CHAPTER III

RESEARCH METHOD

This chapter presents sub-chapters dealing with the research method, it focuses the method used in conducting this study which covers research design, population, sample and sampling, variables, research instrument, validity and reliability testing, normality testing, data collecting method, and data analysis.

A. Research Design

Research design is a plan on how to collect and process the data which can be implemented to achieve the research objectives. Research design is important in conducting research. According to Porte (2010:64) research design is useful exercise for the critical reader for it will help us to clarify the appropriateness of the procedures carried out so far and out us in a better position to judge the suitability of any subsequent data analysis chosen. It means that the research design is the processes which are include planning and doing the research. Based on Arikunto (2010:172) research design is the subject of which the data collected. It means that, the research design is all needed process to collect and to achieve scientific truth for a research. In conducting this research, it needs plan of some steps that will take. The researcher has to follow the research design to reach the research successfully. The design begins with a general statement of a research problem or topic. In

the beginning, the researcher needs to think about some topic in which he or she has interest and wants to know more about it.

Considering the research problems and the purposes of the research, this research conducted in quantitative approach. Since this research determine the relationship between one thing (an independent variable) and another thing (dependent variable) in a population. Quantitative research is research that is guided by a particular hypothesis, which is one of the goals of the research, is to test the hypothesis that predetermined. Based on Ary *et al.* (2002:22), quantitative research uses objective measurement and statistical analysis of numeric data to understand and explain phenomena.

The researcher was conducted in an experimental design. Experimental research is research to know the possibility influence caused and effect by applying one or more experimental group. According to Ary et al. (2006:325) experimental research design is to enable researcher to estimate the effect of an experimental treatment. Experimental research is one of research based on the way the research is done. Arikunto (2013:2) explain there are three ways the research is done, that are description research, operation research, and experiment. Experiment is the way to know the cause effect relationship which is increased intentionally by the researcher and know the effect because of a treatment. While Ary et al. (2010:26) states "experimental research involves a study of the effect of the systematic manipulation of one variable(s) on another variable. An experimental usually involves four groups of design, pre-experimental design, quasi-experimental design, pure/true experimental

design, and ex post facto design. It is supported by Porte (2010:64) point out that:

Pre-experimental design are simple and inexpensive to implement and exploratory in nature, but lack control groups to compare with the experimental group. **In quasi-experimental designs,** both control and experimental groups are used in the study, but subject have not normally been randomly selected nor randomly assigned to these groups. **In pure/true experimental designs** there would have been prior random selection of subjects and random assignment to groups. **In ex post facto designs** the researcher studies the hypothesized link between two variables, but he/she is not interested in what on before the study, and no special treatment is applied to the subjects.

The researcher has a purpose to investigate whether there is an effect on vocabulary mastery after giving the treatment in the controlled condition. The researcher used pre-experimental research design by using one group pretest post-test design with quantitative approach without control variable. This study used pre-experimental research design because it does not have random assignment of subject to group or other strategy to control extraneous variable and there was no pre-treatment. The other reason the researcher used pre-experimental research design because this study was intended to know the effectiveness of using modified domino card game toward students' vocabulary mastery at seventh grade of MTs Assyafi'iyah Gondang Tulungagung by comparing between the students' scores before they are being taught by using modified domino card game and after they are being taught by using modified domino card game. That is why in this study the researcher just takes one group and use pre-test and post-test to see the result of the treatment.

According to Ary et al. (2010:303) the one-group pretest-posttest design 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. The design of the research is presented by table 3.1 as follows:

Table 3.1 Pre-test and post-test pre-experimental research design

Pre-test	Treatment	Post-test
\mathbf{Y}_1	X	Y_2

Y₁: Students' vocabulary mastery of experimental group in pre-test

X: Treatment by using modified domino card game

Y₂: Students' vocabulary mastery of experimental group in post-test

The researcher gave pre-test to know the achievement students' vocabulary mastery before being taught by using modified domino card game. Then, the researcher applied the treatment (*X*) to the students. After treatment given to the students' the researcher gave post-test to know the students' vocabulary mastery after being taught by using modified domino card game. After that, the researcher compared between the result of pre-test and post-test score to know the modified domino card game was effective in increasing the students' vocabulary mastery.

