlund, *Measurement and Evaluation in Teaching*, New York: Macmillan Publishing Company, p.78

The writer gave the try out test to VIII-C class on Monday, March 16<sup>th</sup> 2015 period 10.10-11.30, which followed by 18 students. at MTs An-Nur Palangka Raya. The total item of try out test 50 questions. The time allocation of try out process 80 minutes.

These are the procedures that in carrying out the try out:

- a. Preparing the instrument.
- b. Showing to the students how they must do with the test of try out.
- c. Giving the test items to the students.
- d. Collecting to the student's works.
- e. Scoring the student's works.
- f. Calculating the result of the test using formula.
- g. Analyzing the result of the test and enter to the table.
- h. The writer analyzed the data obtained to know the instrument validity and instrument reliability.
- i. If the result is valid, it means that the test item as the instrument of this study are suitable to be given.

**Table 3.4**  
**The score to Vocabulary**

<b>Criteria</b>	<b>Score</b>	<b>Predicate</b>
<b>Jawaban siswa benar (the answer of student right)</b>	1	Good
<b>Jawaban siswa salah (the answer of student wrong)</b>	0	Poor



Based on sudijono.<sup>62</sup>

From the result of try out, it is found the instrument of validity, reability and index of difficulty.

#### ➤ Instrument Validity

The validity of a test is the extent to which measure, what is suppose to measured and nothing else.<sup>63</sup> Instrumentation validity discuss about construct and content validities of the test which use in this research.

##### a) Content validity

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.”<sup>64</sup> To fulfil the content validity, the test content is directly related with what have been taught to the student that have two ways namely using crossword puzzle and without crossword puzzle. The following table is the specification of content validity

**Table 3.5**

#### **Specification of Test**

<b>Indicator</b>	<b>Sub Indicator</b>	<b>Number of Items</b>	<b>Description of test items</b>

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<sup>62</sup>Anas Sudijono, *Pengantar Evaluasi Pendidikan*, Jakarta PT: Raja Grafindo Persada , 2003, p.198

<sup>63</sup>H. Douglas Brown, *Teaching by Principles*..... p. 185.

<sup>64</sup>Ibid, p. 83.

Content words	Noun	25	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25
	Adjective	25	26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50

#### b) Construct Validity

According to Gronlund “construct validity is the process of determining the extent to which test performance can be interpreted in term of one or more construct”.<sup>65</sup> The test item is constructed based on the material given in classroom, it is capable of measuring certain specific characteristic in accordance with fill the white squares with letters, forming words or phrases. The test items are constructing based on English Curriculum to the eight year student at MTs An-Nur Palangka Raya.

To measure the validity of the instrument, the writer used the formulation of product moment by pearson as follow:<sup>66</sup>

$$r_{xy} = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{\{N \sum x^2 - (\sum x)^2\} \{N \sum y^2 - (\sum y)^2\}}}$$

Where :

$r_{xy}$  : the coefficient of correlation

<sup>65</sup>Norman E. Gronlund, *Measurement and Evaluations in Teaching*, New York: Macmillan Publishing Company, t.th, p. 83.

<sup>66</sup>Riduan, *Metode dan Teknik Menyusun Thesis*, Bandung:alfabeta, 2004, p. 110.

$\sum x$  : total value of score X

$\sum y$  : total value of score Y

$\sum xy$  : multiplication result between score X dan Y

N : number of students

After the value of coefficient correlation ( $r_{xy}$ ) had found, then it was calculated using the measurement of t-test with the formula as follows:

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

Where :

t : the value of  $t_{observed}$

r : the coefficient correlation of  $r_{xy}$

n : number of students

The distribution of  $t_{table}$  at alpha 5% and the degree of freedom (n-2) with the measurement of validity using this criteria :

$t_{observed} > t_{table} = \text{valid}$  $t_{observed} < t_{table} = \text{invalid}$
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To know the validity level of the instrumen, the result of the test was interpreted to the criteria or the correlation index as follow :

