CHAPTER III

RESEARCH METHODOLOGY

A. Place and Time of the Study

This research will be conducted at Modern Islamic Boarding School Nurul Hakim, located on M. Yakub Street, Bandar Setia, Percut Sei Tuan. The researcher selected this institution as the research site because no similar study comparing the Mimicry Memorization Method and the Proprioceptive Method has been previously conducted there. Thus, this study is expected to provide valuable insights into the implementation of these vocabulary teaching methods in the context of an Islamic boarding school.

The study will employ a quantitative experimental design, which is used to determine the causal effect of a specific treatment under controlled conditions. This design allows the researcher to examine whether different teaching methods lead to significant differences in students' vocabulary mastery. A pre-test and post-test design will be utilized to measure students' vocabulary achievement before and after treatment. The data obtained from both tests will be used to compare the effectiveness of the Mimicry Memorization and Proprioceptive Methods.

There are two main variables in this study: the independent variable and the dependent variable. The independent variables are the Proprioceptive Method and the Mimicry Memorization Method, while the dependent variable is the students' vocabulary mastery. The research will involve two groups—an experimental group and a control group. The experimental group will receive instruction using the Proprioceptive Method, whereas the control group will be taught using the Mimicry Memorization Method. Both groups will be administered a pre-test to determine their initial vocabulary proficiency and a post-test after treatment to identify any improvement.

The research design can be illustrated as follows:

Group	Pre-Test	Treatment	Post-Test
Experimental	O_1	X_1 (Proprioceptive Method)	O_2
Control	O_3	X_2 (Mimicry Memorization Method)	O_4

Table 3.1 Research Design

Where:

- **O_1 and O_3** = Pre-test scores of the experimental and control groups
- **X_1 and X_2** = Treatments using the Proprioceptive and Mimicry Memorization Methods
- **O_2 and O_4** = Post-test scores of the experimental and control groups

B. Population and Sample

1. Population

Population refers to the total number of subjects that become the focus of observation in a study. It represents the entire group of individuals to whom the research findings are intended to be generalized. According to Sugiyono (2014), population is the whole subject or object possessing certain characteristics determined by the researcher.[39] Based on this definition, the population of this study consists of the second-year students at Modern Islamic Boarding School Nurul Hakim.

No	Class	Number of Students
1	XI-A	30
2	XI-B	26
Total		**56**

Table 3.2 Population

[39] Sugiyono. (2014). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D.* Bandung: Alfabeta, p. 117–118

2. Sample

A sample is a portion of the population selected to represent the whole group and used as the source of data for the study. Sampling allows the researcher to draw conclusions that can be generalized to the broader population. This research employed a purposive sampling technique, which means the selection of participants was based on specific considerations and the researcher's judgment regarding their suitability for the research objectives.[40]

The sample of this study consists of two classes of first-year students at Modern Islamic Boarding School Nurul Hakim, namely classes XI-A and XI-B. Each class was chosen because of their similar English proficiency level and accessibility for the experimental treatment. Class XI-A served as the experimental group, while class XI-B served as the control group.

No	Class	Number of Students
1	XI-A	20
2	XI-B	20
Total		40

Table 3.3 Sample

C. Technique of Collecting Data

In this study, the data were collected through a vocabulary test designed to measure students' mastery of English vocabulary. Two types of tests were administered: a pre-test and a post-test. The pre-test was given prior to the treatment to assess the students' initial vocabulary knowledge, while the post-test was conducted after the treatment to determine the improvement in their vocabulary mastery following the implementation of the teaching methods.

[40] Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), p. 1–4.

The vocabulary test consisted of 20 multiple-choice questions that covered the target vocabulary items taught during the instructional sessions. The same set of questions was used for both the pre-test and post-test; however, the order of the items was randomized to minimize memorization bias and ensure test validity. Students were allotted 20 minutes to complete the test, and all answer sheets were collected immediately after the allotted time.

This testing technique was chosen because multiple-choice tests are effective in assessing students' receptive vocabulary knowledge and allow for objective scoring. The results of the pre-test and post-test were later analyzed statistically to identify any significant differences between the experimental and control groups in terms of vocabulary mastery.

D. Research Procedure

The research procedure consisted of two main stages: the teaching procedure (treatment implementation) and the post-test administration. Each stage was carefully designed to ensure the reliability and validity of the data collection process.

1. Teaching Procedure

In the teaching procedure, the researcher applied two different vocabulary learning methods to two groups of students: the Proprioceptive Method for the experimental group and the Mimicry Memorization Method for the control group. Both groups received instruction on the same vocabulary topics but through different teaching strategies according to their assigned method.

During each meeting, students were introduced to a set of new vocabulary items and were required to memorize at least seven new words per session. The researcher provided clear guidance, modelled pronunciation, and facilitated interactive activities aligned with each method. The detailed steps and lesson plans for both methods are provided in the appendix, which includes descriptions of the classroom procedures, learning materials, and time allocation for each stage of instruction.

