CHAPTER III

RESEARCH METHOD

A. Research Design

According to Arikunto (2013), research design can be interpreted as a plan structured work in terms of relations between variables in a manner comprehensive in such a way that the results of his research can provide answers for research questions. The plan includes the things to be the research was carried out, starting from making hypotheses and their implications operational until the final analysis.

This research used quantitative research because of the data in the form of numerical and statistical analysis. It includes experimental research. The type of experimental design used by the researcher is quasi-experiment. Creswell (2012) says that quasi-experiments include assignment, but not a random assignment of participants to groups. A quasi-experimental design is the development of a true experimental design, which has a control group but can not fully function to control external variables that affect the execution of the experiment. In addition, quasi-experimental design is a type of research design that has groups control, and experimental groups were not chosen randomly. Researchers use quasi-experimental design because in this study there are variables from outside that cannot be controlled by the researcher.

In this research design, there were two groups of classes involved. The researcher gave some steps, which are pre-test, treatment, and post-test. The researcher gave different treatments to both groups, the first group was an experimental group that used the edmodo application, while the second group was a control group that did not use the edmodo application. The table of the research design as quoted by Sugiyono (2012) as follow:

Table 3.1

Research Design

Class	Pre-test	Treatment	Post-test
C	O1	Y	O2
E	O1	X	O2

(*Source : Sugiyono, 2016*)

Note:

E   : Experiment Class

C   : Control Class

O1   : Pre-test

X   : Edmodo Application

Y   : Google Classroom

O2   : Post-test

Based on the explanation above the researcher has given the pre-test to know the students' real competence in reading skills. The researcher conducted the pre-test before treatment X (Edmodo). After implementing the treatment, the researcher gave a post-test to measure the students' improvement in reading skills.

B. Research Variable

According to Sugiyono (2016), the research variable is an attribute investigation, variable is everything that planed by the researcher to learn. Variable is a constructor character to be studied there are two kinds of variables in common, are Independent variable and dependent variable. An Independent variable is a variable that is affected or influences another variable. A dependent

variable is a variable that is affected or has become effective by an Independent variable. In this study, two variables are used by the researcher, are Independent (X) and Dependent (Y) variables.

The researcher conducted Edmodo as an independent variable to indicate the students' reading score, and in a dependent variable, the researcher chose students' reading skills. The description is as follows:

Table 3.2

Research Variables

Group	Independent Variable	Dependent Variable
Experimental Group	Edmodo Application	Students' Reading Skills
Control Group	Google Classroom	Student's Reading Skills

(Source: Sugiyono, 2016)

Based on the explanation above, the researcher concluded that there is two variable in this study, they are X as an (Edmodo) and Y as (students' reading skills).

C. Research Population, Technique Sampling, and Sample

1. Research Population

Sugiyono (2013) states that population is composed of the generalization: object or subject that has the quality and certain characteristics set by the researcher to learn and then make a conclusion. Therefore, the population of this research was the students in the fourth semester of the English department at the Muhammadiyah University of Metro in the academic year 2020/2021. It consists of 40 undergraduate students of the English Department at the Muhammadiyah University of Metro.

No.	Class	Number of Students
1.	A	20
2.	B	20
Total Number of Students'		40

(Source: By English Department Lecturer of Fourth Semester at Muhammadiyah University of Metro)

Based on the table, the population of this research is the fourth semester at the Muhammadiyah University of Metro in the academic year 2020/2021. There are two classes this semester. The number of students in class A is 20 students and 20 students in class B. Therefore, the total population in this research is 40 students.

2. Sampling Technique

Setiadi (2013) argues that the sampling technique is one technique for taking samples. The sampling technique is the way researchers take samples from the population. In researching to obtain samples from the population, researchers used the cluster random sampling technique. This is sampling to conduct research, stated by Sugiyono (2017). Researchers used random to determine the class of the experimental group and the control group.

There are two classes labeled with A and B class. From these classes, and the researcher took two classes that became the sample of this research. Below are the steps are done by the researcher:

a. The researcher wrote a number on a piece of paper.

b. The papers were rolled and then put into the glass.

c. The glass has shaken until getting the rolling of paper was out.

d. The first roll of paper was B class became the subject of the experimental class.

e. The second role of paper was A class became the subject of the research as control class.