0,800 – 1,000 = Very High Validity

0,600 – 0,799 = High Validity

0,400 – 0,599 = Fair Validity

0,200 – 0,399 = Poor Validity

0,000 – 0,199 = Very Poor Validity<sup>67</sup>

#### ➤ Instrument Reability

Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials. Reliability refers to consistency of measurement, which is how consistent test scores or other evaluation results are from one measurement to another. Reliability can be defined as the stability of test scores.<sup>68</sup>

To measure the reliability of the measurement, the writer used the formula of Kuder Richardson (KR-21). The formula was as follows:

$$r_{11} = \left( \frac{K}{K-1} \right) \left( 1 - \frac{M(K-M)}{K.Vt} \right)$$

Where:

$r_{11}$  = instrument reliability

K = the number of test item

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<sup>67</sup>Suharsimi Arikunto, *Dasar – Dasar Evaluasi Pendidikan*, Jakarta: PT. Bumi Aksara, 2001, p. 75.

<sup>68</sup>J.B. Heaton, *Writing Language English Test*, London: Longman, 1987, p. 155.

$M$  = the mean score on the test for all the testers

$Vt$  = the standard deviation of all the testers' score

➤ Index of Difficulty

The index of difficulty (or the facility value) of an item simply shows how easy or difficult the particular item proved in the test.<sup>69</sup> To know the level of difficult of test, the writer will use the formula as follows:

$$F.V = \frac{R}{N}$$

Where:

F.V = Facility value / level of difficulty

R = Number of the student who get the right answer

N = The total of students.

The result of formula above is connected the F.V value below:

FV = 0.00 – 0.30 = Difficult

0.31 – 0.70 = Fair

0.71 – 1.00 = Easy<sup>70</sup>

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<sup>69</sup>Anas Sujono, *Pengantar Evaluasi Pendidikan*, Jakarta: PT. Raja Grafindo Persada, 2013, p. 172.

<sup>70</sup>Ibid, p. 253.

### **E. Data Collection Procedure**

The first thing that the writer did was determined the class that would be the experimental class, control class, and try out class. After doing determined class, the writer gave the try out test to VIII-C class on Monday, 16<sup>th</sup> 2015 period 10.10-11.30, which followed by 18 students. Then the writer gave pre-test to VIII-A as experimental class on Tuesday, March 24<sup>th</sup> 2015 period 10.10-11.30, which followed by 30 students and pre-test to VIII-B as control class on Monday, March 23<sup>th</sup> 2015 period 08.30-10.10, which followed by 33 students.

Next, the experimental class was given treatment by teaching them using crossword puzzle. Meanwhile, the control class was taught as how they were usually taught (taught using book). After that, Post-test was given after the treatments completed. The writer gave post-test to VIII-A as experimental class on Wednesday, April 15<sup>th</sup> 2015 period 09.30-10.50, which followed by 30 students and post-test to VIII-B as control class on Saturday, April 18<sup>th</sup> 2015 period 10.10-11.30, which followed by 33 students. The post-test was given in order to know the effect of using crossword puzzle media on vocabulary mastery. After giving the post-test, the writer analyzed the result of students' scores as the primary data of the study. Then, the data were discussed and concluded.

The steps of the data collection procedure are simply drawn as follow:

1. The writer determined the class into experiment group, control group, and try out group. It was done on March 12<sup>th</sup>, 2015.
2. The writer gave try out test.

The try out test was given to VIII-C class on Monday, 16<sup>th</sup> 2015 period 10.10-11.30, which followed by 18 students. The try out test was in the form of multiple choice.

3. The writer gave pre-test.

The pre-test was given to VIII-A as experimental class on Tuesday, March 24<sup>th</sup> 2015 period 10.10-11.30, which followed by 30 students and pre-test to VIII-B as control class on Monday, March 23<sup>th</sup> 2015 period 08.30-10.10, which followed by 33 students.

4. The writer gave treatment to the experimental class and control class.

The experimental class was given treatments by teaching them using crossword puzzle. Meanwhile, the control class was taught using book (for the steps of treatment, see Table 3.7). Both classes were taught four times in four meetings. The schedule of the meetings is shown in Table3.6.

