CHAPTER III

RESEARCH METHOD

In this chapter explained the method that researcher used, how to processed the research until the researcher found out the result of her research. Research method included research design, population and sample, research instrument, validity and reliability testing, variable of the study, data collecting method, and data analysis.

A. Research Design

In this chapter, researcher conducted research to get information what she wants. According to Nunan (1992:1) research is a pejorative one to many practitioners, conjuring up images of white-coated scientists plying their arcane trade in laboratories filled with mysterious equipment, a scientific method to get data in certain purpose and function (Sugiyono, 2014:2), detailed study of a subject to discover new facts about it (Hornby, 2008:375) . Beside there are different definitions with research design. Balnaves and Caputi (2001:29) state that a research design was the guide to how the research is constructed and carried out, how to collect and analyze data, so can be implemented economically and agree with the research purpose (Nasution, 2003:23).

In this research, the researcher used quantitative approach by using experimental research. Gay (1992:298) states that the experimental research method was the only method of research that can truly test hypotheses concerning cause and effect relationships. It means that experimental method represents the most valid approach to the solution of educational problems, both practical and theoretical, and to the advancement of education as a science. An experimental method was both the most demanding and the most productive method of

research. In experimental research there was a treatment. Sugiyono (2014:72) states that experimental research can be defined as research method that is used to know the influence of certain treatment toward others in uncontrolled condition. According to Gay (1992:299) an experimental research is guided by at least one hypothesis that stated an expected causal relationship between two variables. There were three kinds of experimental; these were pre-experimental, quasi-experimental, and true-experimental.

The researcher focused on pre-experimental design. The reason of using pre-experimental design because of the practicality and feasibility of the research. It means that pre experimental design was practical to implement and enable to implement in class VII D. In a pre-experiment there was only single group that was given pre-test and post-test. Pre-test was given before a treatment and post-test was given after the treatment.

The pre-experimental research procedures are:

1. Administering pre-test before applying Make a Match technique with a purpose of measuring students' mastery on vocabulary at first grade of MTs
   Ma'arif Tulungagung
2. Applying the experimental treatment teaching vocabulary using Make a Match technique as the method to the subject (at first grade of MTs
   Ma'arif Tulungagung). The teaching scenario as follow:
   a. Opening
      1) Greeting.
   b. Main Teaching
      1) Researcher prepares some cards contain some concepts or topic that suitable for review session, some cards are the question and some others are answer.

2) Every student gets one card.
3) Every student thinks the question or answer from the card they held.
4) Every student looks for their partner who has the appropriate card with his/her card (question/answer).
5) Every student who can compare to the suitable card before the time over will get point.
6) After one period, cards are shaken again so that every student get different card from previous.
7) And so on.
8) Conclusion/closing.

c. Closing
1) For knowing the students' understanding about this material, researcher asks the students randomly to memorize the new vocabularies which are in the flashcard.
2) Evaluation.

3. Administering post-test after applying Make a Match technique with a purpose of measuring students' mastery on vocabulary at first grade of MTs Ma'arif Tulungagung

In this research, the test was called parametric test because the result was interval data (Sugiyono, 2014:150). It was taken from the students' achievement through pre-test and post-test. The researcher was going to compare between pre-test and post-test score.

B. Variable of the Study

Variable is the focus or main point of research. According to Sugiyono (2014:38) variable is everything which was decided by researcher to be learnt so the researchers can get information about what she wanted. There are two variables that were used in this research, namely, independent and dependent variables. These were independent that was defined by Sugiyono (2014:39) as variable that influences or can be as reason for appearing the dependent variable and independent variable was variable that was influenced by dependent variable. The dependent variable was Y variable and the independent variable was X variable. It can be concluded that in this research the dependent variable is students' achievement in vocabulary and the independent variable was make a match technique. These two variables was different one to another and they can be said to be variety research object.

C. Population and Sample

Population was all subject in a research. According to Sugiyono (2014:80) population was generalization area consists of object or subject was decided by researcher which had certain quality and characteristic. It means that population not only human but also objects or things in this world. The populations of this research were all of students at first grade of MTs Ma'arif Tulungagung. It covered four classes; these were A-D class. It was consists of 180 students.