B. Population, Sample and Sampling

1. Population

Population is the whole subject of the research which has certain quality and characteristics. Population is a set to which a researcher wishes to generalize. According to Ary *et al.* (2010:148) population defines as all members of any well-defined class of people, events, or objects. While Arikunto (2013:173) states "Population is the whole subject of research". Based on Lodico *et al.* (2006:13) the population is the large group to which the researcher would like the result of a study to be generalizable. It means that the population is least one characteristic of differentiates it from other groups. Supported by Creswell (2008:151) population is a group of individuals who have the same characteristic. As a description above, the researcher take conclusion that the population is a whole research subject used by the researcher. So, population is very important part in a research.

The target population of this study was all the seventh grade students of MTs Assyafi'iyah Gondang Tulungagung. The total number of seventh grade students of MTs Assyafi'iyah Gondang Tulungagung is students consisting of 5 classroom and 175 students with less than 35 students for each class. The researcher was challenged to offer a new technique for students to ease them in learning English better, especially in vocabulary.

2. Sample

After the researcher identified the population, the next step was selecting the sample. Selecting sample is very important step in

conducting a research. Sample is a part that is assumed to represent a population. Sample is the part of population which has certain quality and characteristics. According to Ary *et al.* (2010:148) sample is a portion of a population. It means that the sample is a set of data consisting of only a part of the research. In other word, good sample must be represented of the entire as possible, so that the generalization of the sample as true as population. Supported by Creswell (2008:152) sample is a subgroup of the target population that the researcher plants to research for generalizing about the target population. While Arifin (2012:215) explains sample is the part of population that will be researched or sample is miniature population.

The sample of this research is the students of the A class of seventh grade at MTs Assyafi'iyah Gondang Tulungagung in which the total of them are 35 students consisting of 21 males and 14 females. Those 35 students were given a pre-test, treatment, and post-test during the research.

3. Sampling

After the researcher identified the population, the next step was selecting the sampling. Arikunto (2013:176) explains that technique to take the sample is called sampling technique. There were some techniques that can be chosen to determine the sample. The researcher used non-probability sampling. Ary *et. al.*, (2010:155) explain in non-probability sampling, there is no assurance that every element in the population has a chance of being included. It means that this technique of sampling does

not give opportunity for all members in population to be chosen. The researcher used purposive sampling as the one method in non-probability sampling by consideration of achievement in learning English. The purposive sampling is technique to take sample with the motive. Sugiyono (2007:124) states "Purposive sampling is technique to determine sample considerately". From the purposive sampling, the sample of this research was the students on seventh grade that consist of 35 students.

Therefore, the researcher chooses seventh grade because based on the information and suggestion from English teacher, the condition of the class was passive when teaching learning English than the other class so, this class is appropriate to be given a treatment. The modified domino card game made the students active, enjoy, and fun in teaching learning. The ability of the students was possible to develop by using modified domino card game in teaching vocabulary. The other reason why the researcher used the students on seven grade because the researcher wanted applied modified domino card game in Junior High School and the technique that researcher used was modified domino card game was appropriate with the characteristics of the students on seven grade.

According to Harmer (2001:39) the characteristic of Junior High School students are: They seem to be less lively and humorous than adult, Identity has to be forced among classmates and friends, peers approval may be considerably more important for the students than the attention of teacher, which, for younger children, is so crucial, They would be much happier if such problem did not exist, They may be disruptive in class.

They could play modified domino card game because their age (between 13 – 15 years old) was support to play the modified domino card game. So, the researcher chooses the A class of seventh grade students at MTs Assyafi'iyah Gondang Tulungagung as sample of this research that consist of 35 students.

C. Variables

Variable is measurable characteristics that varies. According to Latief (2011:10) variable is a key term in research. A variable is a characteristic or attribute of an individual, group, educational system, environment or an organization that the researchers can measure or observe and varies among individuals or organizations studied. Measurement means that the researcher records information from individuals by asking them to answer questions. And when variables vary, it means that scores will assume different values depending on the type of variable being measured Creswell (2012:112).

In this research, the researcher used two variables, there are:

1. Independent Variable (X)

An independent variable is an attribute or characteristic that influences or affects an outcome or dependent variable Creswell (2012:116). Independent variable is the cause of other variable. Based on

the definition above, the independent variable of this research was the use of Modified Domino Card Game.

