CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

The design of this research is experimental research. This research is included as quantitative research. As Sugiyono (2010:14) states that quantitative research is research method that is based on the philosophy of positivism, is used to examine the population or a particular sample. In this research, the researcher uses quasi experimental design. According to Sugiyono (2009: 77), the quasi experimental design is a study which is aimed at discovering the influence of particular treatment. Quasi experimental design includes pre-test and post-test design with both an experimental and a control groups. Quasi experimental design is often an impact evaluation that assigns member to the experimental group and control group by a method other than random assignment.

In this design, the researcher took two classes. One is experimental class and the other is control class. Every class gets pre-test, treatment and post-test in order to find the progress of the students' vocabulary mastery. The researcher gives treatment for about one month. Furthermore, the experiment class get treatment through Building Word game and control class got treatment through conventional technique. The research design is described as follow:

Table 2 Nonequivalent Control Group Design

Group	Pre-test	Treatment	Post-test
Experimental	O_1	X_1	O_2
Control	O_3	X_2	O_4

(Sugiyono, 2009: 79)

Note :

X_1 : Treatment vocabulary mastery by using board race game

X_2 : Treatment vocabulary mastery by using conventional technique

O_1 : Pre-test

O_2 : Post-test

O_3 : Pre-test

O_4 : Post- test

B. Research Variable

"Variable is an object of research or what become the main attention in a research" Arikunto (2002: 96). In other hand, Sugiyono (2012: 59), states "Variable is an attribute or the nature or value of the object or activities which has a certain variation applied by researchers to study and then pulled its conclusion". In a study which is conducted by the researcher consists of two variables, those are dependent variable and independent variable.

As for an explanation of each of the variables are as follows:

1. Independent variable according to Sugiyono (2012 :59) "Independent variable is the variable that affects a being as the dependent variable incidence or changes (tied)".

2. Dependent variable as Sugiyono states (2012: 59) "the dependent variable is the variable that is affected or which become due as a result of the independent variable (free)."

   The descriptions of both variables are as follow:

   (a) The dependent variable is students' vocabulary mastery (Y).

   (b) The independent variable of the research is building word game (X).

In concluding, there are two variables in this research, they are Y (Students' vocabulary mastery) as dependent variable, X (building word game) as independent variable.

1. The Operational Definition of Variable

The operational definition is used to describe the characteristic of the variables that is observed by the research. The researcher collects data and information from dependent and independent variable. Independent variable is as important as the dependent variable, but the dependent variable has function to affect the dependent variable. So, the conclusion is both of independent and dependent variable influence each other. In this research the researcher gives the operational definition variable as follows:

a. The Operational Definition of Building Word

Building word game is one of creative games. This game included as competitively game. In this activity, the students are asked to build new words from some letter they got. The researcher serves some sets of alphabet letters. Then they are divided into some groups, every member of group must take some letter randomly then they must build new words from those letters. It can be used to enrich students' vocabularies.

Based on the explanation above, it can be concluded that building word game can be used in learning vocabulary. There are several activities included building word game. When it is used in learning vocabulary mastery, it has some benefit for the students in each step of the activities. Creative, active and equal opportunities are the benefit that provides by the game.

b. The Operational Definition of Vocabulary Mastery

Vocabulary is one of the language aspects which should be learnt. Learning vocabulary is important because in order to be able to speak, write, and listen the learners have to know vocabulary first. In learning vocabulary automatically they have to know the meaning of words themselves and can use it in sentences.

In brief, vocabulary mastery can be defined as a number of vocabulary (words) in a language which contains information about its meaning, form, and usage in context of communication. The vocabulary mastery is not a spontaneous process which is easy to be done. The process of vocabulary mastery begins when someone is still an infant. Basically, the baby"s first language comes from the mother tongue. They will master the vocabulary through the simple words by listening the words which are uttered by someone else. It is known that English vocabulary learning cannot run successfully without English ability (English skills) because both of them are very important in English teaching and learning process. The students cannot do well in comprehension without large vocabulary, for the passages and questions involve a range of words much wider than that of daily conversation.

C. Research Population, Sample Technique and Sample

To do this research, the researcher explained the population, sample and sampling technique as follow:

1. Research Population

Based on Sulistyo-Basuki (2006 :182) population is the whole objects which will be researched. In a line according to Sugiyono (2012:117) population is generalisation area consisting of object or subject that have particular quality and characteristic which is decided by the researcher to learn and make a conclusion. It is people or other thing discuss in the research. On the other side, a population is the group to which a research would like the result of a study to be generalized.

So, it can be concluded a population is an object that will be observed by the researcher. In this research, the population of research is students of Accountancy Class at the second semester of Economy Faculty of Metro academic year 2016/2017. The students of Accountancy class are decided as the population of the research with total 45 students.