3. Research Sample

According to Arikunto (2013) sample of the research is a part of the population that has all the main characters from the population. Sugiono (2010) explains that the sample is a part of the total and characteristics of the population. In this research, the researcher used two classes the B class as the experimental which consists of 20 students, while class A is the control class which consists of 20 students.

Based on the explanation above, it can be concluded that the sample is part of the population. After all the classes labeled with A and B, It has become a sample of this research where the researcher conduct this study at those classes. Finally, the researcher took two classes in the fourth semester of the English Education study program at the Muhammadiyah University of Metro in the academic year 2020/2021. There are class A as control class and class B as an experimental class.

D. Research Instrument

The instrument of the research is a part of activities to detect the

accurate data. Ali (2014) argues that a research instrument is an equipment that can be used in the research conducted to get the final goal of the research. An instrument is a tool when the researcher administered the research through a certain technique. The researcher gave a test as an instrument in this research. The pre-test is given to the students to measure their reading skills before the treatment and the post-test is given to measure their reading ability after giving the treatment.

After all of the tests are reliable then the researcher conducted a pre-test before treatment and gave a post-test after the treatment. The score of the test is based on criteria on the reading test rubric.

E. Validity and Reliability

1. Validity

Sugiyono (2013) validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. Validity is concerned with the study's success at measuring what the researcher set out, In this case after the instrument is constructed about some aspects which are measured based on the particular theory, it can be consulted by the experts.

Arikunto (2016) claims that validity is a standard that shows the degree of validity or valid instruments. Therefore, validity is a tool that can be used to see the validity of an instrument that was used by the researcher. In this study, the researcher analyzed the test from content validity. Content validity examines whether the test is a good representation of the material that needs to be tested. It means that the item of the test will be represented by the material that is discussed. The validity instrument was corrected by the validator.

2. Reliability

Reliability refers to the extension to which the test is consistent in it is score and indicates how accurate the test score is. Arikunto (2016) says that the reliability of the test is an instrument that can be believed to be used as an instrument for collecting data because it has been good. Based on the explanation above, the measurement of whether the test has good reliability or not.

Instrument reliability testing is measured by internal consistency reliability testing, with one-time instrument testing. This reliability test used the Spearman-Brown formula, which is as follows:

$$r_{11} = \frac{2(r \frac{1}{2} \frac{1}{2})}{(1 + r \frac{1}{2} \frac{1}{2})}$$

Where :

r_{11} = Instrument reliability

r ½½ = r_{xy} the correlation index between the two instruments

Before entering the formula above, first, find the correlation index between the two instruments. the formula used is formula as stated Sugiyono (2013) as follows :

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

Where:

r_{xy} = cofesien correlation X and Y

N = number of samples

X = initial score

Y = final score

F. Data Collecting Technique

The most important thing in this research is collecting the data that can determine the result of the research. According to Dennis *et al.,* (2012) tests are a measurement technique used to measure behavior or help understand and predict behavior. Furthermore, an improvement of students' achievement can be tested by using a test as a method. The researcher used a test to

measure students' reading comprehension. A detailed explanation can be seen below:

1. **Pre-Test**

A pre-test is conducted as the preliminary research to identify the students' real competence and problems in reading learning. A pre-test is done before the treatment process. The researcher took the score to get the first information. The pretest was administrated on, 16th June 2020 at 08.00 - 10.00 a.m. The researcher used Edmodo as a technique to test. The researcher has given the example of using Edmodo and after that, the students have to do it themselves using a smartphone.

2. **Treatment**

After conducting a pre-test, the researcher gave the treatment to the students. Treatment aims to develop the students' reading skills. According to Erik Yuda Pratama, Edmodo in Teaching Effectiveness the Argumentative Text by implementing some principles, as follow:

a. It can be use mobile activity as long as it is connected with an internet connection. Edmodo communities are built by lecturer for a specific group of students. About online activities using social networking sites like Edmodo in creating meaningful activity suitable for reading skills. Post Assignment Tool this tool facilitates the lecturer to submit the assignment/task and ask the students to post. Task represents opportunities for learners to manipulate interdependent chunks of the target language.

b. She started with introducing how to grasp the main ideas in the text, then continued with exploring students to the vocabulary, and finally ended up with asking the students to compare and contrast one text to another. Not only did she know about how to teach

reading skills, she know about how to teach reading skills, she also had a good understanding of implementing and promoting Edmodo application into a teaching and learning process.

c. Confirmed that Edmodo could be useful for teaching and learning, particularly teaching and learning reading skills.

