CHAPTER III

RESEARCH METHOD

This chapter presents the description of the research methodology, it discussed about aspects, which are very important and support the analysis of the research problem. It includes research design, research variable, population and samples, Research instrument, procedure of experiment, Data collection, Data analysis, Data interpretation

A. Research Design

In this study, the researcher uses experimental quantitative design. Since, in this study, the researcher do a treatment for the subject of the research which is divided into control and experiment group as the experiment object in order to know the effectiveness of the treatment in this case is digital game *Chick Learned English*.

Trianto (2011:203) stated that, "Experimental design are core method of the research model that uses a quantitative approach." In experimental studies the researcher uses treatment, while in a naturalistic study without treatment. So the experimental research method can be interpreted as the research methods used to find a specific treatment effect against the other under controlled conditions.

Besides, Sugiyono (2011:14) stated that, Quantitative method is a research method resting on positivism philosophy that is used to research population or particular sample, generally the technique to take the sample is

taken randomly, the data collection uses research instrument, the data analysis has quantitative or statistics in order to test the hypothesis that has been made. In line with that, quantitative research design is the standard experimental method of most scientific disciplines.

This research used *true experimental design*. There were two groups in experimental research, experimental group and control group. The researcher does an experiment by giving some treatment to the subject to know that there is improving students' vocabulary mastery by using educational digital game, named *Chick Learn English*, it was done by comparing two groups of study, they are experimental and control group. Experimental group is taught using *Chick Learn English* while control group is taught using flashcard media. The designed used in this study based on Sugiyono's design. The research design can be described as follows:

Table 3.1 Research design

Group	Pre-test (O)	Treatment	Post-test (O)
Experimental (R_1)	O_1	*Chick Learn English*	O_2
Control (R_2)	O_3	Flashcard	O_4

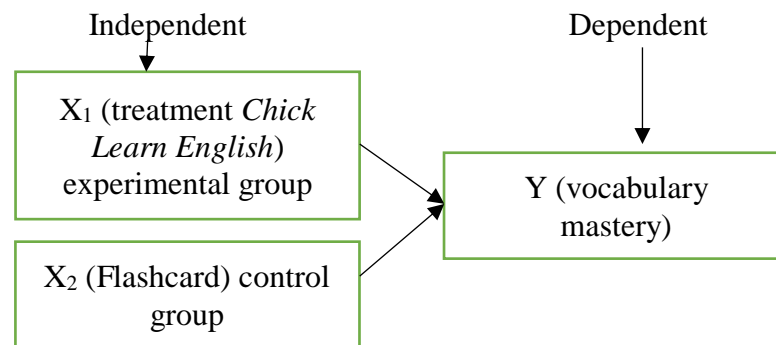*(Sugiyono, 2013:116).*

Notes:

R_1 : Experiment

R_2 : Control

O_1 : pretest of experiment group

O_3 : pretest of control group

O_2 : Posttest of experiment group

O_4 : posttest of control group

The design used for this research is *design of non equivalent control group design*. According to Sutrisno Hadi (2004:468-469) *the design of non equivalent control group design* consist of some steps as follow: (1) *Pre-experiment measurement,* means the measurement before the treatment); (2) *treatment*, (when the researcher did some treatment to the sample); (3) *Post experiment measurement* (the measurement after being treated).

B. **Research Variables**

Generally, variable is something that will become the object of research. There are two variables in this research. They are independent and dependent variable.

1. Independent variable (X) is the variable which is causing and influencing the data of research which is measured. The independent variable is teaching method by using *Chick Learn English* and using *flashcard*. The Independent variable is symbolized with X_1 (using *flashcard*) and X_2 (using *Chick Learn English*)

2. For the dependent variable (Y), it can be observed by giving treatment to the object of research. In this study, the dependent variable is the vocabulary mastery which is indicated by the student's achievement of vocabulary mastery. The dependent variable is symbolized with Y.

Independent   Dependent

X_1 (treatment *Chick Learn English*) experimental group

X_2 (Flashcard) control group

Y (vocabulary mastery)

1.1 Research Variable

C. Population and samples

1. Population and samples

According to Creswell (2012:142), "Population is a group of individuals who have the same characteristic." Further, Creswell (2012: 142) also says that, "sample is a subgroup of the target population that the researcher plans to study for generalizing about the target population." The population of this study is the fourth grade students of elementary school in MI Miftahul Huda Bakalan academic year 2020/2021. It consists of 32 students, which is divided into 18 girls and 14 boys.

To decide the sample of this study, the researcher refers to Arikunto's opinion, Arikunto (2010:112) says, "if the population of the study are less than 100 in number, the researcher had better taken all of them. If the population are more than 100 number, the researcher can taken around 10 %-15% or 20%-25% or 50 % of them."

Based on the view above, These all population will be the sample of this study, because it is less than 100 respondents. It means the sample of this study are 32 students.