The researcher took one class from the population as sample. Sugiyono (2014:81) stated that sample was part of amount and characteristic that was had by population, was part or representative of research population (Arikunto, 2010:175). It means that the sample had to represents all of population. So, the researcher took sample from class VII D that consists of heterogeneous students. There were 43 students in class VII D. They were active students. Class of VII D also called data source because the researcher got data from VII D class.

The sample was taken by using sampling. In this research, researcher used purposive sampling in selecting sample. Purposive sampling (Nasution, 2003:98) was sample which chosen accurately so it can be relevant with research design, technic in selecting sample by certain consideration (Sugiyono, 2014:85).

The researcher used purposive sampling in taking her sample because the technique which was used in this research emphasized on active learning. The active learning took a part in cooperative learning. Based on preliminary observation, students of class VII D had different characteristics with other class. Students of VII D were more active than other class when they were taught English subject. There were many feedbacks as type of participation from students in teaching learning process. The participation of class VII D was very important in this research. It means that their participation gave big contribution in reaching this research purpose.

D. Research Instrument

Instrument can be defined as tool. According to Arikunto (2010: 203) research instrument was tool or facility that was used by researcher in collecting data. The data which was gotten can be easier processing because it was accurate, complete, and systematic. Biddix (2009) said that was the generic term that researchers used for a measurement device. It can be survey, questionnaire, interview, documentation, and test. In this research, researcher uses test as an instrument of her research. The test was made by researcher.

In developing the test was based on school-based curriculum and syllabus which was used in MTs Al-Ma'arif Tulungagung (the developing test can be seen in appendix 1). The test was conducted to measure students' achievement in vocabulary that integrated in teaching reading. So, researcher had to see standard competence and based competence of reading in

syllabus. After knowing the standard competence and basic competence, researcher developed some indicators that must be reached by students. From these indicators, researcher developed the test. The test is in the form of multiple choice and completion. There were five indicators and each indicator consists of 4 questions in the form of multiple choice and 2 questions in the form of completion.

There were two kinds of test, these pre-test and post-test. Pre-test is given to students before giving treatment and post-test is given after giving treatment. Here, the treatment is Make a Match technique. After conducting pre-test and post-test, researcher had to do scoring of them. Researcher had to make scoring guide first. In this research, there were two kinds of form of the test. It was multiple choice and completion and the test amount of pre-test and post-test were the same. The scoring guide of the test was below:

a. Right answer x 3 => 20 x 3= 60

b. Right answer x 4 => $\frac{10 \times 4 = 40}{100}$ +

E. Validity and Reliability Testing

The best instrument had to fulfill two importance requirements, these were validity and reliability. Validity and reliability were used to test the legality of data. These were the explanations of validity and reliability below:

1. Validity

The researcher used validity to know her research instrument was valid or not. According to Nasution (2003:74) validity was measure what to be measure, a measurement showed levels of research instrument validity (Arikunto, 2010:211), degradation of accuracy between data which was happen on research object and capacity which can be reported by researcher (Sugiyono, 2014: 267). High and low validity of instrument showed how far data were collected didn't diverge from validity itself. There were four kinds of validity that was most used by researcher. These were content validity, criterion-related validity, construct validity, and face validity. In this research, researcher used three types of validity in making research instrument. The types of validity as follow:

a. Content validity

The test was called content validity if the content of test was suitable to what was going to be tested. According to Gay (1992:56) content validity was the degree to which a test measures an intended content area. Content validity was guaranteed if contents of test constituted representative sample of the language skill, structures, etc. being tested. It means that the test must be appropriate with the material in certain level of education. In developing items of test, researcher had to know the curriculum of school which used to do research. Because the school uses school-based curriculum, the researcher developed the test based on the school-based curriculum by reading the base-competence and standard-competence. The researcher only used the base-competence and standard-competence of reading skill because this research wanted to know the students' achievement of vocabulary integrated in teaching of reading. Nation (2003:75) said that content validity was gotten by establishing good sampling. It means that choosing representative items from whole material of studies.