The researcher was done treatment spend four meeting, exactly from Thursday, February 16th 2017 until Wednesday, March 1st 2017. The treatment of this research is Modified Domino Card Game, in which the researcher as teacher used treatment to solve students' vocabulary problems in the class. Modified Domino Card Game is one of the strategies that are able to help students in teaching and learning vocabulary mastery process. Modified Domino Card Game is implemented in discussion group and it can make students more active. Besides, Modified Domino Card Game strategy can provide opportunities for students to improve vocabulary mastery.

In teaching vocabulary by using Modified Domino Card Game, the research as English teacher provided the topic and picture that was appropriate with the material in learning of syllabus. Then, the teacher explained the role of Modified Domino Card Game to the students.

Domino Card Game is very easily done by the teachers and the students in the teaching and learning process in the classroom, because the students can memorize all of the vocabulary in domino cards. It is hoped the students be able to continue the domino cards game easily and smoothly.

2. Dependent Variable (Y)

A dependent variable is an attribute or characteristic that is dependent on or influenced by the independent variable Creswell (2012:115). This is the effect of independent variable. This variable was not manipulated by the researcher, but it was affected by the independent variable. The dependent variable of this research was the students' vocabulary mastery.

D. Research Instrument

Instrument is the tool that is used to collect the data which is needed in the research and it was one of the significant steps in conducting the research. The instrument of this research is test. The researcher used the test as the instrument to elicit and collect information on students' vocabulary mastery before and after giving treatment. A research instrument should be valid and reliable. It is valid if the instrument can measure what will measure. According to Arifin (2012:226) test is technique of measuring that contains some questions, statements, and some tasks that should be done or answered by the respondent. It can be conclude that test is a process of measuring students' knowledge and ability, so the writer should make a good test.

In this research, there are two kinds of test:

1. Pre-test

A pre-test provides a measure on some attribute or characteristics that assess for participant in an experiment before receive a treatment (Creswell 2008:301). This pre-test will be given to the students before the

researcher gave the treatment to the students. Before conducting of pretest, the researcher will be tryout the instrument to the students in other class on. The researcher took thirteen students at seventh grade of MTs Assyafi'iyah Gondang Tulungagung, especially seven C class. Before conducting the tryout, the instrument was consulted or validated to the advisor. Pre-test in this research was the test consists of some questions in the form of multiple-choice test (15 questions), matching test (5 questions) and arrange test (5 questions), total of the questions were 25 questions and the topic is descriptive text about people, place and thing which was the first material in second semester on junior high school. Pre-test is needed to know how far students' vocabulary achievement and the students' score in vocabulary before the researcher giving the treatment. (See the test in appendix 3)

2. Post-test

A post-test is a measure on some attribute or characteristic that is assessed for participants in an experiment after a treatment (Creswell 2008:301). This post-test will be given to the students after the researcher gave the treatment to the students. Before conducting of post-test, the researcher will be tryout the instrument to the students in other class. The researcher took thirteen students at seventh grade of MTs Assyafi'iyah Gondang Tulungagung, especially seven C class. Before conducting the tryout, the instrument was consulted or validated to the advisor. Post-test in this research was the test consists of some questions in the form of

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multiple-choice test (15 questions), matching test (5 questions) and arrange test (5 questions), total of the questions were 25 questions and the topic is descriptive text about job and professions which was the second material in second semester on junior high school. Post-test is needed to know the students' score in vocabulary after the researcher giving the treatment. (See the test in appendix 4).

The scoring technique of pre-test and post-test is the same. There is only one correct answer for each item. The formulating scores as follow:

Each correct answer x 4

 $= 25 \times 4$

= 100

 $score = \underline{obtained\ score}\ X\ 100$ $total\ score$

E. Validity and Reliability Testing

Validity and reliability of instrument are integral part in conducting a research since the instrument which will be used must be valid and reliable before using it to collect the data in this research. The researcher ensured that the instrument was valid and reliable by doing validity and reliability testing as follows:

1. Validity

Validity is measure appropriate what will be measured, and usually established through an in depth review instrument, including an examination of the instrument's items being tested. According to Ary *et al.*

(2010:225) validity is the most important consideration in developing and evaluating measuring instruments. It means that validity is the most complex criterion of an effective test and the most important principle of language testing.

