CHAPTER III

RESEARCH METHOD

This chapter presents sub-chapters dealing with the research method. This chapter covers research design; population, sample and sampling; research instrument; validity and reliability testing; normality testing; data collecting method; data analysis, and also hypothesis testing.

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. 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. 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.

This research conducted in pre-experimental design with the form of one-group pretest-posttest design using quantitative approach without control variable. It is caused by this research does not have random assignment of subject to groups or other strategies to control extraneous variables. The researcher just take one class and uses pre-test and post-test to see the result of the treatment using flash card as media toward students' vocabulary of seventh grade at SMPN 1 Ngantru. The result of the treatment is found by comparing the pre-test and post-test score. One group pre-test and post-test design means that this design gives pre-test before treatment and gives post-test after 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
The Design of the One-Group Pretest-Posttest Design

Pre-test	Treatment	Post-test
Y_1	X	Y_2

Explanation :

Y_1 = Pre-test

X = Treatment

Y_2 = Post-test

In this research, the procedures of experimental research that use one-group pretest-posttest design are:

1. The researcher administering a pre-test by a purpose to measure the students' vocabulary score before being taught by using flash card as media to the subject.

2. The researcher applies the experimental treatment of teaching vocabulary by using flash card as media to the subject.

3. The researcher administeries a post-test by a purpose to measure the students' vocabulary score after being taught by using flash card as media to the subject.

The different scores were attributed to application of the experimental treatment are then evaluated by comparing the pre-test and post-test scores.

In this research, the researcher uses pre-experimental design by using quantitative approach with one-group pretest-posttest design. As mentioned before, the objective of this research was to know the effectiveness of using flash card as media toward the students' vocabulary. The effectiveness of this media was known after knowing the significant difference between the students who are being taught before

using flash card and the students who are being taught after using flash card.

B. Population, Sample and Sampling

1. Population

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. 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 characteritic. As a description above, the researcher take conclusion that the population is a whole of research subject. So, population is very important part in a research.

According to Creswell (2008:151) population is a group of individuals who have the same characteristic. This research will conducted at SMPN 1 Ngantru. The total students at SMPN 1 Ngantru are 1011 students. The population in this research is the seventh grade students at SMPN 1 Ngantru Tulungagung in the academic year of 2015/2016. The total number of the seventh grade students at SMPN 1 Ngantru Tulungagung in the academic year of 2015/2016 are 294 students, consist 9 classes.

2. **Sample**

Selecting sample is very important step in conducting a research. According to Ary et al (2002:163) 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 representive 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. Sample of this research are the students of the VII-C class at SMPN 1 Ngantru, in which the total of them are 33 students and this research was just conducted in one class. More clearly, in the VII-C class there were 33 students consisting of 16 males and 17 females.

3. **Sampling**

Sampling is a technique to take the sample (Sugiyono, 2015:118). It means that sampling is the process of getting a representative part of the population being studied. In conducting this research, sampling technique is needed to take a representative sample of whole population.

Based on Gay (1987:123) sampling technique is the process of selecting a number of individuals for a study in such a way the individual represent the large group from they were selected. In selecting the sample of this research, the researcher used purposive sampling technique.

Purposive sampling is a technique of taking sample by specific consideration (Sugiyono, 2015:124). It means that, purposive sampling is sample which is taken because the researcher believe that could give sufficient information. The researcher choose purposive sampling by consideration of achievement in English course. Therefore, the researcher choose VII-C class because based on the information and suggestion from English teacher, this class had average capability and this class is appropriate to be given a treatment.

C. Research Variable

Variable is measurable characteristics that varies. It means that, variable is the characteristics or attribute of an individual, group, educational system or the environment. According to Latief (2011:10) variable is a key term in research. In this research, the researcher used two variables. They were independent variable and dependent variable.

1. Independent Variable (X)

Independent variable is a variable manipulated by the experimenter. Creswell (2008:127) defines an independent variable is an attribute or characteristic that influences or affects an outcome or dependent variable. In this research, the researcher gives statement that treatment of teaching vocabulary by using flash card as independent variable.

