CHAPTER III
RESEARCH METHOD

A. Research Design

The method of this research was quantitative research. This research was used True-experimental design. According to (Zubair, 2020) true-experimental research is an effective research design for testing cause-and-effect relationships between variables. By using randomization, treatment and control groups, and pre- and post-treatment measurements, the study can control confounding variables well and provide valid conclusions about the effects of the intervention.

In this research, there are two groups being compared: the experimental group and the control group (Thresia, 2017). According to (Asrul et al., 2024) the two sample classes required for this research are the experimental class and the control class. The experimental group will be treated using wordwall media, which is designed to improve students vocabulary acquisition through interactive features. Meanwhile, the control group will be taught without using Wordwall, so that researchers can evaluate the difference in the effectiveness of this learning method in improving students' vocabulary skills.

The materials given and purpose of the research to each class are the same. There are two kinds of tests given in this research, they are pre-test given before the treatment that aims at finding out the homogeneity of the two classes and post-test after the treatment is to find out whether or not using wordwall media can improve the students vocabulary mastery.

Table 3 Table Research Design

Group	Pre-test	Treatment	Post-test
Experimental Class	O1	Wordwall media	O2
Control Group Class	O1	-	O2

Based on the above explanation, the researcher used three main procedures in this study: pre-test, treatment, and post-test. All tests were expert-validated before being administered to the students. The pre-test was given to both groups (experimental group and control group) to measure their

achievement before the treatment was conducted. After that, the experimental group received treatment using wordwall media, while the control group was taught as usual without using wordwall. Finally, the researcher compared the results of both groups to evaluate whether the use of wordwall had a significant effect on improving students' vocabulary skills.

B. Research Population and Sample

1. Research Population.

According to Sugiyono (2019) population refers to a group that has one or more characteristics in common, such as middle school students, first-born children, freshman at University, or teacher in school. Population is the defined group from which the participants in the study are to be selected. The population of this research is all the students at the tenth grade Nursing of SMK Muhammadiyah 3 Metro.This numbers population are 105 students,consists of 3 classes.

2. Research Sample.

According to Sugiyono (2019) sample is part of population from whom the data of the study are obtained.In this research. In this research the researcher used cluster random sampling. Cluster random sampling is a sampling technique in which the population is divided into groups or clusters, then samples are randomly selected from these groups. Each cluster selected represents the population as a whole (Sugiyono, 2019). The sample of this research are students in classes X Nursing 1 consists of 35 students as a experimental class and X Nursing 2 consists 35 students as a control class.

C. Research Variable

According to Sugiyono (2019) a research variable is a trait, characteristic, or value of a person, object, or activity that can vary and is identified by the researcher for study. The term variable implies that specific elements can change among objects in a population. In research, variables are classified into dependent and independent variables. The descriptions for each type of variable are as follows:

1. Independent variable

According to Sugiyono (2019), the independent variable, also known as a stimulus, predictor, or antecedent variable, is the factor that influences or causes

changes in the dependent variable. In Indonesian, it is often called the independent variable.

2. Dependent variable

According to Sugiyono (2019), dependent variables, also known as output, criteria, or consequent variables, are influenced by the independent variables. In Indonesian, it is called the dependent variable.

The descriptions of both variables are as follow:

1. The Independent Variable (X) is a wordwall media.
2. The Dependent Variable (Y) is a vocabulary mastery.

D. Research Instruments

According to Creswell in (Purwitasari, 2022) an instruments is a tool used to measure, observe, or document quantitative data. Instruments can be tests, questionnaires, computation sheets, diaries, lists of observations, inventories, or assessment instruments that are identified before the researcher gathers data.

The tool that will be used in this research is the test. The test will be split into two parts: a pre-test and a post-test. There are 30 multiple choich questions in the test. Before students receive the treatment, a pre-test is administered to determine their level of achievement. Students are given a post-test utilizing wordwall media exam to determine their achievement after receiving treatment.

E. Research Validity and Research Readibility

1. Research Validity

According to Arikunto (2010) in (Sudiati et al., 2018) states that a test is valid if it measures what it a purpose to be measured. In this research, the validity of the instrument was assessed using face validity, which involves evaluating the instrument based on the judgment of experts in the field. Face validity refers to the extent to which a test or measurement tool appears to be effective in terms of its content and purpose, based on a superficial or surface-level judgment. It is a basic form of validity that focuses on whether the instrument seems to measure what it claims to measure, according to non-statistical evaluations from experts or users.

