

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This research will use a pre-experimental research design. It is called a pre-experimental design because this design is not yet an actual experiment. External variables still influence the formation of the dependent variable (Sugiyono, 2017: 109).

Pre-experiments are the simplest form of research design. In a pre-experiment, a single group or multiple groups are observed after some agent or treatment is presumed to cause change. It aims to know whether there is significant development before and after using the Plickers application and whether using the Plickers application can improve students' reading skills.

The research design will use the One Group Pretest-Posttest Design. In this research, there is a pretest before and after treatment; thus, the results obtained are more accurate because researchers can compare the results before and after treatment.

The following is a table of research designs for One Group Pretest-Posttest Design:

Table 3.1
One Group Pretest-Posttest Research Design

Group	Pretest	Treatment	Posttest
Experimental	O_1	X_1	O_2

Source : Sugiyono (2017: 112)

Description :

O_1 : Pretest before the treatment is given

X_1 : Treatment of the experimental group (using Plickers application)

O_2 : The final test (posttest)

Based on table 3.1, in pre experimental research, there one pretest, treatment, and post test. Additionally, the terms pretest, treatment, and posttest refer to the following:

1. Pretest

A pretest is an initial measurement conducted before the administration of treatment or intervention. In this study, a pretest was conducted to assess the level of students' reading skills among ninth-grade students of SMP 1 Sungai Ambawang before they were given the treatment using the Plickers application. The pretest aimed to obtain an initial overview of the students' reading skills proficiency before they engage in the upcoming treatment.

2. Treatment

Treatment refers to the intervention or treatment given to the research subjects. In this study, the treatment involved the use of the Plickers application to help build students' reading skills. The Plickers application was utilized as a tool to assist students in mastering teaching reading skills. This treatment could involve the use of the Plickers application in reading skills learning activities in the classroom.

3. Posttest

A posttest is a measurement conducted after the administration of treatment or intervention. After students received the treatment using the Plickers application, a posttest was conducted to measure the progress of students' teaching reading skills. This aimed to evaluate the effectiveness of the given treatment and determine if there was a significant improvement in students' reading skills after using the Plickers application.

By utilizing a pre-experimental research design, this study aims to examine the impact of using the Plickers application on students' reading skills. However, it is important to note that pre-experimental research has limitations in terms of internal validity and generalizing research findings. The results of this study are expected to provide preliminary information on the effectiveness of using the Plickers application to enhance reading skills among ninth-grade students of SMP 1 Sungai Ambawang in the academic year 2021/2022.

B. Population and Sample

1. Population

The population is a generalization area consisting of objects/subjects with specific qualities and characteristics determined by researchers to be studied and then drawn conclusions (Sugiyono, 2017: 80). The population in this study were students of class IX SMP Negeri 1 Sungai Ambawang, totaling 36 people.

2. Sample

The sample is part of the number and characteristics possessed by the population (Sugiyono, 2017: 81). The sample in this study was all students of class IX SMP Negeri 1 Sungai Ambawang, totaling 36 people.

The sampling technique will use cluster random sampling. Cluster random sampling is a geographical sampling technique used to determine a sample when the subjects to be studied or data sources are extensive, such as the population of a country, province, or district (Sugiyono, 2017).

C. Technique and Tool of Data Collection

Data collection techniques will use in this study include the following:

1. Measurement

The measurements will gauge the students' reading skills of SMP Negeri 1 Sungai Ambawang before and after using the Plickers application. Plickers is an educational tool that uses printables, such as a quick response code. The answer options A, B, C, and D are printed on the image's paper. The teacher presents the questions during the learning process, and students display the Plickers card and their answers.

Teachers can respond to cards using the Plickers app installed on a mobile device. They can instantly see student responses and grading data for that question, including who got the correct answer and who did not (Masita, 2020: 312).

The measurement technique collects quantitative data to determine the level or degree of freedom of certain aspects compared to certain norms and relevant units of measurement (Nawawi, 2012: 101).

2. Observation

The observation method is described as a method to observe and describe the behavior of a subject, and it involves the basic technique of simply watching the phenomena until some hunch or insight is gained (Kumar, 2022: 3). Observations were made by direct observation at SMP Negeri 1 Sungai Ambawang to assess students' reading skills.

3. Documentation

Documentation is a record of events that have been researched. Documents can be in writing, pictures, or monumental works of someone (Sugiyono, 2017: 240). The documentation in students' reading skills scores was tested before and after using the Plickers application.

Meanwhile, the data collection instrument used in this study is a test item that the teacher will use to assess students' reading skills.

D. Technique of Data Analysis

1. Univariate Analysis

The data analysis technique will use in this research is univariate analysis. The univariate analysis will use to explain the characteristics of each variable studied. Generally, this analysis only produces each variable's frequency distribution and percentage (Notoatmodjo, 2012: 182).

The analysis using through the frequency distribution with the formula:

$$P = \frac{SP}{SM} \times 100\%$$

Description :

P : Students' score

SP : Score obtained from students

SM : Highest score expected

2. Descriptive Statistical Analysis

According to Muhson (2006: 2), descriptive statistical analysis is a statistical method used to analyze data by describing or portraying the collected data as it is, without intending to draw conclusions that apply universally or generalize. This analysis consists solely of accumulating basic data in the form of descriptions, meaning it does not seek to explain relationships, test hypotheses, make predictions, or draw conclusions.

Descriptive statistical analysis techniques that can be used include:

a. Measurement

1) Mean

Mean is the average of a set of numbers. It is calculated by adding up all the numbers in the set and dividing by the total number of numbers (Tsoulfanidis, 2010).

2) Mode

Mode is the value that appears most frequently in a set of numbers (Tsoulfanidis, 2010).

3) Median

Median is the middle value in a set of numbers when they are arranged in order. If there is an even number of values, the median is the average of the two middle values (Tsoulfanidis, 2010).

4) Standard Deviation

Standard deviation is a measure of how spread out the values in a set of numbers are. It is calculated by finding the square root of the variance, which is the average of the squared differences from the mean (Tsoulfanidis, 2010).

b. Normality Test

According to Priyanto (2013), the requirements for parametric analysis include the normal distribution of data. Testing is conducted using the Kolmogorov-Smirnov test to determine whether the data distribution for each variable is normal or not. The basis for decision-making in the normality test is as follows:

- 1) If sig. > 0.05 , then the data is normally distributed.
- 2) If sig. < 0.05 , then the data is not normally distributed.

c. Homogeneity Test

According to Widiyanto (2010), the homogeneity test aims to determine whether the variance of multiple datasets from a population is the same or not. This test generally serves as a requirement (though not an absolute one) in comparative analyses such as independent sample t-tests and ANOVA.

The basis for decision-making in the homogeneity test is as follows:

- 1) If the p-value is < 0.05 , then the variances of the two or more population datasets are not the same (not homogeneous).
- 2) If the p-value is > 0.05 , then the variances of the two or more population datasets are the same (homogeneous).

d. T-Test

According to Ghozali (2018), the partial influence test or t-test is a statistical test conducted to determine the influence of each independent variable on the dependent variable in a regression model.

The t-test is performed by testing the null hypothesis that the regression coefficients of each independent variable are equal to zero, individually. The results of the t-test will indicate whether each independent variable has a significant influence on the dependent variable in the regression model.

The t-test is commonly used in multiple linear regression analysis to evaluate the separate effects of each independent variable on the dependent variable. If the t-test results show a significant value ($p < 0.05$), it can be concluded that each independent variable has a significant influence on the dependent variable in the regression model.