

CHAPTER III

RESEARCH METHODOLOGY

In this chapter, there are several parts to discuss. They are research design, population and sample, instruments, variable of the research, the method of collecting data, and the method of data analysis.

3.1 Research Design

There are many kinds of research design in conducting a research. According to Mubarok (2015: 2), research can be defined a process to find the solution based on the problem which is investigated. In this research, the researcher used quantitative research. According to Syahrul and Salim (2007:113), a quantitative research is an empirical research that consisted of statistical data. It means that the researcher collects and analyzes the data statistically.

The researcher used experimental research to observe this problem. Mubarok (2015:88) states that experimental research is a research method that used to find a specific treatment effect against to the other in uncontrolled condition. It meant that experimental research was a research that needs a treatment to find out the significance difference of the research. Sugiyono (2016:107) states that experimental research design is a research design that used to find out the significance influence of the treatment in group.

Based on Mubarok's opinion (2015:87), there are four kinds of experimental research. They are pre-experimental research, true-experimental research, factorial research, and quasi experimental research. This research was conducted a quantitative research in the form True Experimental pre-test post-test control group design to find out the effectiveness of word chain game through English song. Sugiyono (2016:112) stated that the main characteristic of true experimental is that the sample used as an experiment or as a control group is taken randomly from a certain population. So, the characteristic of true experimental research were the control group and the sample was chosen randomly.

In this design the researcher took two random classes, the first class as experimental class and the second class as control class. Experimental class was the class which the students gave the treatment using word chain game through English song and the control class did not receive the treatment. Pre-test given to each class before giving the treatment, then the experimental class was treated by using word chain game through English song, while control class treated without word chain game through English song. The last each class got post-test and the result of pre-test and post-test in both of class are compared.

The researcher used pre-test-post-test control group design. The design of this research as follows:

Table 3.1. Design of true experimental research

E	O₁	X	O₂
C	O₃		O₄

(Sugiyono, 2016:112)

Where:

O₁ = Pre-test for the experimental groupO₃ = Pre-test for the control groupO₂ = Post-test for the experimental groupO₄ = Post-test for the control group

E = Experimental Group

C = Control Group

X = Treatment using word chain game through English song

The research conducted in experimental group and control group.

The experimental group taught by using Word Chain through English song in teaching vocabulary and the control group taught by using cooperative learning in teaching vocabulary. The result of post-test and pre-test were counted by using statistics.

3.2 Variable of Research

Variable is the object of the study or focus of the study. According to Sugiyono (2016:61) research variables are things that shape what is defined by the research to be studied in order to obtain information about it, and the conclusion drawn on next. There are five kinds of variables in a study, namely independent, dependent, moderator, control, and

intervening.

In this research there were two kinds of variable, independent variable (X) and dependent variable (Y). Arikunto (2010: 12) stated that independent variable is the condition or characteristics that are manipulated by the researcher in order to explain the relation with the observed phenomena. Independent variable is a variable which influences other variable. The independent variable (X) in this research was Word Chain through English song. Meanwhile, Dependent variable (Y) that the condition are influenced by independent variable. Referring to the definition, the dependent variable of the research was vocabulary mastery.

3.3 Subject of The Research

a. Population

According to Mubarok (2015:31), population means the generalization region consisting of the objects/subject that have certain quantity and characteristics defined by the researchers to be studied and than drawn conclusion. The population of this study was the eleventh grade of MA Roudlotul Mubtadiin Balekambang in academic year 2020/2021 which consists of 127 students.

In one line with Sukardi (2003:54), sometimes the researcher can not do the study to all of the members of the group that become the target in the research. Than the researcher just be able to take a part of the sum of the population. A part of that population is called as

sample. The sample of this research was simple random sampling. The researcher chooses two classes as the sample. They were one class as the experiment class (IK-2) and the other class as the control class (IK-3).

Table 3.2

Table of the populations

Class	Total of Students
XI-IK 1	32
XI-IK 2	25
XI-IK 3	25
XI-IPA 1	16
XI-IPA 2	29
Total	127

b. Sample

Sample is part of the quality and characteristics of the population (Mubarok, 2015: 32). According to Arikunto (2010: 174), sample is part or representative of the population studied. The researcher used a simple random sampling by using lottery technique to get data. In this technique was done randomly without seeing the strata that exist in that population. In this research, the researcher takes two classes randomly. The first class was X1 IK 2 as an experimental class and the total of this class were 25 students. The

second class was XI IK 3 as a control class and the total of this class were 25 students. So, the total samples of this research were 50 students.