The description of using flash card in teaching vocabulary. First, the researcher gives the pre-test to students in VII^C class. In this research, the pre-test is to measure how far the student's understanding about vocabulary. Second, the researcher gives treatment to the students by using flash card with to find formulate the problems. The students can formulate the problems of memorize their vocabulary. The last, the researcher gives the post-test to the students in VII^C class.

2. Dependent Variable (Y)

Dependent variable is the variable which is observed and measured to determine the effect of the independent variable. According to Creswell (2008:126) a dependent variable is an attribute or characteristic that is dependent on or influenced by the independent variable. The dependent variable in this research is the student's vocabulary that is showed by the student's score.

D. Research Instrument

Instrument is a tool to collect a data which is needed in a research. The researcher uses test as the instrument to collect the data. A research instrument should be valid and reliable. It is valid if the instrument can measure what will measured. The instrument of this research is test. Based on Arikunto (2006:127) test is a series question, exercise or other means which are used to measure the skill, knowledge, intelligent, ability that have by individual or group.

There are two kinds of test in this research, they are pre-test and post-test. Before conducting of pre-test and post-test, the researcher will tryout the instrument in other class. Before conducting the tryout, the instrument was consulted or validated to the advisor on February, 5th - 15th 2016. The instrument which validated used 10 multiple choices test, 5 completion tests, and 10 matching test. After that, the instrument will be tryout to the students on February, 16th 2016. The result of the tryout is good because the test is not too easy and not too difficult, so the test of treatment can be applied.

The description of the tests are:

1. Pre-test

    Pre-test will be given to the students before the researcher being taught by using flash card. Pre-test is needed to know how far the students' score in vocabulary before giving treatment. The researcher gives a pre-test to the students which consist of 25 questions, the kinds of questions are 10 multiple-choice tests, 5 completion tests, and 10 matching tests.

2. Post-test

    Post-test will be given to the students after the researcher being taught by using flash card. Post-test is needed to know the students' score in vocabulary after giving treatment. In this post-test, the researcher give same questions with pre-test. The kinds of questions consist of 10 multiple-choice tests, 5 completion tests, and 10 matching tests.

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

Correct answer x 4

= 25 x 4

= 100

$$score = \frac{obtained\ score}{total\ score} \times 100$$

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 (test) was valid and reliable by doing validity and reliability testing as follows:

a. Validity

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. Test validation is the process of accumulating evidence to support such inferences. Before conducting the research, the researcher certained that the instrument had two kinds of validity as follows:

1. 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 test will have content validity if it includes a proper sample of the structure or content which is relevant with the purpose of the test. The instrument in this research achieved content validity since the test was designed based on standard and basic competence in KTSP since the school implements KTSP curriculum. In this research, the content of question in testing about descriptive text. It was suitable to be mastered the students of seventh grade at Junior High School. Table 3.2 shows content the validity as follow:

Table 3.2 Content Validity

Standard Competence	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 appropriate with usage.	
Basic Competence	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 that appropriate with usage.	
		Items number
	1. To find out the meaning in English	16, 17, 18, 19, 20

Indicators	2. To find out the meaning in Indonesian	21, 22, 23, 24, 25
	3. To identify the text structure that relevant with descriptive text	11, 12, 13, 14, 15
	4. To find out the correct word that relevant with descriptive text	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
	Total	25 items

2. Construct Validity

Construct validity is a test can be demonstrated that it measures just the ability which is supposed to measure. According to Heaton (1988:161) if a test has construct validity, it is capable of measuring certain specific characteristic in accordance with a theory of language behavior and learning. Here, the researcher used construct validity in administering vocabulary test based on the form of multiple-choice test, completion test, essay and matching test with a purpose to measure the students' vocabulary about descriptive text.

b. **Reliability**

Based on Allison (1999:13) reliability is a necessary element of validity, but not a sufficient on. Furthermore, supported by Heaton (1988:162) reliability is a necessary characteristic of any good test for it to be valid at all and test must be reable as measuring instrument.