There are four kinds of validity: content validity, construct validity, criterion-related validity and face validity. In this research, the researcher used content validity and construct validity because this study has administered test based on syllabus.

a. Content validity

Content validity is the extent to which the questions on the instrument and the scores from these questions are representative of all the possible questions that a researcher could ask about the content or skill Creswell (2008:172). Ary *et al.* (2010:226) stated that to have a content validity, the instruments are representative of some defined universe or domain of content. The type of the instrument was test. The content validity of the test can be done by comparing the content of test and the material that will be learned. The researcher made a test based on main competence and basic competence in the syllabus Curriculum of 2013 since the school implements the Curriculum of 2013 in the time the researcher conducted this research of first grade MTs Assafi'iyah Gondang Tulungagung, the researcher made a test specification before making a test, especially vocabulary testing. After knowing the standard competence, the researcher made indicator of the

test based on the standard competence in syllabus. Therefore this test is valid in term of content validity. Table 3.2 shows content the validity as follow:

Table 3.2 Content Validity

Main	To understand the social function, text structure, and element of language from descriptive text with explain and ask about description of people, animal, and things that		
Competence	appropriate with usage.		
Basic	Responding a meaning and rhetoric step accurately, fluent, and thanked in writing a very simple vocabulary which is connected with description of people, animal, and things		
Competence	that appropriate with usage.		
The state of the s	The state of the s	Items number	
	To find out the closest meaning in English	6,8,10	
	2. To find out the antonym and synonym	4,5,7,9,13,16,17,18,19,20	
Indicators	To arrange the words or sentences based on the descriptive text	11,15,21,22,23,24,25	
	4. To find out the correct	1,2,3,12,14	
	word that relevant with		
	descriptive text		
	Total	25 items	

b. Construct validity

Construct validity is a test can be demonstrated that it measures just the ability which is supposed to measure. Construct validity is the test measure hypothetical construct (Sukardi, 2012: 123). In this research, the researcher used construct validity in administered vocabulary test in three kinds of test format: there was multiple-choice test, matching test and arrange test. In multiple-choice, the students should answer the questions from the selection answer. The matching test, the students should match the vocabulary list in right side in the

form of English word with its meaning in the left side. Both of them are appropriate for testing vocabulary.

c. Face Validity

Face validity refers to the degree to which a test looks right, and appears to measure he knowledge or abilities it claims to measure, based on subjective judgment or the examinees who take it, the administrative personnel who decide on its use, and other psychometrically unsophisticated observers (Brown, 2004:76). A test is said to have face validity if it *looks* as if it measures what it is supposed to measure. For example: a test which pretended to measure pronunciation ability but which did not require the test-takers to speak might be thought to lack face validity. This is true even if the test's construct and criterion-related validity can be demonstrated. Face validity is hardly a scientific concept, yet it is important. A test which does not have face validity may not be accepted by test-takers, teachers, education authorities or employers. The test in this research was designed to measure students' vocabulary mastery.

2. Reliability

Reliability is consistency and dependently. The research instrument has high reliability if it can produce consistent result. In this research, the researcher used Kuder Richardson 20 Formula to measure the reliability of the test. The researcher used KR-20 Formula because the test administered only once, if the test item was correct is given one point and if the test

item was incorrect is given zero point. It was appropriate to measure the reliability of the test in the form of multiple-choice test. The researcher used KR-20 Formula by calculating the data by using Microsoft Excel.

The researcher gives test as much 25 questions for students of MTs Assafi'iyah Gondang Tulungagung to know the reliability of test. In this research, the researcher used KR-20 formula to measure the test to be reliable, most of them used this formula because not crucial and requires test administration only once Fraenkel and Wallen (2005:156).