2. Technique of sampling

The technique of taking sample in this research uses total sampling technique. It is based on the Sugiyono's opinion (2007: 124) that, "the total sampling is a technique to collect the data which is the total number sample is similar with the total population." In this study, the researcher takes all the population in fourth grade as the sample of study because the number of respondents less than 100 people.

After having number of sample, the next step is divide the sample into two groups. They are control group and experimental group. Every group consist of 16 students. They were assigned as the experimental and control groups. To desperate the sample into two groups, the researcher tries to divide them based on their ability of English vocabulary. It means the researcher does not divide them between capable and incapable but the researcher divides into two groups which have average ability. In the control group there are capable and incapable students, in experiment group also consists of capable and incapable students. It can be seen from the latest mark of English they had before in the first semester.

D. Research Instrument

There is only an instrument that is applied on this research. The researcher used test as the instrument of the research

1. Test

The researcher tested the student using multiple choice form with four optional answer. The researcher choose this type of question because it can be answered in a short period of time, and also can be easily and quickly scored. The students will not be confused in answering the question. The data from this test can be used to measure the students' vocabulary mastery by using educational digital game, called *Chick Learn English*. The researcher uses two kinds of test, namely pre-test and post-test.

a. Pre-test

Pre-test is used to know the students' basic ability in vocabulary mastery before they get treatment. This test is given to both experimental and control group. The type of test is multiple choice which consist of 25 question items. The time for doing this test is around 60 minutes.

b. Post-test

Post-test also will be given to both experimental (that have got the treatment) and control group. Same as the pre-test, the question sheet will consist of 25 questions items and time to do this

test is around 60 minutes. The aim of this test is to know the progress of the experimental and control group.

2. Instrument test quality testing

   a. Validity of the test

   According to Latif (2011: 223) valid means correct, while Arikunto (2010:145) mentioned that, "Validity is a measurement which shows the grades of number of an instrument. An instrument can be valid if it can reflect what is being measured." It means that when the researcher claim that the result of students writing assessment is valid, the researchers convinced that the writing assessment result correctly reflects the students' writing skill as distinct from their reading skill, or from their knowledge of vocabulary. Validity is very important because one of main characteristic of test, without having this characteristic a test is not important.

   To analyze validity of the test, the researcher used *Pearson product moment test of validity* that is counted using SPSS 16.00 version. The item of the test is considered valid if the result of the correlation coefficients (R_{xy}) is as many or bigger as the r-$_{table}$ of *product moment*. The number of students joining the test is 30 students, with the significance level $\alpha = 0.05$ and the r table is 0.349. The item of the test is considered not valid if the correlation coefficient is lower than R $_{table}$. The criteria is as follows :

$$R_{count} \geq R_{table} = valid$$

$$R_{count} < R_{table} = invalid$$

(Budiyono, 2000:69)

b. Reliability of the test

Reliability of instrument means that it is needed to make sure that the instrument can be consistent if used in other time. Therefore, the instrument as the test is reliable. (Latief, 2011: 212). The researcher used Alpha Cronbach's test of reliability through SPSS 16.0 version to account the data collected. So the researcher know whether this test have reliable or not. As the basic decision, the researcher refers to the table below.

Table 3.2 Cronbach's Alpha Interpretation

Cronbach's Alpha	Interpretation
0,00 – 0,20	Less Reliable
0,21 – 0,40	Rather Reliable
0,41- 0, 60	Quite Reliable
0,61 – 0,80	Reliable
0,81 – 1,00	Very Reliable

3. Report of instrument testing

a. Result of Validity Test

The instrument of testing to measure the students' ability of vocabulary consist of 60 multiple-choice items. This instrument is tested first whether it is valid and reliable or not as the instrument to measure the students' ability. Good or valid instrument can indicate the valid data of score.

The validity of test was counted using SPSS 16.00 version using *Pearson Product Moment*. After being tested to another respondent, the valid items are 51 items, while invalid items are 9 items they are number 6, 14, 20, 28, 32, 38, 42, 45, and 54 (the complete data can be seen on appendix 4).

b. Result of Reliability Test

After being analyzed the validity of test, the next step was analyzing reliability of test. There are 51 valid items that was being analyzed to know the reliability of it using Alpha Cronbach's test of reliability through SPSS 16.0 version.

The result of the calculation the reliability is 0,946 (the complete data can be seen on appendix 5) it means that the instrument is reliable to be used to measure students vocabulary mastery.

E. Procedure of Experiment

To do this study, the researcher uses some procedures that have to done in order. First, the researcher gives pre-test to the experimental and control group. Next, giving treatment to experimental group, while it is not given to the control group. The last is the evaluation by giving them a post-test.