2. Research Sampling Technique

Sugiyono (2010:118) states that sampling technique is one of techniques to take sample. In deciding sample that is used in research, there are some sampling techniques which can be used. They are probability sampling and non probability sampling. Probability sampling consists of simple random sampling, proportionate stratified random sampling, disproportionate stratified random sampling, and area (cluster) sampling. While non probability sampling consists of systematic sampling, quota sampling, incidental sampling, purposive sampling, saturated sampling, and snowball sampling.

From some kinds of technique sampling above, the researcher uses simple random sampling. The researcher takes one class on second semester of Accountancy Class of Economy Faculty academic year 2016/2017 to be divided into two classes. They are experimental class and control class The researcher divided them from 45 students by disproportionate stratified random sampling, because those classes consist of some boys and girls randomly. It is also included as systematic sampling because the way to divide them into two classes used odd and even SRN. Whoever had odd SRN were included as experimental class and students who had even SRN were included as control class. So that, each class consists of 22 and 23 students which got the different treatment from the researcher. But, the amount of those classes is not balance. Experimental class has 22 students and control class has 23 students. So, it should be balanced to be 23 students for each class in counting the data. Dividing into balance amount is using purposive sampling which relieve one sample from the data of control class.

3. Research Sample

In the research, often be used the sample. According to Arikunto (2002:104) states that sample is part of the population. Sugiyono (2012:127) states sample is part of total and characteristic of the population as the representative of the population which will be studied by researcher. In short, the researcher concludes that sample is the object which has been selected to research from the population.

In this research, the researcher takes sample from population, and the population is 45 students.

D. Research Instrument

The instrument of research is extremely needed in a research as a tools used to while collecting the data of research. It is the equipments or tools used all the research conducted to get the final goal of the research. It should be valuable in the research. According to Arikunto (2002:136), research instrument is a device used by the researcher while collecting data to make their work become easier and get a better result, complete and systematic in order to make the data easy to be processed.

In conclusion, research instrument is the tool to collect the data in the research which is valuable to be tested. In this research, the researcher uses test “Matching Words” in giving the instrument to the subjects to know increasing of students’ vocabulary mastery. The total number of the test is 25 items.

Here is the specification table instrument of vocabulary mastery:

Table 3.5 Specification Table Instrument of Vocabulary Mastery

Basic Competence	***Indicators***	***Predictors***	***Items***
Identifying the vocabulary of business.	*Identifying name of job description.*	*Students are able to identify the name of job description*	*1,2,3,4,5,*
	Annalyzing some accounts in accountant.	*Students are able to analyze some accounts in accountant*	*6,7,8,9,10, 11, 12, 13, 14, 15*
	Identifying the product and services.	*Students are able to identify product and services*	*16, 17, 18, 19, 20, 21, 22,23,24,25*

E. Validity and Reliability of Instrument

In making the instrument, the researcher makes sure that those items of instrument are valid and reliable, then the explanation of the validity and reliability of instrument as follow:

1. Validity

Validity is the equipment which is used to measure in measurement toward the thing should be measured Hasan (2006:15). According to Sugiyono (2013: 121), validity refers to extent which the test measures what it will be intended to measure. The valid instrument is the instrument which used to get the data and measure what do necessarily be measured. The instrument called valid if it has high validity, but when the instrument has low validity it is not valid.

In this research, the researcher used content validity. The researcher used the syllabus of English for business at Accountancy class to compare the content of those subjects material with the material have been taught to the students by the researcher. To know the validity of the instrument, the researcher used the Correlation Product Moment formula as follow:

$$r_{xy} = \frac{\sum xy}{\sqrt{(\sum X^2)(\sum y^2)}}$$

where:

r : validity

x : score of validator 1

y : score of validator 2

$\sum x^2$: total score of x^2

$\sum y^2$: total score of y^2

2. Reliability

Sugiyono (2013: 121) states that the reliable instrument is the instrument which is used in several times to measure the same object can produce the same data. So, the result of instrument is consistent. A can be called reliable if the result score is can be believed and unchanged distinctly. There are several kinds of reliability test such as test-retest reliability, equivalent-forms reliability, split-half reliability, Cronhuch alpha reliability, KR reliability, rater reliability, and estimated reliability.

Based on the explanation above, the researcher analyzed the data using split-half reliability in this research. The procedure as follow:

1. The researcher divided the valid instrument in half (odd group instrument and even group instrument).
2. The researcher ccorrelated the sets of scores (total score of odd group and even group), to find coefficient correlation of test the researcher used “Pearson product moment formula” (Sugiyono, 2013, 183), as follow:

$$rxy = \frac{n\sum x.y - \left(\sum x\right)\left(\sum y\right)}{\sqrt{\left(n.\sum x^2 - \left(\sum x\right)^2\right)\left(n\sum y^2 - \left(\sum y\right)^2\right)}}$$

Note:
rxy = coefficient correlation Pearson product moment
n = the number of students
∑ = sum
X = the students total score from up gap
Y = the students total score from bottom