Simple random sampling is technique for take sample in simple regardless of the strata and areas that exist in the population which is studied Mubarok (2015:43). There was some steps that the research was done in choosing the sampling, the steps were follows:

1. The researcher observes the eleventh grades. The aim was to know the characteristic of the students in each class.
2. After observing, the research made a lottery. It was made from a piece of paper. Each paper contains the name of classes.
3. Next, the lottery was put into the glasses and the researcher shock the glass.
4. The researcher shocked twice, in order to determine the experimental group and control group.
5. After getting the number of lotteries, the researcher conducted the research.

3.4 Instrument of the Research

In the process of collecting the data involved a written test as the instrument of the research. Test is one of the method used for measurement that is to collect the characteristic' information of an object (Widyoko, 2016: 117). Meanwhile, Mubarok (2015: 68) states that test is a

method of measuring a person's ability knowledge, or performance in a given domain. In this research, the research used pre-test and post-test as the written test. In this research, for the written test using multiple choice consist of 20 questions. They were cloze test, matching word, change the word into infinite verb (V1), past verb (V2), and participle verb (V3), and matching word for both pretest and post-test.. The question for pre-test and post-test are 20 questions. But before giving post-test, the researcher gave treatment to the experimental class was Word Chain and for the control group was cooperative learning.

The test as instrument to know the students' vocabulary mastery toward the material that was given for the students. It was given to measure how far students' understanding in English vocabulary before and after using Word Chain through English song.

3.5 Trying Out Instrument

a. Validity

The validity are an important quality of test that validity test was used to measure whether the obtain data of instrument were valid or not. According to Sugiyono, (2018: 193) stated that valid means the instrument can be use to measure what should be measured. Trying out the instrument of validity in this research using a product-moment correlation to identify item validity. The formula of the validity test was as follows:

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}}$$

Note:

r_{xy} : The validity of the item test

N : The total of the students

X : The total of the students who answer correctly

Y : The students' score

b. Reliability

Sugiyono (2018: 193) stated that the valid and reliable are absolute requirement to get research result valid and reliable. To determine the reliability of test, the researcher used formula of K-R 21 (Kuder Richardson). The formula of reliability test was as follows:

$$r_1 = \frac{k}{(k-1)} \left(1 - \frac{M(k-M)}{kV_1} \right)$$

Note:

r_1 : The reliability instrument

k : The total item of questions

M : The mean of total scores

V_1 : The total varia

c. Homogeneity

Homogeneity test used to know whether experimental group and control group that were decided, population that had relatively same variant or not. It was meant to get the assumption that sample of

research came from a same condition or homogenous. According to Sugiyono, (2014: 164) stated that homogeneity test is intended to determine whether the sample taken has the same variance and does not show a significant. The homogeneity test was analyzed by using One-Way Anova Test in IBM SPSS.

$$F = \frac{S_1^2}{S_2^2}$$

Note:

F : Coefficient of F test

S_1^2 : Variance of the control group

S_2^2 : Variance of the experimental group

d. Normality

Normality test used to check the data that is going to be analyzed whether both groups had normal distribution or not. The data normality test obtained from pre-test and post-test scores in experimental group and control group. In this research, normality distribution analyzed by using *Shapiro Wilk* in IBM SPSS. With determining that the data is normally distribution if *Asymp. Sig. > 0,05* (Asmarani, 2008: 234).

3.6 Research Procedures

Data collection is a method or tools which are used by researcher to get valid data (Mubarok, 2015: 41). In collecting the data, the researcher used test. According to Djemari on (Widyoko, 2016: 117) stated that test is one of the way to estimate a person's ability indirectly, that is through a person's response to the stimulus or question. According to Arifin (2014: 226) stated that test is a technique of measurement that are various question which is there are various questions, statements, or a series of tasks that must be done or answered by the respondent. So, in this research test was used to collect data of students' vocabulary mastery.

a. Pre Test

The researcher used vocabulary pre-test. Pre-test was given before treatment by using Word Chain through English song. The purpose of this test was to measure the students' vocabulary mastery. The researcher gave 20 questions. There were 20 question of multiple choices consist of cloze test, matching word, and change the word into infinite verb (V1), past verb (V2), and participle verb (V3), and matching.

b. Treatment

Treatment given to the experimental and control class. This treatment was given two times. The experimental group was taught by using Word Chain through English song, while control group was taught by using cooperative learning. Here was the table of specific

procedure of treatments.