2. Post-Test

After completing the treatment sessions, a post-test was administered to both groups to measure their vocabulary mastery after the application of the two methods. The test consisted of the same format and difficulty level as the pre-test, ensuring comparability of results. Students were required to answer questions related to the vocabulary items taught during the treatment period. Upon completion, all answer sheets were collected and scored to determine the improvement in students' vocabulary achievement.

The results of the post-test served as the primary data for statistical analysis, aimed at identifying whether there was a significant difference in vocabulary mastery between the students taught using the Proprioceptive Method and those taught using the Mimicry Memorization Method.

E. Data Analysis

After collecting data above, the researcher analysed them to know the comparison between the students‟ achievement that learned with proprioceptive and Mimicry Memoization methods.

For this research experiment quantitative technique was applied to analysis. And before the data was analysed, the author tested the data. The data and the steps are:

1. Descriptive analysis

After the data has been collected, it, then, was used as a pattern below:

a. Finding the mean:

$$\overline{X} = \frac{\sum X}{N}$$

Where :

$\overline{X}$ = mean

$\sum X$ = total score

N = total sample

b. Finding standard deviation

Standard deviation can be required by:

$$SD = \sqrt{\frac{\sum X^2}{N} - \left(\frac{\Sigma X}{N}\right)^2}$$

Where :

SD = standard deviation

$\frac{\sum X^2}{N}$ = each score is squared then summed up then divided

$\left(\frac{\sum X}{N}\right)^2$ = each score is summed up and divided by N

2. Inferential Analysis

a. Normality Test

- Analyzing $X_1, X_2, \ldots\ldots X_n$, standard number $Z_1, Z_2, \ldots\ldots Z_n$ by formulation $Z_{i\ score} = \frac{x_1 - x}{dx}$

  (each of X mean and standart deviation)

- For each standart number by using distribution list of standart normal, then it conducted of chance $F(z_i) = p(Z \leq Z_i)$
- Furthermore, it is counted of proportion $Z_1, Z_2 \ldots\ldots Z_n$ that smaller equal with Z_i.
- Count difference of $F(Z_i) - S(Z_i)$, afterwards determine that absolute values.
- Take the biggest value among difference absolute values. Describe this value by using L_o. If $L_o < L$ that is received from scoring critic values of Liliefors test with standard evident $\alpha = 0{,}05$, so normal distribution data.

b. Homogeneity Test

For testing do both of variants homogeny, using equality test of two variants, is

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

Furthermore, comparing with $F_{variants}$ = Identically, if Fvar < Ftab, both of sample are homogeny[41]

After the writer find out whether both groups have normal distribution and homogeny. The writer will be used validity test to find out the instrument valid or not, and Reliability test to consistency and accuracy in scoring.

c. The Validity

Validity is the most important consideration in developing and evaluating measuring instrument. An invalid or valid instrument has high validity,the instruments are less valid means to have validity.[42]

The formula applied to find out the validity of the test is:

$$P = \frac{\sum R}{\sum T}$$

Where:

P : Index of difficulty

R : Right Answer

T : Number of Sample

d. The Reliability

Reliability is synonyms with the consistency of a test, survey, observation, or other measuring device. Reliability means consistency and accurary in scoring that would have come

[41] Sudjana, *Metode Statistik*, (Bandung :Tarsito,1996), p.250

[42] SuharsimiArikunto,*Prosedur penelitian suatu pendekatan praktik*, (Jakarta: 2010 PT. Rineka Cipta) , p. 173

from one measure which is investigated.[43] Reliability is one of the characteristic of good test. It refers to the consistency of the measurement. The test in this study used writing test form. The scoring of the writing test involved the subjectively, thus find out whether the test was reliable, the writer used the inter-rater reliability.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n(\sum x^2) - (\sum x)^2]\,[n(\sum y^2) - (\sum y)^2]}}$$

Where:

r : The reliability of the test

n : Number of students

∑x : Sum of rate I (R1)

∑y : Sum of rate II (RII)

F. The Technique of Analysing Data

The writer was used t_{test} formula to analyzing the data. t_{test} is used to find whether there is a significant difference between the score of students' English club in vocabulary.

The formula of t_{test} is :

$$t = \frac{X_1 - X_2}{\sqrt{\frac{(\mu_1 - 1)S_2^2}{n_1 - n_2 - 2} \times \left(\frac{1}{n_1} + \frac{1}{n_1}\right)}}$$

The criteria of test $t_{count} > t_{table}$ of 95% and alpha 5% with dk = n-2 then the hypothesis can is acceptable and otherwise if $t_{count} < t_{table}$ it is mean the hypothesis not acceptable.

[43] Ibid, p. 221