3. The researcher applied Spearman Brown correction formula to find the reliability test. The formula is follow:

$$r_{11} = \frac{2r_{xy}}{1 + r_{xy}}$$

Note:
r_{11} = reliability of instrument
rxy = correlation between score each split

4. The researcher evaluated the result. The result of r_{11} consulted to criteria reliability as follow:

1. A very high reliability ranges from 0,81 up to 1,00
2. A high reliability ranges from 0,61 up to 0,80
3. Average reliability ranges from 0,21 up to 0,60
4. A very low reliability ranges from 0,00 up to 0,20

(Adopted from Sugiyono, 2013, 131)

F. Data Collecting Technique

In collecting data, the researcher used written test in form of multiple choices test as data collecting technique. The procedure of reading comprehension test can be collected from some test bellow:

1. Pre-test

The researcher used pre-test to collect the data of students' vocabulary mastery before giving treatment. The researcher gave the test both to experimental and control class. The aim of pre-test is to know the students' vocabulary mastery before the researcher giving treatment. The kind of data is multiple choices. The test consists of 25 questions. Each item got 4 score when the answer is right and zero score when the answer is wrong. So, the total score

of all right answer is 100. After that the researcher knows how far the students' vocabulary mastery.

2. Treatment

Treatment is an activity in giving lesson by method, technique or some games. The treatment conducted after pre-test and before post-test to know the students accomplishment on vocabulary mastery. The treatments are used by the researcher are board race game for experimental class and conventional technique for control class.

3. Post-test

After giving treatment, the researcher gives the post test. The instrument of post test is equivalent with pre test. The researcher gives post test in experimental and control class. The kind of test is matching word meaning. The test consists of 25 questions. Each item got 4 score when the answer is right and zero score when the answer is wrong. So, the total score of all right answer is 100. Therefore, the researcher got the data from post-test.

G. Data Analysis Technique

After collecting the data, the next stage is analyzing the data. The researcher used t-test formula t-test includes normality, homogeneity and hypothesis test. The explanation as follow:

1. Normality Test

The goal of normality test is to identify whether data distribution is normal or not. Normality test is utilized to settle on whether a data set is well modeled by a normal distribution or not. In normality test, the researcher uses non-parametric test. The researcher finds out each score of distribution of Expected Frequency and Perception Frequency and the formula that can be used is as follow:

According to Budiyono (2015:171-172) Bellow is the procedure of the data calculating:

(a) Observation $X_1, X_2, X_3, \ldots X_n$ make into new numerical such Z_1, Z_2, Z_3, Z_n the formula is $Z_i = \frac{x_i - \bar{x}}{S}$ Where = $\bar{x}$: average from sample and S: standard deviation.

(b) For every numerical use data distribution normal of data then count the chance uses $F(Z_i) = P(Z \geq Z_i)$

(c) Then, count the proportion $Z_1, Z_2, Z_3, \ldots Z_n$ which smallest or equal with average with Z_i. If the proportion find by $S(Z_i)$ so, the formula is $S(z_i) = \frac{z_1, z_2, z_3 \ldots z_n \leq z_i}{n}$

(d) Count quarrel $F(z_i) = S(z_i)$

(e) Take the high cost of data between the others then mention the high as L_0.

The criteria of normality test are:

H_o : $L\text{-}_{ratio}$ is lower than $L\text{-}_{table}$ (the distribution of the data is normal)

H_a : $L\text{-}_{ratio}$ is higher than $L\text{-}_{table}$ (the distribution of the data is not

normal)

The criteria of testing is received Ho if $x^2_{ratio} < x^2_{table}$ (I – α), (k – 3)

2. Homogeneity Test

Homogeneity is a measurement used to determine data variety. The formula of homogeneity test by using Ms. Excel on Data Analysis F-test for Two-Sample for Variances is as follow:

$$F_{count} = \frac{\text{The biggest variance}}{\text{The smallest variance}}$$

The hypothesis formula:

$H_0 : \sigma_1^2 = \sigma_2^2$ (both populations have the same variances)

$H_1 : \sigma_1^2 \neq \sigma_2^2$ (both populations don't have the same variances)

The criteria of testing :

Reject H_o if $F_{count} \geq F_{table}$

Accept H_0 if $F_{count} < F_{table}$

Where $F_{table} = F_{½}\alpha (n_1\text{-}1, n_{2\text{-}} 1)$, α get from 10% and 2%

(Adopted from Sudjana, 2005:44)

3. Hypothesis Statistic

Statistically, research hypothesis is expressed as follow:

H0 = ρ = 0

H1 =ρ ≠0

a. Null Hypothesis (Ho)

Ho = "Building Word game does not influences students' vocabulary mastery."

b. Alternative Hypothesis (Ha)

Ha = "Building Word game influences students' vocabulary mastery"

The assumption if the hypothesis as follows: If F-ratio (Fo) < F-table (Ft), the Null Hypothesis (Ho) is accepted and alternative hypothesis (Ha) is rejected.