CHAPTER III

RESEARCH METHOD

This chapter presents the research method. It focuses the method used in conducting this study which covers (a) Research Design, (b) Population and Sample, (c) Research Instrument, (d) Validity and Reliability Testing (e) Normality Testing (f) Data Collecting Method, and (g) Data Analysis

A. Research Design

Research is a scientific approach applied to the study of the problem. Sugiyono (2014:2) stated that research is the scientific approach to get the data which are having certain functions and purposes. It is way to get the useful information. In line with Arikunto (2010: 130), research is an activity to precise an object uses a methodology to get the data or important information for the researcher and to increase the quality of something.

This study used an experimental design using quantitative approach with one group Pretest-Posttest design. According to Cohen at al., (2007: 272). The essential feature of experimental research is that investigators deliberately control and manipulate the conditions which determine the events, in which they are interested, introduce an intervention and measure the difference that it makes.

Experimental research is very unique. It is only the one of research that directly attempts to influence a particular variable, and when applied, it one more dependent variable. An experimental usually involves two groups of subject; an experimental group and a comparison group, although it is possible to conduct an experimental with one group. This research used Pre-

experimental design with one group which was given pre-test and post-test. The test was given twice, before giving treatment called pre-test and after giving treatment called post-test.

A diagram of One Group Pre test – Post test design:

Y1	X	Y1
Pretest	Treatment	Post test
	(Independent variable)	(Dependent variable)

Variable is the object of the research. In line with Sugiyono (2014: 38) variable of study are every things that studied by researcher so that from those research, gotten information and can be concluded. In this research, there are two kinds of variables. They were:

a. Independent Variable (X)

Independent variable is a variable which influence dependent variable, in other word independent variable is causes variable. In this study, the independent variable was Shop-n-Spree game (X) to teach vocabulary.

b. Dependent Variable (Y)

Dependent variable is the consequence of or dependent variable upon antecedent variables. The dependent variable in this research was the students' score in vocabulary.

The procedures of experimental research that use One Group pretest - posttest design are:

1. Administering a pretest with a purpose measuring vocabulary mastery of First grade students at SMP N 3 Kedungwaru

2. Applying the experimental teaching vocabulary by using Shop-n-Spree game as the strategy to the subjects (students of first grade at SMP N 3 Kedungwaru). The teaching scenario was follow:
    a. Teacher (researcher) divided class into six groups, every group consist 5-6 students.
    b. One by one group come forward, and stands in line.
    c. Students the members of group one by one look for the items that need by costumers in Shop-n-Spree game.
    d. Other students in other group write the vocabulary that get by the players for add the knowledge.
    e. Teacher writes the vocabulary that get by the students to count the score.
    f. Four groups who get higher score will play in the next meeting.
3. Administering a posttest with a purpose of measuring vocabulary mastery of first grade students at SMP N 3 Kedungwaru.

In this research, researcher wanted to know the effectiveness of using Shop-n-Spree game in teaching vocabulary by conducting the pre-experimental research. The effectiveness of the strategy was known after knowing the significant differences between the students who were taught before and after applying Shop-n-Spree game's activities.

B. Population and Sample

In every research, population, sample and sampling include in the essential part. In this research, researcher took the students of the first grade at SMPN 3 Kedungwaru as the

population. According to Sugiyono (2014: 80) population is a generalization of object/ subject which is has quality and characteristic that is concluded by researcher. Population is not only human, but also things, plants, or animals. Population is object or subject which has certain characteristics. Populations of this research were all students of first grade at SMP N 3 Kedungwaru Tulungagung.

There is difference between population and sample in Quantitative and Qualitative research. According to Sugiyono (2013:297), population in quantitative define as set of subject/object that has characteristic as the object of research to get a conclusion, and sample is involving in population. The population of this study was all students of first grade at SMP N 3 Kedungwaru, there were seven classes. The researcher took the VII D class as sample of this research which consists of 34 students because according to the English teacher; VII D's students have average achievement. So, this class represents all of students of the first grade in that school.

Sample is part of population, and sampling is the way that used by the researcher to select the number of individuals as a sample in study. In this research, researcher used purposive sampling technique. The researcher took one of seven classes from the first grade at SMP N 3 Kedungwaru, exactly VII D class, because according to the English teacher's opinion VII D class has high achievement. In this class, there are 34 students consisting of 20 males and 14 females.

C. Research Instrument

Instrument is tool or device used for a particular task (Oxford: 231). Instrument is significant things in research. With instrument, researcher can get the data. In this study, researcher used a test as instrument. The test was developed from KTSP and syllabus which was used by SMPN 3 Kedungwaru and seeing the standard competences. After knowing the standard

competences, researcher developed some indicators that must be reached by the students. From those indicators, researcher developed the test that consists of two kind of test; pretest and posttest.