5. The writer gave post-test

The post-test was given to VIII-A as experimental class on Wednesday, April 15<sup>th</sup> 2015 period 09.30-10.50, which followed by 30 students and post-test to VIII-B as control class on Saturday, April 18<sup>th</sup> 2015 period 10.10-11.30, which followed by 33 students.

6. The scoring of students' score.

The writer give score to the data from experiment group and control group

7. The writer analyzed the data.

The data were analyzed based on the data analysis procedure drawn in the last part of this chapter.

8. The writer discussed and concluded the findings.

**Table 3.6**  
**Schedule of the Study**

<b>No.</b>	<b>Experimental Group</b>		<b>Control Group</b>	
	<b>Date</b>	<b>Material/subtopic</b>	<b>Date</b>	<b>Material/subtopic</b>
1.	March 24 <sup>th</sup> , 2015	Pre-test	March 23 <sup>th</sup> , 2015	Pre-test
2.	March 25 <sup>th</sup> , 2015	Parts of A House	March 28 <sup>th</sup> , 2015	Parts of A House
3.	April 7 <sup>th</sup> , 2015	Parts of A Body	April 6 <sup>th</sup> , 2015	Parts of A Body
4.	April 8 <sup>th</sup> , 2015	Family	April 11 <sup>th</sup> , 2015	Family
5.	April 14 <sup>th</sup> , 2015	Fruits	April 13 <sup>th</sup> , 2015	Fruits
6.	April 15 <sup>th</sup> , 2015	Post-test	April 18 <sup>th</sup> , 2015	Post-test



**Table 3.7****Teaching Procedure for Experimental and Control Groups**

Teaching Procedures for Experimental Group	Teaching Procedures for Control Group
<p>➤ Meeting 1</p> <p>1. Pre-activities (± 10 minutes)</p> <ul style="list-style-type: none"> <li>• The teacher greets the students.</li> <li>• The teacher checks students' presence.</li> <li>• The teacher and the students open the lesson by saying "Basmallah".</li> <li>• The teacher tell the students about something and asks the students about several questions such as "This classroom is located beside the teachers office. There is a big whiteboard in front of this class. There is a teacher desk near the whiteboard. It has thirty two tables. How many chairs in this class?"</li> </ul> <p>2. Whilst-activities (± 55 minutes)</p> <ul style="list-style-type: none"> <li>• The teacher gives handout then explains and gives example about descriptive text to</li> </ul>	<p>➤ Meeting 1</p> <p>1. Pre-activities (± 10 minutes)</p> <ul style="list-style-type: none"> <li>• The teacher greets the students.</li> <li>• The teacher checks students' presence.</li> <li>• The teacher and the students open the lesson by saying "Basmallah".</li> <li>• The teacher tell the students about something and asks the students about several questions such as "This classroom is located beside the teachers office. There is a big whiteboard in front of this class. There is a teacher desk near the whiteboard. It has thirty two tables. How many chairs in this class?"</li> </ul> <p>2. Whilst-activities (± 55 minutes)</p> <ul style="list-style-type: none"> <li>• The teacher gives handout then explains</li> </ul>

students.

- The teacher gives a chance to the students to ask question about descriptive text.
- The teacher gives worksheet to the students.
- The teacher gives chances for students to answer task related the example of descriptive and answer the crossword puzzle.

### 3. Post-activities (± 15 minutes)

- The teacher makes conclusion about the material today.
- The teacher gives motivation to the students and informing students about learning topic for next meeting.
- The teacher and the students close the lesson by saying “Hamdallah” all together.

and gives example about descriptive text to students.

- The teacher gives a chance to the students to ask question about descriptive text.
- The teacher gives worksheet to the students.
- The teacher gives chances for students to answer task related the example of descriptive.

### 3. Post-activities (± 15 minutes)

- The teacher makes conclusion about the material today.
- The teacher gives motivation to the students and informing students about learning topic for next meeting.
- The teacher and the students close the lesson by saying “Hamdallah” all together.

