**CHAPTER III RESEARCHMETHOD**

* 1. **ResearchDesign**

The design of this research was quantitative research with experimental research methods. Babbie (2010) as cited by University of Southern California (2024), the focus of quantitative methods is on objective measurements and the statistical, mathematical, or numerical analysis of data gathered via surveys, polls, and other means of gathering information, as well as the use of computer technology to manipulate statistical data that has already been obtained. The goal of quantitative research was to collect numerical data, generalize it to other populations, or provide an explanation for specific phenomena.

In conducted this research, there were two classes of second grader who were participated. The first class was the experimental class, and the second class was the control class. The experimental class wass a class that uses QuillBot application, and the control class was aclass that did not useQuillBot application. Thus, researcher had used basic technique (Manual) to analyse data.

In this research, the researcher used the Nonequivalent Control Group Design. Gay argues that the non-equivalent control group strategy involves randomly assigning intact groups to treatments, rather than individuals. There are two factors in this study. The first is an independent variable; the second is a dependent variable. The independent variable "X" represents the employment of imaging approach, whereas the dependent variable "Y" represents the students' grammar mastery.

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This research compared two groups. The first is the experimental group, which was treated using an imaging method. The second group is the control group, which was either treated with the conventional technique or not treatedwith the imaging strategy. The table below summarizes the research design:

**Table3.1ExperimentalDesign**

|  |  |  |  |
| --- | --- | --- | --- |
| **Group** | **Test** | **Treatment** | **Test** |
| ExperimentalGroup | Pre-Test | QuillBot application | Post Test |
| Control Group | Pre-Test | Conventional Technique | Post-Test |

* 1. **PopulationandSample**
     1. **Population**

According to Lind et al (2017) as cited by Wibowo (2020), population is the number of people or things that share a specific characteristic. The population of this research was second-grade students at SMK Swasta Nur Azizi Tanjung Morawa, there were three clases MPLB 1, MPLB 2, and MPLB 3. Each class consisted of 40 students per class. Then, the population was 120 students.

* + 1. **Sample**

As noted by Etikan et al. (2016) as cited by Wibowo (2020), a sample is a subset of the population. It is one of the constituent elements of the population. The researcher had taken two clases randomly class XI MPLB 1, which consisted of 40 students and XI MPLB 3 (Management Perkantoran dan Layanan Bussiness) which consisted of 40 students. Then, the researcher had chosen XI MPLB 1 as experimental class and XI MPLB3 as control class, randomly.

* 1. **ResearchInstrument**

In this research, the researcher had used a test as an instrument. The test instrument included a pre-test and a post-test. Researcher had given an Indonesian sentences that consisted of 10 questions for students, they would translate the sentences into English and filling a part of the blank option. Subsequently, it would be applied in the QuillBot application to check their grammar accuracy.The scores in the pre-test and post-test are obtained through grammar assessment. Grammar assessment would be applied to the QuillBot application so that the researcher could get information about their ability to arrange grammar in a structure manner.

* 1. **TechniqueofCollectingData**

In this case, the technique that researcher used in collecting data was the testofquestionnairetechnique.Becausethistechniquewas very easyandeffective for getting accurate results to what extent the QuillBot application was successful or not in developing students' grammar mastery.

1. Pre-Test

Pre-test was given for experimental and control group before doing the treatment, it was used to measure on students’ grammar mastery.

1. The Treatment

After conducting pre-test, the experimental group and control group were taught by using same materials. But, the experimental group used QuillBot application as treatment, while the control group used conventional technique.

1. Post-Test

The post-test was given after the treatment, it was also give for experimental and control group; yet, the treatment was only given to the experimentalgroup. The result of post-test score was used to measure the effectiveness of QuillBot applicationon students’ grammar mastery.

* 1. **Data Analysis**

The researcher applied a quantitative data analysis approach in this study. A statistical strategy was used to examine the quantitative data from this study. In this research, the researcher was using a quantitative data analysis technique. The quantitative data of this research was analyzed by using statistical method. The researcher uses T-test of Arikunto (2014:354) as formulated below:

t= 𝑀𝑥−My

(∑x²+∑x² 1 1

√𝚗1+𝚗2−2)(𝚗₁+𝚗₂)

where:

t:T-test

Mx:Themeanscoreoftheexperimentalgroup My: The mean score of control group

∑𝑥2:Totalstandarddeviationoftheexperimentalgroup

∑𝑦2: Total standard deviation of the control groupNx:Thenumberofstudentsoftheexperimentalgroup Ny: The number of students of the control group

Forthisexperiment,theresearcheruses5%(0.05)alphalevelof significance as usually used in educational research.

Determining 𝑡𝑡𝑎𝑏𝑙𝑒in significance level 5% with degrees of freedom (df) df = (𝑁𝑥 + 𝑁𝑦) – 2

where:

df=degreesoffreedom

𝑁1=Totalsubjectofsamplein experimental

𝑁2=Totalsubjectofsample incontrolgroup

After the researcher had known the T-table, the data would be viewed usingtheT-test.IfT-test>T-table,thenHaisacceptedandHoisnotaccepted.Or vice versa.