Pretest has aim to measure students' ability before treatment process. Post-test was given after doing an experimental research study or after teaching by using Shop-n-Spree game. The test was in the form of multiple choice test and matching test. In getting the data, class VII D became both experimental and control group.

In every research, researcher needs data to get information about his or her research. According to Arikunto (2010:172) data is the result of researchers' scripts, organized as fact or number. In this study, the data are the students' scores taken from the pretest and posttest. Because the data are in the form of numbers, the data belonged to quantitative data.

The scoring technique of pretest and posttest were same. There was only one correct answer for each item because form of test is objective test. The formulating scores as follows:

Correct answers x 4

= 25 x 4

= 100

$$\text{Score} = \frac{\text{obtained scores}}{\text{total scores}} \times 100$$

D. Validity and Reliability Testing

Research is always dependent upon measurement. To measure the instrument should go through a process of validity and reliability check.

1. Validity

The result of research called valid if there is the similarity between the gotten data and actually happened to research object. Valid instrument is measurement's tool uses to get data. Sugiyono (2014: 121) stated valid is the instrument can be used to measure what should be measured.

There are four types of validity; 1) Content validity, 2) Criterion related validity, 3). Construct validity, 4). Face validity. In this study, the researcher analyzed the test from content validity and face validity.

a. Content validity is instrument organized as test, validity testing can be done with compare the instrument and teaching materials (Sugiyono, 2014: 129). A test is said have content validity if it consist sample of language skills, structures, etc. being tested. So, content validity is the agreement between curriculum objectives and objectives being assessed. The instrument of this research had a content validity that the test was designed based on the SK-KD in KTSP 2006. The instrument had been repaired based on advice from expert that validated it. The test specification of pretest and posttest can be seen in the diagram 3.1 as follows:

Table 3.1 The Test Specification of Pretest and Posttest

Learning Objectives	**Types of test**	**Pre test**	**Post test**
Students can mention things in the bedroom.	Multiple choice and matching	2, 3, 4, 10, 12, 17, 19, 20.	1, 5, 11, 12, 13, 16, 18, 19.
Students can mention things in the living room.	Multiple choice and matching	1, 6, 7, 9, 11, 13, 15, 22, 25	3, 7, 9, 10, 15, 17, 21, 24, 25.
Students can mention things in the bathroom.	Multiple choice and matching	5, 8, 14, 16, 18, 21, 23, 24.	2, 4, 6, 8, 14 20, 22, 23.

b. Face validity is sometimes used in describing tests. Basically, face validity refers to the degree to which a test visible to measure what it purposes to measure (Gay, 1992: 156). In this study the researcher wants to know the students' score in vocabulary after given treatment. Therefore the tests were in the form of multiple choices and matching test. These two kinds' tests are considered appropriate in revealing the students' vocabulary mastery.

2. Reliability

A reliable test is consistent and dependable. If the students are given the same test on two different occasions, the test should have similar results. In line with Arikunto (2010: 221) reliability is an instrument can be trust and can be used as tool to get the data because the instrument is good. The reliable instrument will produce reliable result.

There are two kinds of reliability; external reliability and internal reliability. In this research, researcher used internal reliability. According to Arikunto (2010: 223) internal reliability gotten by analyze data from once testing. In order to measure the reliability of the test items, the researcher used the KR-20 formula because this formula requires test administration only once and the scoring is one correct answer given point 4, while incorrect answer is given 0, thus this formula is appropriate for calculating the reliability of multiple choices and matching test form.

KR-20 formula

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

where,

r_{11} = reliability coefficient

n = number of test items

s_t^2 = standard deviation

p_1 = the right response

q_1 = the wrong response

After calculating the reliability of the test items, the researcher classified the reliability coefficient which taken from Sudjiono (1996: 209-230). The classification of reliability test can be seen in table 3.2, as follows:

Table 3.2. Classification of Reliability Test

Reliability Test Coefficient	**Classification**
0.90-1.00	More highly
0.70-0.89	High
0.50-0.69	Fair
0.30-0.49	Low
<0.30	Very Low

In tryout, the researcher asked students to answer the questions in the pretest and posttest. The result as follows:

1. Pretest

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

To know the formula below was used:

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

$= 7.110 - \left(\frac{441}{31}\right)^2$

$= 7.110 - 202$

$= 6.908$

Therefore, the standard deviation is:

$\sqrt{S_t^2} = \sqrt{\frac{6.908}{31}} = 15$

After finding the result of standard deviation, the reliability can be computed by using Kuder Richardson formula (KR-20)

Therefore, the reliability is:

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

$r_{11} = \left[\frac{25}{25-1}\right]\left[\frac{15-4.53202}{15}\right]$

$r_{11} = \left[\frac{25}{24}\right]\left[\frac{10.46798}{15}\right]$.