➤ Meeting 2

1. Pre-activities (± 10 minutes)

- The teacher greets the students.
- The teacher checks students' presence.
- The teacher and the students open the lesson by saying "Basmallah".
- The teacher tell the students about someone and asks the students about several questions such as "My father was a leader in the family, the one who always keep and protect us. My father is skinny, tall, high nose, and smokers. How your father looks like?"

2. Whilst-activities (± 55 minutes)

- The teacher gives handout then explains and gives example about descriptive text to students.
- The teacher gives a chance to the students to ask question about descriptive text.

➤ Meeting 2

1. Pre-activities (± 10 minutes)

- The teacher greets the students.
- The teacher checks students' presence.
- The teacher and the students open the lesson by saying "Basmallah".
- The teacher tell the students about someone and asks the students about several questions such as "My father was a leader in the family, the one who always keep and protect us. My father is skinny, tall, high nose, and smokers. How your father looks like?"

2. Whils-activities (± 55 minutes)

- The teacher gives handout then explains and gives example about descriptive text to students.
- The teacher gives a chance to the students to ask question about

- The teacher gives worksheet to the students.
- The teacher gives chances for students to answer task related the example of descriptive and answer the crossword puzzle.

### 3. Post-activities (± 15 minutes)

- The teacher makes conclusion about the material today.
- The teacher gives motivation to the students and informing students about learning topic for next meeting.
- The teacher and the students close the lesson by saying “Hamdallah” all together.

### ➤ Meeting 3

#### 1. Pre-activities (± 10 minutes)

- The teacher greets the students.
- The teacher checks students’ presence.

descriptive text.

- The teacher gives worksheet to the students.
- The teacher gives chances for students to answer task related the example of descriptive.

### 3. Post-activities (± 15 minutes)

- The teacher makes conclusion about the material today.
- The teacher gives motivation to the students and informing students about learning topic for next meeting.
- The teacher and the students close the lesson by saying “Hamdallah” all together.

### ➤ Meeting 3

#### 1. Pre-activities (± 10 minutes)

- The teacher greets the students.

- The teacher and the students open the lesson by saying “Basmallah”.
- The teacher tell the students about someone and asks the students about several questions such as “I have a daughter. I also have a sister. My daughter should to call my sister ‘aunt’. how should you call a child of your brother?”

## 2. Whilst-activities (± 55 minutes)

- The teacher gives handout then explains and gives example about descriptive text to students.
- The teacher gives a chance to the students to ask question about descriptive text.
- The teacher gives worksheet to the students.
- The teacher gives chances for students to answer task related the example of descriptive and answer the crossword puzzle.

## 3. Post-activities (± 15 minutes)

- The teacher checks students’ presence.
- The teacher and the students open the lesson by saying “Basmallah”.
- The teacher tell the students about someone and asks the students about several questions such as “I have a daughter. I also have a sister. My daughter should to call my sister ‘aunt’. how should you call a child of your brother?”

## 2. Whilst-activities (± 55 minutes)

- The teacher gives handout then explains and gives example about descriptive text to students.
- The teacher gives a chance to the students to ask question about descriptive text.
- The teacher gives worksheet to the students.
- The teacher gives chances for students

- The teacher makes conclusion about the material today.
- The teacher gives motivation to the students and informing students about learning topic for next meeting.
- The teacher and the students close the lesson by saying “Hamdallah” all together.

#### ➤ Meeting 4

##### 1. Pre-activities (± 10 minutes)

- The teacher greets the students.
- The teacher checks students’ presence.
- The teacher and the students open the lesson by saying “Basmallah”.
- The teacher tell the students about something and asks the students about several questions

to answer task related the example of descriptive.

##### 3. Post-activities (± 15 minutes)

- The teacher makes conclusion about the material today.
- The teacher gives motivation to the students and informing students about learning topic for next meeting.
- The teacher and the students close the lesson by saying “Hamdallah” all together.