Table 3.4

Treatment procedure of experiment class and control class

Meeting	Experimental Group	Control Group
1	<ol style="list-style-type: none"> 1. The researcher explains the material about song. 2. The researcher explains about part of speech (Verb, Adjective, and Noun) 3. The researcher gives a lyric song to each student. 4. The researcher plays the music for about 3 times. 5. The researcher asks the students to listen and understand the music. 6. The researcher asks the students to translate into Bahasa. 7. The researcher explains about word chain. 8. The researcher gives simulation about word chain. 9. The researcher divides the students into some groups. 10. The researcher gives one word each group and asks 	<ol style="list-style-type: none"> 1. The researcher explains the material about song. 2. The researcher explains about part of speech (Verb, Adjective, and Noun) 3. The researcher gives a lyric song to each student. 4. The researcher plays the music for about once. 5. The researcher asks the students to listen and understand the music. 6. The researcher asks the students to translate into Bahasa. 7. The researcher asks the students to submit the lyric song and the researcher gives each student the blank lyric of the song. 8. The researcher asks the students to complete the blank lyric based on listening the music. 9. The researcher will play the

	<p>the student to mention 10 words based on the song (Word Chain Game).</p> <p>11. The researcher evaluates the students knowledge and give conclusion.</p> <p>12. The researcher asks the students to prepare the test for next meeting.</p>	<p>music 2 times.</p> <p>13. The researcher the students to prepare the test for next meeting</p>
2	<p>1. The researcher asks the previous material to the students.</p> <p>2. Researcher gives a paper to each student.</p> <p>3. The researcher gives instruction to the students.</p> <p>4. The researcher asks the students to do the post-test</p> <p>5. The researcher evaluates the students' knowledge and gives the conclusion.</p>	<p>1. Researcher asks the previous material to the students.</p> <p>2. Researcher gives a paper to each student.</p> <p>3. The researcher gives instruction to the students.</p> <p>4. The researcher asks the students to do the post-test</p> <p>5. The researcher evaluates the students' knowledge and gives the conclusion.</p>

c. Post-Test

The post-test given after doing a teaching and learning process which include the treatment given to students, which was using Word Chain through English song in enriching students' vocabulary. The students were given 20 questions for the post-test. The questions are multiple choices. It given in order to find whether there was an

improvement in their achievement on English vocabulary or not after given the treatment.

3.7 Method of Data Analysis

The Sugiyono (2014: 147) said that data analysis is an activity after the data from all respondents or other data sources collected. The analyze data was a process to find the data in a research. One of the technique to analyze the data was using T-test. The researcher used formula in *IBM SPSS 24*. The T-test was used to examine whether there was significant difference between experimental group and control group. The researcher analyzed the data using following steps:

1. Scoring the students' achievement of pre-test and post-test by using formula:

$$\text{Score} = \frac{\text{the total of right answer}}{\text{the total of items}} \times 100$$

2. Calculating the mean of pre-test score and post-test score.

Determining mean with formula:

$$\bar{x} = \frac{\sum fixi}{\sum f}$$

\bar{x} : The average of variables score

$\sum fixi$: Sum of frequency multiply the students' score

$\sum f$: Number of the students

3. Calculating the standard deviation of pre-test score and post-test score. Determining standard deviation score with formula:

$$s = \sqrt{\frac{\sum (xi - \bar{x})^2}{(N - 1)}}$$

s : Standard deviation of sample

xi : Each value in the data set

\bar{x} : The mean of all value in the data set

N : Total number of value in the data set

4. Calculating the T-test of pre-test and post-test score to find out the difference between them by using formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r \left(\frac{s_1}{\sqrt{n_1}} \right) \left(\frac{s_2}{\sqrt{n_2}} \right)}}$$

t : Test of significance

\bar{x}_1 : Mean score of control group

\bar{x}_2 : Mean score of experimental group

s_1 : Standard deviation of control group

s_2 : Standard deviation of experimental group

s_1^2 : Sample variance of control group

s_2^2 : Sample variance of experimental group

n_1 : Number of students in control group

n_2 : Number of students in experimental group

r : Correlation between two groups

After analysing the data using formula in *IBM SPSS 24*, the researcher compared the scores between control group and experimental

group. The method of analysis data was used to know the effectiveness of using Word Chain through English song to improve students' vocabulary mastery that applied in eleventh grade students of MA Roudlotul Muhtadiin. It used to prove there was significant difference or not in pre-test and post-test.