$r_{11} = [1.0416666667][10.46798]$

$r_{11} = 0.7269430753$

From the note above, the result shows that the test was reliable with the reliability coefficient of 0.72 or 72%, it means that the reliability of test is high.

2. Posttest

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

To know the formula below was used:

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

$= 17066 - \left(\frac{769}{37}\right)^2$

$= 17066 – 431.965$

$= 16634.035$

Therefore, the standard deviation is

$\sqrt{S_t^2} = \sqrt{\frac{16634.035}{37}} = 21.2$

After finding the result of standard deviation, the reliability can be computed by using Kuder Richardson formula (KR-20)

Therefore, the reliability is:

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

$$r_{11} = \left[\frac{25}{25-1}\right]\left[\frac{21.2 - 3.819233778}{21.2}\right]$$

$$r_{11} = \left[\frac{25}{24}\right]\left[\frac{17.380766222}{21.2}\right].$$

$$r_{11} = [1.0416666667][0.8198474633018868]$$

$$r_{11} = 0.854007774300127$$

From the note above, the result shows that the test was reliable with the reliability coefficient of 0.85 or 85%, it means that the reliability of test is high.

E. Normality Testing

Normality testing is used to know whether the data is normal distribution or not. It is important to get the normality data because the data can be considered to represent to population when it is in normal distribution (Priyatno, 2012: 33). In this research, the researcher intended to test the normality of the data by using SPSS 16.0 with One-Sample Kolmogorov-Smirnov method. The normality testing was done toward the pretest and posttest scores.

The hypotheses for testing normality are:

a. H_0: Data is in normal distribution

b. H_a: Data is not in normal distribution

The hypotheses for normality testing say that the data is in normal distribution if H_0 is accepted and it is automatically, the data is not in normal distribution if H_a is accepted. The H_0 is rejected when the significance value is lower than 0.05 (α = 5%), while H_0 is accepted if the significance value is higher than 0.05 (α = 5%). The result analysis for normality testing can be seen in table 3.3, as follow:

Table 3.3 The Result of Pretest and Posttest in Normality Testing

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		34
Normal Parameters[a]	Mean	.0000000
	Std. Deviation	15.06345497
Most Extreme Differences	Absolute	.104
	Positive	.077
	Negative	-.104
Kolmogorov-Smirnov Z		.607
Asymp. Sig. (2-tailed)		.855

a. Test distribution is Normal.

From the table 3.3, it can be known that the significance value of pretest is 0.855. As stated before, the hypotheses for normality testing say that the data is in normal distribution if H_0 is accepted and it is automatically, the data is not in normal distribution if H_a is accepted. The H_0 is rejected when the significance value is lower than 0.05 ($\alpha = 5\%$), while H_0 is accepted if the significance value is higher than 0.05 ($\alpha = 5\%$). Based on the data above, it is show that the significance value of the pretest and posttest is 0.855 and it is higher than 0.05 (0.855>0.05). It means that H_0 accepted and H_a is rejected. It can be interpreted that the data is in normal distribution. It shows that the instruments in this research are in normal distribution.

F. Data Collecting Method

Data collecting method is the way to collect data. Data of this study collecting by administering test. Test is a tool or procedures used to measured something in a condition, ways and the rules are determined (Arikunto, 2010:53). The data in this research was collected by administering written tests. The test was developed based on the SK-KD in KTSP 2006 which the test had been repaired based on advice from expert that validated it. The explanation is on appendix 1.

The procedures in collecting the data are:

1. Pretest

The pretest was given to measure students' ability in vocabulary mastery. In this research, the pretest was conducted in the first meeting. The test was in the form of written form. The number of pretest was 25 numbers consist of 15 multiple choices form, and 10 matching test. The test was called objective test because there was only one correct answer each number. Furthermore, the scoring guide for pretest was formulated follows:

Score = correct

For pretest, the researcher allocated 40 minutes. This result of this test was numerical scores and then can be evaluated by the researcher.

2. Posttest

Posttest has purpose to measure the students' achievement after treatment. Post-test was given after doing an experimental research study or after teaching by using Shop-n-Spree game at Wednesday, 27th January 2016. The test was in the form of multiple choice test and matching test. In getting the data, class VII D became both experimental and control group.

G. Data Analysis

The result of the data will be compared between the first data (pre-test) and the second data (post-test) to know whether there are any different students' scores before and after being taught by using Shop-n-Spree game. The researcher analyzes the collected data by quantitative.

In this research, the researcher uses a quantitative data analysis technique. The quantitative data is analyzed by using statistical method. This technique is used to find the significant difference on the students' scores after taught by using Shop-n-Spree game.

The researcher used T-test according to Ary et al (2002: 195) with the following formulation:

$$t = \frac{MD}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}}$$

Notes:

t : t-score

MD : average difference

ΣD^2: Different scores squared, the summed

$(\Sigma D)^2$: Different scores summed then squared

N : number of samples.