3. Post-Test

The post-test was given after the treatment was given in the experimental study or after being taught advanced reading using the Edmodo application to see whether the Edmodo application was effective or not for learning reading skills. The post-test scores were based on the criteria for the reading test rubric.

G. Data Analysis Technique

After the researcher collected the data, the researcher analyzed the result of data from pre-test and post-test related both of them through the formulas of normality test, homogeneity test, and hypothesis test. The procedures to treat the data are as follow:

1. Normality Test

The object test for normality to determine the distribution of the data follows a normal distribution or not. One of the test assumptions of the statistic compilation is that the data must fulfill the qualification of the normal distribution. Therefore analyzing the normality of the distribution of the students' scores is crucial. A detailed explanation can be seen as follow:

Normality test using the formula Chi-quadrateas Ghazali (2010) follows:

a. The hypothesis formula:

Ho: sample comes from the population that has a normal distribution.

H_1: sample did not come from a population that has not a normal distribution.

b. Statistic formula:

$$x^2_{count} = \sum_{i=1}^{k} \frac{(O_i - E_i)}{E_i}$$

Ghazali (2010)

Notes:

x^2 = Chi-quadrate

Oi = frequency observes

Ei = frequency expectation

k = Interval class

The criterion, if $X^2_{count} \leq X^2_{table}$ with DK = k – 3, so, the data is normal.

2. Homogeneity Test

A homogeneity test was applied to analyze whether or not the scores of one group have homogenous variance compared with the score of other groups. In this study, the researcher used F-test. The formula can be seen as follow:

a. The hypotesis formula:

$H_0 : \sigma_{1^2} = \sigma_{2^2}$ both samples have the quality of variants.

$H1 : \sigma_{1^2} \neq \sigma_{2^2}$ both samples have different variants.

b. The used statistic formula of the test is:

$$F = \frac{biggest variants}{smallest variants}$$

c. The test criterion

Accepted H_0 if $F_{ratio} < F \frac{1}{2}\alpha$ (V_1 - V_2), with $V_1 = n_1$-1 and $V_2 = n_2$-1

Sugiyono (2013)

3. Hypothesis Test

A hypothesis is an assumption about a population parameter. This assumption can be true or not. It is a method of making statistical decisions using experimental data, the best way to determine whether a statistical hypothesis is true would examine the entire population. After collecting the data, the researcher analyzed them to find out whether the use of the Edmodo technique could increase the students' achievement in reading related to things in the classroom.

Hypothesis testing is intended to see whether the hypothesis that is proposed in this research is accepted or not, to test the hypothesis, Repeated Measures T-test was conducted and the used formula of the test is t-test which frames at this below formula:

$$t -_{test} = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{S_1{}^2}{N_1} + \frac{S_2{}^2}{N_2}}}$$

Notes:

$\overline{X}_1$ = the means of the experiment class

$\overline{X}_2$ = the means of the control class

S = the standard deviation

N_1 = the number of students in the experimental class

N_2 = the number of students in the control class

Before using the t-test formula the researcher would determine the average variant (S^2)

The variant (S^2) is calculated by the formula:

$$S^2 = \frac{(N_1 - 1)S_1^2 + (N_2 - 1)S_2^2}{N_2(N_2 - 1)}$$

Notes:

N_1 = Number of students in the experimental class

N_2 = Number of students' in control class

S_1^2 = Variant of experimental class

S_2^2 = Variant of control class

S^2 = Variant

The criteria are:

H_0 : H_0 is accepted if t-ratio $<$ t-table

H_a : H_a is accepted if t-ratio $>$ t-table

Based on the explanation above, the researcher concluded that the hypothesis is an assumption about a population parameter. This assumption may be true or not be true when sample data are not consistent with the statistical hypothesis, so the hypothesis is rejected because the test is used to know whether the hypothesis that is proposed can be accepted or rejected. The formula which is used in this test is the t-test.