KR-20 formula

$$\mathbf{r}_{11} = \left[\frac{n}{n-1}\right] \left[\frac{S_t^2 - \sum p1q1}{S_t^2}\right]$$

Where:

 r_{11} = reliability coefficient

n = number of test items

 S_t^2 = standard deviation

p1 = proportion of passing the test item

q1= proportion of failing the test item

 $\sum p1q1$ = sum of passing the test item times to failing the test item

After calculating the reliability of the test items, the researcher classified the reliability coefficient which taken from according to Ridwan (2004:136), the criteria of reliability instrument can be divided into 5 classes, those are very reliable, reliable, enough reliable, rather reliable, less reliable. The criteria of reliability can be showed as follow:

Table 3.3 Criteria of reliability

Interval coefficient	Correlation
0.80 - 1.000	Very reliable
0.60 - 0.79	Reliable
0.40 - 0.59	Enough reliable
0.20 - 0.39	Rather reliable
0 - 0.19	Less reliable

To know the reliability of the test, the researcher conducted tryout of the test. The purpose of tryout itself was to know the clear instruction of the test and to achieve the reliable scores. Tryout test conducted in different class that is 7C class. They were chosen because they have almost same level as the experimental group.

In tryout, the researcher asked the students to answer the questions in the pre-test. And the result as follow:

Table 3.4 the preparatory to compute the standard deviation

No.	Name	$\mathbf{X}_{\mathbf{t}}$	X_t^2
1.	AAY	18	324
2.	ATR	16	256
3.	DDF	18	324
4.	DS	16	256
5.	FAN	18	324
6.	FAR	18	324
7.	KNP	17	289
8.	MHS	20	400
9.	MHM	16	256
10.	MK	16	256
11.	MM	18	324
12.	RA	16	256
13.	SALM	16	256
		$\sum X_t = 223$	$\sum X_t^2 = 3845$

$$S_t^2 = \sum x_t^2$$

To know $\sum x_t^2$ the formula below was used:

$$\sum x_t^2 = \sum x_t^2 - \left(\frac{\sum x_t}{N}\right)^2$$

$$= 3845 - \left(\frac{223}{13}\right)^2$$

$$= 3845 - (17.15)^2$$

$$= 3845 - 294.12$$

Therefore, the standard deviation is

$$\sqrt{s_t^2} = \sqrt{\frac{3550.88}{13}} = 16.53$$

Table 3.5 the table to compute the reliability using Kuder Richardson formula (KR-20).

Item	Np	p1	Nq	q1	p1.q1
1.	13	1	0	0	0
2.	11	0.84	2	0.16	0.13
3.	11	0.84	2	0.16	0.13
4.	10	0.76	3	0.24	0.18
5.	0	0	13	1	0
6.	10	0.76	3	0.24	0.18
7.	11	0.84	2	0.16	0.13
8.	13	1	0	0	0
9.	9	0.69	4	0.31	0.21
10.	13	1	0	0	0
11.	13	1	0	0	0
12.	11	0.84	2	0.16	0.13
13.	4	0.30	9	0.70	0.21
14.	11	0.84	2	0.16	0.13
15.	10	0.76	3	0.24	0.18
16.	7	0.53	6	0.47	0.24
17.	13	1	0	0	0
18.	6	0.46	7	0.64	0.29
19.	8	0.61	5	0.39	0.23
20.	6	0.46	7	0.64	0.29
21.	3	0.24	10	0.76	0.18
22.	4	0.30	9	0.70	0.21
23.	10	0.76	3	0.24	0.17
24.	8	0.61	5	0.39	0.23
25.	8	0.61	5	0.39	0.23
					\sum p1.q1 = 3.68

Therefore, the reliability is:

$$\mathbf{r}_{11} \! = \! \left[\frac{n}{n \! - \! 1} \right] \left[\frac{S_t^2 - \! \sum p \! 1 q \! 1}{S_t^2} \right]$$

$$r_{11} = \left[\frac{25}{25-1}\right] \left[\frac{16.53 - 3.68}{16.53}\right]$$

$$r_{11}$$
= [1.041] [0.77]

$$r_{11} = 0.80157$$

From the analysis, the researcher got the result of pre-test tryout score. The reliability coefficient is 0.80. From the above evidence, it was found that the reliability of test is very reliable. And also it can be tested on students.

F. Normality Testing

Normality distribution test is a test to measure whether the data has a normal distribution or not. Normality test is intended to show that the sample data come from a normally distribution population. Good data was the data in the normal distribution. Raharjo (2014) explain the basis for a decision in the normality test is: If the significance value is more than 0.05, the data is normally distributed. While, if the significance value is less than 0.05, the data are not normally distributed. To know the normality, in this research, the researcher used one method in normality testing that was One-Sample Kolmogorov-Smirnov Test on SPSS 16.0. The result can be seen in the table below:

Table 3.6 Normality Test
One-Sample Kolmogorov-Smirnov Test

		pretest
N		35
Normal Parameters ^a	Mean	60.91
	Std. Deviation	8.005
Most	Absolute	.188
Extreme Differences	Positive	.188
	Negative	127
Kolmogorov-Smirnov Z		1.109
Asymp. Sig. (2-tailed)		.171
a. Test distrib	oution is Normal.	