b. Construct validity

A test was said to have construct validity if it can be demonstrated that was measure just the ability which was supposed to measure. Gay (1992:157) said that construct validity was degree to which a test measured an intended hypothetical construct. Construct validity cannot be seen but the effect can be observed. It means that construct validity was used to explain students' behavior. According to Nasution (2003:76) construct validity was used to know whether indication which was tested only contain one dimension. For example, knew students' ability in writing, the test must be a writing test. This research was to test vocabulary achievement integrated in teaching reading, so the researcher multiple choice and completion as the form of test. The construct validity had advantage that was researcher knew the components of attitude or ability which were measured by testing (Nasution, 2003:77).

c. Face validity

A test was called as having face validity if it looks as if it measures what it was supposed to measure. The term of face validity was sometimes used in describing a test. According to Gay (1992:156) face validity refers to degree to which a test appears to measure what it purports to measure. Facie (2002) said that face validity refers to the transparency or relevance of a test as which appear to test participants. For example a test for junior high school students must be suitable to what the students have been learnt. Junior high school students should not be given a test for senior high school students. It can break the face validity.

2. Reliability

A test which gave the same result of measurement was reliable. According to Gay (1992:161) reliability was the degree to which a test consistently measured whatever it measured, an absolute requirement to determine one variable effect to another (Nasution, 2003:77). Reliability indicated in a definition that an instrument reliable enough to use as instrument for collecting data because that instrument is good (Arikunto, 2010:221).

Reliability was also requirement for validating a test. It means that the test which was not reliable, it cannot be valid automatically. Reliability was expressed numerically, usually as a coefficient. A high coefficient indicated high reliability and a low coefficient indicated low reliability (Gay, 1992:162). Coefficient which the score of 1.00 shows that the test was perfectly reliable. To know the reliability of the test, the researcher used Kuder-Richardson Reliability. The formula was as follow:

KR-20 Formula

$$r_{11} = \left(\frac{n}{n-1}\right)\left(\frac{S_t^2 - \sum p_1 q_1}{S_t^2}\right)$$

Where,

r_{11} = reliability coefficient

n = number of test items

S_t^2 = standard deviation

p_1 = the right response

q_1 = the wrong response

F. Try out test

Try out test was conducted before the researcher conducted the pre-test and post-test. It was implemented to know whether the test was reliable or not. The try out test would be conducted on March, 22nd 2016 in class VII C which had same level with the sample and consists of 40 students. In try out test, the researcher provided 45 questions. It was 45 questions because question which was used in pre-test or post-test were added by 50% of the questions needed. By adding 50% question, the researcher could eliminate unworthy questions and still could use 30 questions for the pre-test or post-test. Of course the eliminating unworthy questions can be done after conducting try out and do analyzing the result. When the try out was done, researcher analyzed the result to know the reliability of test. Based on Sudjiono (1996:209-230) test had more highly reliability when the reliability coefficient was 0.99-1.00, high reliability was 0.70-0.89, fair when the reliability coefficient was 0.50-0.69, if the reliability coefficient showed the score of 0.30-0.49 it was called low, and very low reliability when the score was less than 0.30. The result of try out was follow:

Table 3.1 The preparatory to compute the standard deviation

No	Name	Xt	Xt2
1	CJ	44	1936
2	PRC	44	1936
3	GS	43	1849
4	MAM	21	441
5	AB	17	289
6	DM	32	1024
7	MD	31	961
8	MPV	7	49
9	ECN	40	1600
10	EKS	29	841
11	DW	29	841
12	RDIR	41	1681
13	MDP	42	1764
14	MAMT	40	1600
15	DPN	39	1521
16	LN	19	361
17	DNR	37	1369
18	LM	41	1681
19	FRS	40	1600
20	AVM	40	1600
21	HNW	42	1764
22	IH	22	484
23	AH	26	676
24	ADA	39	1521
25	IA	45	2025
26	HNA	42	1764
27	FW	42	1764
28	WRU	39	1521
29	KE	44	1936
30	FYE	37	1369
31	LS	40	1600
32	SL	41	1681
33	MSA	36	1296
34	MAF	29	841
35	VN	21	441
36	LOA	20	400
37	RFP	39	1521
38	GV	34	1156
39	KAS	32	1024
40	RG	27	729
		∑Xt=1373	∑Xt2=50457