Two experts were invited to evaluate the vocabulary test used in the research, providing feedback on the clarity, relevance, and appropriateness of the items. The evaluation was conducted using a rating scale, where the experts

were asked to score each item based on the following criteria: 1 = Very Poor, 2 = Poor, 3 = Enough, 4 = Good, and 5 = Very Good.

2. Research Reliability

The reliability is the consistency of the test score it refers to the accuracy of measurement by a test. Brown (2000) in (Sudiati et al., 2018) a reliable test is consistent and dependable. The test is reliable if the score is consistent even though the test is administered at a different time. In this test, the researcher used Spearmam Brown in order to know the reliability of the test. Formula of reliability instrument using spearman brown as follows:

$$r_i = \frac{2r_b}{1 + r_b}$$

Where:

$ri = internal\ reliability\ of\ all\ instruments$

$rb = Product\ Moment\ correlation\ between\ odd\ and\ even\ halves$

Table 4 Criteria of Interval Coefficient

Interval Coeffienct	Correlation
0,00-0,199	Very Low
0,20-0,399	Low
0,40-0,599	Medium
0,60-0,799	Hight
0,80-1,000	Very Low

Source : Sugiyono (2019)

F. Data Collecting Technique

1. Pre-test

In the first meeting, the researcher give a pre-test to the students to determine their ability to differentiate between the experimental and control groups. For the pre-test, the researcher offered the student 30 multiple choice.

2. Treatment

Give treatment to students by using a wordwall media in accordance with the material being studied. This treatment will be carried out in four meetings, in the experimental group, namely class X Nursing 1. The researcher explains the

material being studied and using the media of the wordwall media. Meanwhile, in the control class, namely class X Nursing 2, the researcher only explained the material studied to the students, then the researcher tested it by giving a post-test.

3. Post-test

The researcher gave the students a post-test after the pre-test and finished the treatment. The researcher gave a post-test to students after the pre-test and completing the treatment. The researcher gave 30 multiple choice questions and the same time as the pre-test, but the questions given in the post-test were randomly numbered and the questions were given.

G. Data Analysis Technique

The technique of data analysis this research used a statistical analysis of normality, homogeneity and t-test. These statistical analyses did in steps, which firstly the data calculated in normality test, then homogeneity test and last t-test that purpose to highlight the difference result between pre-test and post-test of each group; control and experiment class. It was calculated by using SPSS software.

Data Analysis The data analysis technique in this study was taken based on the post-test results of students from two different classes. The data that was obtained then analyzed using the SPSS program.

1. Test of Normality

Normality test is a test to find out the data already distributed normal or not (Enterprise, 2018). In addition, the use of the normality test is to determine that the data is normally distributed. The approach used in the normality test in this study is the Shapiro-Wilk approach with the help of SPSS 27. Decision making has the following criteria based on significance values:

a. If the significance value reaches > 0.05, then the data is said to be normally distributed.
b. If the significance value reaches < 0.05, it is said to be not normally distributed.

2. Test of Homogeneity

Homogeneity test is carried out to be able to determine the characteristics of the sample taken in the study.The homogeneity test in this study was carried out using SPSS 27 for windows with Leven's Statistics method. The homogeneity

calculation used uses the average value (mean) with decision criteria based on the following values:

   a. If the significance value > 0.05, then the data group comes from subjects that has the same variance (homogeneous).
   b. If the significance value < 0.05, then the data group comes from subjects that has different (inhomogeneous) variances.

3. T-test

T-test is a type of statistical analysis used to determine if there is a significance difference between the means of test result from two groups (Susilaningrum et al., n.d.). Based on the samples, t-test divided into three categories; independent sample T-test, paired sample t-test and one sample T-test. Moreover, in this research, the researcher conducted Paired Sample T Test to test first hypothesis and Independent Sample T Test to test second hypothesis. The basis for making decsicion in Paired Sample T test and Independent Sample T Test as follow:

   a. If value of Sig. (2-tailed) less than 0.05 H1 is accepted and H0 is rejected
   b. If value of Sig. (2-tailed) more than 0.05 H0 is accepted and H1 is rejected.