Reliability is concerned with the effect of such random errors of measurement on the consistency of scores. A reliability test is consistent and dependable. If the students are given the same test on two different occasions, the test should yield similar result.

In this research, the researcher analyzed each item of instrument and computed it by using IBM SPSS 16.0 version. To measure the try out to be reliable and valid, the researcher used the Kuder-Richardson Reliability Formula because this formula requires test administration only once and the scoring is one correct answer was given point one, while incorrect answer was given point zero. Fraenkel and Wallen (2005:156) state the formula is as follow:

KR-20 Formula

$$r_{11} = \left[\frac{n}{n-1}\right] \left[\frac{S_{t^2} - \Sigma p_1 q_1}{s_{t^2}}\right]$$

In which:

r_{11} = reliability coefficient

n = number of test items

S_t^2 = standard deviation

p_1 = the right response

q_1 = the wrong response

The result of that formula showed the reliability of the test with the classified which taken from Sudjiono (1996:209), as the follows:

Table 3.3 Criteria of Reliability Testing

Reliability Test Coefficient	Classification
0.99-1.00	More highly
0.70-0.89	High
0.50-0.69	Fair
0.30-0.49	Low
<0.30	Very

The researcher asks the students to answer the questions in the try

out. Table 3.4 the result as follow:

Table 3.4 The Preparatory to Compute the Standard Deviation

No	Name	X_t	X_t^2
1	RFP	19	361
2	LS	18	324
3	MA	23	529
4	NP	20	400
5	ASF	20	400
6	IP	20	400
7	IWB	19	361
8	ANS	15	225
9	NAH	17	289
10	SW	18	324
11	EF	18	324
12	RW	23	529
13	DRS	16	256
14	RPA	19	361
15	VKD	20	400
		$\Sigma X_t = 285$	$\Sigma X_t = 5483$

$$S_t{}^2 = \frac{\Sigma x_{t^2}}{n}$$

To know ΣX_t^2 the formula below was used:

$$\Sigma X_t{}^2 = \Sigma X_t{}^2 - (\frac{\Sigma x_{t^2}}{n})$$

$$= 5483 - (\frac{285}{15})^2$$

$$= 5483 - 361$$

$$= 5122$$

Therefore, the standard deviation is

$$\sqrt{S_{t^2}} = \sqrt{\frac{5122}{15}}$$

$$= \sqrt{341.466667} = 18.4788167$$

After finding the result of standard deviation, the reliability can be computed using Kuder Richardson formula (KR-20). The table 3.5 reliability by using KR-20 as follow:

Table 3.5 The Table to Compute the Reliability By Using Kuder Richardson Formula (KR-20)

Item	Np	p_1	Nq	q_1	p_1q_1
1	13	0.867	2	0.133	0.116
2	13	0.867	2	0.133	0.116
3	15	1	0	0	0
4	11	0.733	4	0.267	0.196
5	9	0.6	6	0.4	0.24
6	12	0.8	3	0.2	0.16
7	9	0.6	6	0.4	0.24
8	12	0.8	3	0.2	0.16
9	12	0.8	3	0.2	0.16
10	10	0.67	5	0.33	0.22
11	10	0.67	5	0.33	0.22
12	15	1	0	0	0
13	11	0.73	4	0.27	0.2
14	11	0.73	4	0.27	0.2
15	8	0.53	7	0.47	0.25
16	14	0.933	1	0.067	0.062
17	13	0.867	2	0.133	0.116
18	13	0.867	2	0.133	0.116
19	12	0.8	3	0.2	0.16

20	13	0.87	2	0.13	0.12
21	12	0.8	3	0.2	0.16
22	9	0.6	6	0.4	0.24
23	10	0.667	5	0.333	0.222
24	10	0.667	5	0.333	0.222
25	11	0.733	4	0.267	0.196
					$\Sigma p_1 q_1 =$ 3.884444