After calculating by using KR-20 Formula, researcher got the score of reliability coefficient was 0.85. The steps in getting the reliability coefficient were below:

$$S_t^2 = \frac{\sum X_t^2}{N}$$

To know the result of $\sum Xt^2$, the formula which used was below:

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

$$= 50457 - \left(\frac{1373}{40}\right)^2$$

$$= 50457 - 1178.2056$$

$$= 49278.794$$

Hence, the standard deviation was:

$$\sqrt{S_t}^2 = \sqrt{\frac{49278.794}{40}}$$

$$= 35.1$$

So, the reliability was:

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

$$r_{11} = \left[\frac{40}{40-1}\right]\left[\frac{35.1-7.040625}{35.1}\right]$$

$$r_{11} = \left[\frac{40}{39}\right]\left[\frac{28.059375}{35.1}\right].$$

$$r_{11} = [1.025641025641026][0.7994123931623932]$$

$$r_{11} = 0.8199101468332238$$

According to the calculating above, the reliability coefficient was gotten 0.82. It indicated that the reliability coefficient from tryout test was high. The question with an item facility under 04.00 was very difficult because only 40% students could answer it. It could be concluded that researcher must eliminate these items of test and should not use in pre-test and post-test (the table of computation the reliability by using KR 20 can be seen in appendix 6).

G. Normality and Homogeneity Testing

1. Normality Testing

Normality testing was used to know whether the data was in normal distribution or not. The data was called normal distribution which in the form of bell shaped. It means that the distribution of data was symmetrical, it didn't skew to left or right. In calculating the normality, researcher used SPSS 16. The technique that was used was *1 sample k-s technique.* In this case, researcher used statistic non-parametric. The hypotheses for testing normality were:

a. H_0: Data was in normal distribution

b. H_1: Data was not in normal distribution

The hypotheses above explained that the data was in normal distribution if H_0 was accepted and the data was not in normal distribution if H_1 was accepted. The H_0 was rejected when the significance value was lower than 0.01 (α=1%) while H_0 is accepted if the significance value is higher than 0.01 (α=1%). When the H_1 was rejected, automatically H_0 was accepted, conversely. The table of analyzing One-Sample Kolmogorov-Smirnov test as follows:

Table 3.2 The Result of Tryout in Normality Testing

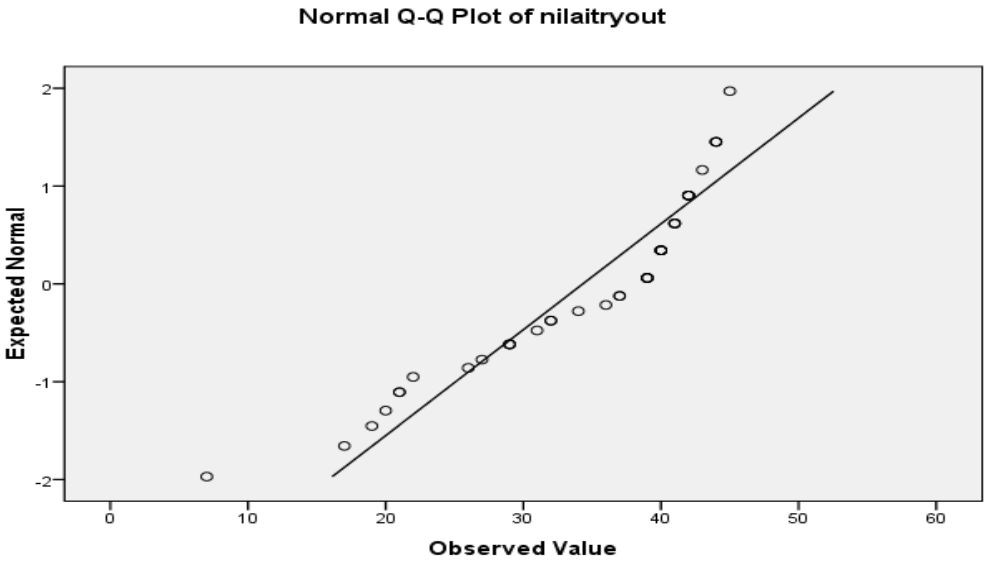
One-Sample Kolmogorov-Smirnov Test

		Y
N		40
Normal Parameters[a]	Mean	34.3250
	Std. Deviation	9.23868
Most Extreme Differences	Absolute	.219
	Positive	.124
	Negative	-.219

Kolmogorov-Smirnov Z	1.382
Asymp. Sig. (2-tailed)	.044

a. Test distribution is Normal.

The table above showed the result of significance value was 0.044. It means that the significance value was higher than 0.01 (0.044>0.01). It could be conclude that H_0



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The hypotheses said that the data was homogeny if H_0 was accepted and the data was not in homogeny if H_1 was accepted. The H_0 was rejected when the significance value was lower than 0.05 (α=5%) while H_0 is accepted if the significance value is higher than 0.05 (α = 5%). When the H_1 was rejected, automatically H_0 was accepted, conversely. After analyzing by using Kolmogorov-Smirnov test, the result of Based on Mean significance value was 0.270. It means that the significance value was higher than

0.05 (0.270>0.05). It could be conclude that H_0 was accepted and H_1 was rejected. So, the data in this research was homogeny. The table of analysis Kolmogorov-Smirnov formula as follows:

Table 3.3 The Result of Tryout in Homogeneity Testing

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Y	Based on Mean	1.253	1	38	.270
	Based on Median	.276	1	38	.602
	Based on Median and with adjusted df	.276	1	31.561	.603
	Based on trimmed mean	.973	1	38	.330

H. Data Collecting Method

In collecting data, the researcher must have method to collect data which was appropriate with her needed data. Because researcher used quantitative approach, so the data were score or number. Of course, the researcher had to conduct administering test as a data collection method. According to Arikunto (2010:193) test is sequence of questions which was used to measure ability, knowledge, intelligence, and skill of individual or group. In this research the test which used was achievement test because the test was conducted to know the students' achievement. There are two kinds of test, standardized test and test which was made by teacher (Arikunto, 2010:267). In this research the test was made by researcher. There were two steps in collecting data as follow:

1. Pre-test

In this research, the test which given in the first was pre-test. Pre-test was given before students getting treatment. The pre-test was followed by 43 students in 30 minutes time allocation. These are consists of 20 number of multiple choices and 10 number of completion. Before giving pre-test, researcher informed the students some indicators that must be reached by them. This pre-test was followed by 43 students of VII C class and implemented on March, 26th 2016.

2. Post-test

Post-test was the last step in collecting data. It was given after the treatment was done. It was conducted on April, 20th 2016 and followed by 43 students. In this test, there were 30 minutes times available. Similar to the pre-test, post-test also had 30 questions. It was consists of 20 multiple choice test and 10 completion test. Before administering the test, researcher explained some indicators that must be reached by the students.

I. Data Analysis

Technique of data analysis was way to analyze data which had been collected. This research used inferential statistic because this research did analyzing data from the sample not population. The data from this research was interval data or score of students' test, so this research used parametric statistic in analyzing data. In analyzing data, researcher would compare the score of first test or pre-test and second test or post-test. In comparing two scores, the researcher wanted to know whether any significant difference between before and after giving treatment. If the result of post-test higher than pre-test, it means that using make a match technic for teaching vocabulary is effective and we can accept the alternative hypotheses, so the null hypotheses automatically rejected.

To check if the null hypotheses rejected or accepted, conversely, researcher used SPSS (statistics package for social science) to process the data. In this research, researcher used *t-test* because her research subject or sample was 45 students. The researcher used Paired Sample T-test formula. The steps were: enter our data in SPSS horizontally->analyze->compare mean->paired sample T-test-> bring two variables to the right->click OK. It would be processed automatically by using SPSS 16.