Based on the table above, output One Sample Kolmogrov-Smirnov Test shows that the subjects are 35 students. The value of Kolmogrov-Smirnov Z is 1.109 and the Asymp. Sig (2-tailed) is 0.171. If the probability > 0.05, it means that the data is normal. The significant is 0.171 bigger than 0.05 (0.171>0.05). It means that the data is distributed normally.

Because the data is normal, t-test as one of parametric testing was chosen for the data analysis. It is supported by Chan (2003) point out that since the normality assumption is satisfied, we can use the paired T-test to perform the analysis: In SPSS use *Analyze, Compare Means, Paired Samples T test*.

G. Data Collecting Method

Data collecting method was the method that was used by the researcher to collect data. Tanzeh (2009:57) stated that data collecting is systematic and standardized procedure to obtain the necessary data. Data of

this study was collected by administering test. Arikunto (2013:266) explain that instrument which is in the form of test can be used to measure basic ability and achievement. In this research, the data was collected by administering test they were pre-test and post-test. The pre-test and post-test were about vocabulary. Both pre-test and post-test consist of some questions related to the vocabulary, the total of the question were 25 questions in the form of multiple choice (15 questions), matching (5 questions), and arrange test (5 questions). The researcher collected the data by administered pre-test, gave treatment, and administered post-test to the students. The researcher will be tryout the pre-test to the students in other class on Tuesday, February 7th 2017. The researcher took ten students at seventh grade of MTs Assyafi'iyah Gondang Tulungagung especially in 7C class to know the validity and reliability of the test before conduct research.

The first step in research was administering pre-test, the researcher gave pre-test to the students on Thursday, February 9th 2017. The material in pre-test about descriptive person, place and thing has been taught by the teacher before the researcher gave the pre-test, so the researcher gave pre-test to the students.

The last step was administering post-test on Thursday, March 2nd 2017. The researcher will be tryout the pre-test to the students in other class on Tuesday, February 28th 2017. The researcher took ten students at seventh grade of MTs Assyafi'iyah Gondang Tulungagung especially in 7C class to know the validity and reliability of the test before conduct research. The

material in post-test is descriptive text about job and professions. The researcher gave post-test after the students gave third treatment from the researcher.

H. Data Analysis

Data analysis is the process of evaluating data using analytical and logical reasoning to examine the data provided. The data obtained from research result of students test that were analyzed quantitatively. Quantitative data analysis is also called statistical analysis. It means that the result of the data served up in numeral form. Data analysis is a review of a series of activities, grouping, systematization, interpretation and verification of data so that a phenomenon has social value, academic, and scientific (Tanzeh, 2009:26). Ary *et al.* (2010:95) explain that data analysis indicate how the researcher will analyze the data to the test the hypothesis and/or answer the research question. While Khotari (2004:18) explain after the data have been collected, the researcher turns to the task of analyzing the data.

In this research, the researcher used statistical analysis because the result of the data was numerical form. The researcher used T-test to analyze the data by comparing with the first data (pre-test) and the second data (post-test) to know whether there was significant different score of the students before being taught by using modified domino card game and after being taught by using modified domino card game in increasing the students' vocabulary mastery to the seventh grade students in MTs Assyafi'iyah

Gondang Tulungagung. If the result of post-test is higher than score of pretest, it means that teaching vocabulary by using modified domino card game is effective. To get the achievement of vocabulary mastery test, the researcher gave the student a test after got treatment by using modified domino card game. The researcher used Paired sample T-test since the data were normal. In this research, the researcher used analysis compare means-paired sample T test by SPSS 16.0 because the researcher use one group experiment using two test, there are pre-test (without treatment) and post-test (using treatment). After that, the researcher compared the mean from the result of pretest and post-test. Using SPSS 16.0 means that the researcher did not use manual computation, all data collected were accounted by using SPSS 16.0 program in this case was paired sample T test.