

CHAPTER III

RESEARCH METODOLOGY

A. Research Design

The design of this research used an experimental research, with aim of establishing a cause-effect relationship between two variables. The primary objective of experimental research is to identify and understand the impact or relationship between variables (Sugiyono 2023:128). This study used quasi experimental design, which involved two separate groups, the first group is the experimental group and the second is the control group, both classes had same topic, same class duration, and same teacher. The experimental group taught using Poro English Application and control group used conventional media. The experimental group received over five meetings. At the end of meeting, the researcher given a same post-test to each class.

In this study, the researcher will use a Posttest-Only Control Design. Post-result compared to determine the treatment effect, according to Sugiyono (2023:133) the design was displayed in following Table:

Table 3.1**Posttest-Only Control design**

E	X	O ₁
C		O ₁

Where:

E: Experimental group was teaching by using Poro English application

C: Control group was teaching by conventional media

X: Poro English application treatment

O₁: Students' score of Post-test to know the result of study

B. Population and sample**1. Population**

A population is a domain of generalization comprising object or subject possessing certain quantifiable characteristics that a researcher can establish for investigation and subsequent conclusion-drawing Sugiyono (2023). The population of this study was the Tenth-Grade students of SMAN 2 Pariaman, with total of 300 students divided into 9 classes as follows:

Table 3.2**The population of The Tenth Grades of SMAN 1 Pariaman**

No	Class	Total
1	X E1	36
2	X E2	36
3	X E3	36
4	X E4	36
5	X E5	36
6	X E6	25
7	X E7	25
8	X E8	36
9	X E9	34
Total Number of Students		300

In conclusion, at SMAN 1 Pariaman class X has divided into 9 classes (from class X E1 to class X E9) with total of 300 students.

2. Samples

A sample is portion of population's and characteristic and total number. If the population is large, and researcher can't study everything in it (die to limitations like funding, time, or personnel), they can take a sample from that population Sugiyono (2023:146).

The sample for this research taken with *Cluster Sampling (Area Sampling)*. According to Sugiyono (2023:150) in cluster sampling involves randomly choosing specific, naturally formed groups that mirror the characteristics of the large population, and then including all the subjects from those selected groups in your study.

A lottery method was used to determine the study's sample classes. The researcher assigned number 1 until 9, writing them to individual slips. These slips were drawn randomly from shaken box until two were obtained. The selected classes, X E6 (experimental) and X E7 (control), included total 50 students in total.

C. Research Instrument

The instrument that used in this study is a test. According to Arikunto (2002 :127), a test is a series of questions, task, or other tools designed to assess the skills, intelligence, knowledge, abilities, or talents of individuals or groups. The data for this research gathered based on students' performance. Furthermore, during the research process, the research used a pronunciation test (interview test) to collect data.

D. Technique of data collection

Researcher needs specific techniques for data collection. The choice of a particular technique will depend on the research questions, the type of data, and the overall research design.

A data collection technique refers to the process of gathering information about a subject. Data is understood as factual information, which may include measurements or statistics, though it is not confined to numerical details. This data can then be used to assess and enhance understanding, promote discussion, or identify patterns that may lead to further discoveries in the field. In this research, the technique data collection in this research is a pronunciation test performance (interview) were taken once in post-test.

To assess the students' knowledge after the treatment, the researcher will conduct a post-test in both the experimental and control classes, using the same pronunciation test (Interview). The scoring of this research based on student's pronunciation and asses with rubric pronunciation assessment by Henrichsen.

E. Technique of Data Analysis

In this research, statistical analysis was employed to interpret the data. Specifically, a t-test was utilized to determine the effects of using Poro English Application towards students' pronunciation mastery. According to Sudjono (2014) the t-test formula used for this analysis is presented as below:

$$= \frac{M_1 - M_2}{SE_{M_1} - SE_{M_2}}$$

M_1 : Mean of the score of experimental class. M_2 : Mean of the score of control class
 SE_{M_1} : Standard error of experimental class SE_{M_2} : Standard error of control class

The sequence of operations required for the calculation:

1. Determining mean of variable X, with the formula as follows:

$$M_1 = \frac{\sum x}{N_1}$$

M_1 : Mean of the score of experimental class

$\sum x$: Sum of the students' score of experimental class

N_1 : Number of the students of experimental class

2. Determining mean of variable Y, with the formula as follows

$$M_2 = \frac{\sum y}{N_2}$$

M_2 : Mean of the score of control class

$\sum y$: Sum of the students' score of control class

N_2 : Number of the students of control class

3. Determining standard of deviation score variable X, with formula as follows:

$$SD1 = \frac{\sqrt{\sum x^2}}{N1}$$

SDx Standard deviation score of experimental class

4. Determining the standard deviation score variable Y, with formula as follows:

$$SD2 = \frac{\sqrt{\sum y^2}}{N2}$$

SDy: Standart deviation score of control class

5. Determining standard errors of mean of variable X, with formula as follows:

$$SEM1 = \frac{SD1}{\sqrt{N1 - 1}}$$

SEMx : Standard error of experimental class

6. Determining standard errors of mean variable Y, with formula as follows:

$$SEM2 = \frac{SD2}{\sqrt{N2 - 1}}$$

SEMy : Standard error of experimental class

7. Determining standard errors of different mean variable X and variable Y, with formula as follows:

$$EM1 - N2 = \sqrt{SEM1^2 + SEM2^2}$$

8. Determining t_0 , with formula as follows:

$$t_0 = \frac{M_1 - M_2}{SEM_1 - SEM_2}$$

Mx: Mean of the score of experimental class

My: Mean of the score of control class

SEMx: Standard error of experimental class

9. Determining t-table with degree of freedom (df) in significant level 5% and 1% with the formula as follows:

$$Df = (N1 + N2) - 2$$

Df\;: Degree of freedom

N₁: Number of students of experimental class

This research analyzed data to assess the effects of using Poro English Application towards students' pronunciation mastery. Post-test scores from both experimental and control group were collected. Before conducting an independent sample T-test in SPSS 30 for hypothesis testing, it was necessary for first verify data normality and homogeneity of variances between the two groups.

After confirming the data met the assumptions of normality and homogeneity, a t-test was conducted to determine if the significant value was greater or less than α (0.05). if the significant value was less than α (0.05), the null hypothesis (H₀) was rejected, and the alternative hypothesis (H_a) was accepted. Conversely, if significant value was greater than α (0.05), H₀ was accepted, and H_a was rejected.