Therefore, the reliability is:

$$r_{11} = [\frac{n}{n-1}] [\frac{S_{t^2} - \Sigma p_1 q_1}{s_{t^2}}]$$

$$r_{11} = [\frac{25}{25-1}] [\frac{S_{t^2} - \Sigma p_1 q_1}{s_{t^2}}]$$

$$= [\frac{25}{24}] [\frac{18.4788167 - 4.08}{18.4788167}]]$$

$$= [1.0416666667] [0.77920664]$$

$$= 0.81167359$$

The result shows that the test was reliable with the reliability coefficient of 0.81 or 81%, it means that the reliability of test is high.

F. Normality Testing

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. To know the normality,

the reseacher used Kolmogrov-Smirnov test with IBM SPSS 16.0 version. If the value is smaller than 0.05, it indicates that the data are not-normal. If the value is higher than 0.05, it indicates that the data are normal. The test of normality is done toward the students' vocabulary score in both of pre-test and post-test.

Based on Alan & Wayne (2007:25) the hypothesis for testing normality are:

a. H_0 : The distribution of the data is normal

b. H_1 : The distribution of the data is not normal

The Null Hypothesis (H_0) is rejected when the significance value is lower than 0.05 (a = 5%). The analysis as follow:

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		33
Normal Parameters[a]	Mean	.0000000
	Std. Deviation	5.50387349
Most Extreme Differences	Absolute	.116
	Positive	.087
	Negative	-.116
Kolmogorov-Smirnov Z		.664
Asymp. Sig. (2-tailed)		.770
a. Test distribution is Normal.		

Based on the output from IBM SPSS 16.0 by using One-Sample Kolmogorov-Smirnov test above, it shows that the subject are 33 students. Based on the output of the above, it was known that the significant value is 0.770. While, to fulfill the provision of normal distribution is if the significance value or probability > 0.05. In fact, the result of normality testing is geather than 0.05 (0.770 > 0.05). So, it can be concluded that the data that has been tested has normal distribution. Therefore t-test as one of parametric testing was chosen for the data analysis.

G. Data Collection Method

Data collection method is the way which is used by researcher to process or collect the data which is needed. In this research, the researcher used test organizingly. According to Ary et al (2010:201) a test is a set of stimuly presented to an individual in order to elicit responses on the basis of which a numerical score can be assigned. It means that the score in this test based on a representative sample of the individuals' behavior, it is an indicator of the extent to which the subject has the characteristic being measured. The data were collected through pre-test and post-test. During three weeks research, the students followed the treatment.

The data of this research were collected by using testing. Testing can be defined as a process of giving test. Testing is one way to measure the students' ability. Based on Allison (1999:5) testing is sometimes used almost interchangeably with assessment and in this spirit is taken here as a broad

cover term for both formal and informal assessment procedures. Thus a test is a method to gain the data by giving some questions to the respondent.

In this research, the researcher will given treatment to the students three times in three weeks. The treatment will be carried out on February, 2016. The purpose of the treatment is to investigate "The Effectiveness of Using Flash Card Toward Students' Vocabulary of Seventh Grade at SMPN 1 Ngantru in the Academic Year of 2015/2016". In this test, the researcher applied pre-test and post-test. Pre-test is applied before the researcher being taught by using flash card media in students' vocabulary. While, post-test used to measure the students' vocabulary after the researcher being taught by using flash card media in students' vocabulary.

H. Data Analysis

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). The data obtained from the results of student test that were analyzed quantitatively. The quantitative data of this research in analized using statistical computation. This technique was used to find the any significant difference on the students' vocabulary after being taught by using flash card media.

In this research the researcher uses Paired Sample T-test which stated by IBM SPSS 16.0 version. The data is this research are normal, so the

researcher uses t-test as one of parametric testing was chosen for the data analysis.