The researcher will explain how the procedure of the experiment. There are some ways to make this research can easily followed by the

students and make them interested in learning vocabulary. The procedure of teaching are pre-teaching activity, main teaching activity, and post-teaching activity. The procedure in detail as follow:

Table 3.2 The Step of Teaching Vocabulary

STAGES	ACTIVITIES	
	Experimental Group	**Control Group**
Pre-Teaching	a. Greeting b. Getting class attention c. Introduction about the *Chick Learn English* that will be used as media	a. Greeting b. Getting class attention c. Introduction to the students about the material
Main Teaching	d. Explain about the material of *Chick Learn English* e. Explain the topic that is used to apply the *Chick Learn English* f. Asking the students to play the game g. Asking the students about the vocabularies that has learnt	d. Explain about the flashcard and how to play it e. Dividing class into two groups f. Asking the student to play the flashcard g. Asking the students about the vocabularies that has learnt
Post Teaching	h. Giving evaluation about the students' activity i. Reviewing what have learnt j. Closing	h. Giving evaluation about the students' activity i. Reviewing what have learnt j. Closing

F. Data Collection

In the beginning of the study, the experimental and control groups are given a pre-test. It is a multiple choice test, in which the students have to choose the correct word from the picture that shown in the question sheet. There are 25 questions about food and drinks, season, and objects. Then, the

student have to do it in 60 minutes. After that, they will be separated into two groups. Control group will be taught using flashcard media and experimental group will be taught using *Chick Learn English* in a smartphone. After the treatment is completely given, both groups take the post-test. The post-test is the same as the pre-test also with the same topic but using different questions.

G. Data Analysis

The data in this study was a cardinal number, which was gained form the result of multiple choice test. So that the value of the test was analyzed as follow:

$$\frac{\text{True answers}}{\text{Total of question (25)}} \times 100 = \text{total score}$$

The data obtained, then was analyzed as follow:

1. To compare mean between students' score on pretest and posttest of using *flashcard,* the researcher used *paired sample t-test* using *SPSS program 16.00 version*

2. To compare between students' score on pretest and posttest of using *Chick Learn English,* the researcher used *paired sample t-test* using *SPSS program 16.00 version*

3. *Prerequisite analyzed* before it was analyzed using *independent sample t-test*. The pre-requisite of *independent sample t-test* is normality test and homogeneity test.

   a. Normality test

      Normality test used to determine whether a population of normal distribution of data or not. This test is usually used to measure the data ordinal scale, interval, or ratio. (Sugiyono, 2007:156). Test for normality in this study using the *Shapiro Wilk,* which is calculated using *SPSS program verse 16.00*. According to Santoso (2014:191) Shapiro Wilk is used because the sample of research is less than 50. The Basis for a decision according to Santoso as follow:

      - If the value sig (2-tailed) < 0.05 then Ho is accepted and Ha rejected, means the data is not normal

      - If the value sig (2-tailed) > 0.05 then Ho is rejected and Ha accepted, means the data is normal

   b. Homogeneity test

      Homogeneity was used to know whether the decided the experimental group and the control group, came from population that had relative same variant or not. ((Sugiyono, 2007:156). Homogeneity test conducted by *test levene's test homogeneity of variance* which is calculated using *SPSS program verse 16.00*.

      - If the value sig (2-tailed) < 0.05 then Ho is accepted and Ha rejected, means the data is heterogenic

- If the value sig (2-tailed) > 0.05 then Ho is rejected and Ha accepted, means the data is homogeny

4. To compare between students' score on posttest of using flashcard and students' score on posttest of using *Chick Learn English,* the researcher used *independent sample t-test*

H. Data Interpretation

1. Hypothesis of Statistic

   The hypothesis of statistic that will be used in this research is:

   Ho: $\mu1 = \mu2$ $\Rightarrow$ H_0: Null hypothesis

   Ha: $\mu1 \neq \mu2$ $\Rightarrow$ H_a: Alternative hypothesis

2. Hypothesis of study

   In this study, the hypothesis tasted:

   1) H_0 = there is no different effect between those who are taught by using *chick learn English* and those who are taught by using *flashcard* media in vocabulary mastery.

   2) H_a = there is different effect between those who are taught by using *chick learn English* and those who are taught by using *flashcard* media in vocabulary mastery

   The Basis for a decision:

   1) If the value sig (2-tailed) > 0.05 then Ho is accepted and Ha rejected

   2) If the value sig (2-tailed) < 0.05 then Ho is rejected and Ha accepted

Besides using value of significance above, the basic decision also will be known by comparing t-$_{value}$ and t-$_{table}$, as follow.

1) If t-$_{value}$ > t-$_{table}$, the null hypothesis Ho is rejected and the alternative hypothesis (Ha) is accepted. It means that there is significant different between those who are taught by using *chick learn English* and those who are taught by using *flashcard* media in vocabulary mastery ($\mu1 \neq \mu2$).

2) If t $_{value}$ < t-$_{table}$, the null hypothesis Ho is accepted and the alternative hypothesis (Ha) is rejected. It means that there is no significant different between those who are taught by using *chick learn English* and those who are taught by using *flashcard* media in vocabulary mastery.