#### ➤ Meeting 4

##### 1. Pre-activities (± 10 minutes)

- The teacher greets the students.
- The teacher checks students’ presence.
- The teacher and the students open the lesson by saying “Basmallah”.
- The teacher tell the students about something and asks the students about

such as “The name of this fruit is also the name of a color. It has a thick skin. This fruit contains a lot of water in it. This fruit contains vitamin C which is good for the health of our bodies. do you know what this fruit?”

## 2. Whilst-activities (± 55 minutes)

- The teacher gives handout then explains and gives example about descriptive text to students.
- The teacher gives a chance to the students to ask question about descriptive text.
- The teacher gives worksheet to the students.
- The teacher gives chances for students to answer task related the example of descriptive and answer the crossword puzzle.

## 3. Post-activities (± 15 minutes)

- The teacher makes conclusion about the material today.

several questions such as “The name of this fruit is also the name of a color. It has a thick skin. This fruit contains a lot of water in it. This fruit contains vitamin C which is good for the health of our bodies. do you know what this fruit?”

## 2. Whilst-activities (± 55 minutes)

- The teacher gives handout then explains and gives example about descriptive text to students.
- The teacher gives a chance to the students to ask question about descriptive text.
- The teacher gives worksheet to the students.
- The teacher gives chances for students to answer task related the example of descriptive.

## 3. Post-activities (± 15minutes)

<ul style="list-style-type: none"> <li>• The teacher gives motivation to the students and informing students about learning topic for next meeting.</li> <li>• The teacher and the students close the lesson by saying “Hamdallah” all together.</li> </ul>	<ul style="list-style-type: none"> <li>• The teacher makes conclusion about the material today.</li> <li>• The teacher gives motivation to the students and informing students about learning topic for next meeting.</li> <li>• The teacher and the students close the lesson by saying “Hamdallah” all together.</li> </ul>
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#### F. Data Analyze Procedure

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

1. The writer collected the result of test.
2. The writer gave score for the students’ work based on the correct answer that the students made by using the following formula:

$$\text{Student's score} = \frac{\text{Total of correct answer}}{\text{Total of test item}} \times 100$$

3. The writer arranged the obtain scores into the distribution of frequency of scores table.
4. The writer calculated the mean, median, modus, standard deviation, and standard error of variable X1 from the experimental group.
5. The writer calculated the mean, median, modus, standard deviation, and standard error of variable X2 from the control group.



6. The writer calculated the standard error for the difference mean between variable X1 and X2.
7. The writer used  $t_{test}$  because the study compares the mean of one group by using pre-test and post test to know their progress. The conclusion of the study is to show the rejection or acceptance of the hypothesis and to know what is the hypothesis will be accept or reject. The writer will use the formula as follows:

$$t_o = \frac{Mx1 - Mx2}{Semx1 - Semx2}$$

Where :

$t_o$  = the value of the mean difference will be judge

$Mx1$  = the mean of the first group

$Mx2$  = the mean of the second group

$Semx1 - Semx2$  = the standard error of the first and second mean

With the criteria :

If  $t_{test} > t_{table}$  =  $H_a$  is accepted and  $H_o$  is rejected

If  $t_{test} < t_{table}$  =  $H_a$  is rejected and  $H_o$  is accepted

The writer used the level of significance at 1% and 5%. If the result of  $t_{test}$  is higher than  $t_{table}$ ,  $H_a$  is accepted but if the result of  $t_{test}$  is lower than  $t_{table}$   $H_o$  is accepted.

8. The writer used SPSS 16.0 after using manual calculation.
9. The writer checks the normality of the data distribution and homogeneity of data variance using SPSS 16.0.

10. The writer used  $t_{\text{test}}$  to answer the problem of the study, whether there was difference on students' scores.
11. The writer used SPSS 16.0 after using  $t_{\text{test}}$  to answer the problem of the study, whether there was difference on students' scores.
12. The writer determined the level of significant of  $t_{\text{observed}}$  by comparing the  $t_{\text{observed}}$  with the  $t_{\text{table}}$ .
13. The writer interpreted the result of the data analysis.
14. The writer discussed to clarify the research findings. The results of the analysis data are shown in Chapter IV.