CHAPTER III
RESEARCH METHOD

A. Research Design

In this research, the researcher used quantitative research. According to (Creswell, 2014) quantitative research is an approach that tests objective theories by examining the relationship between variables. In this research, the researcher applied an experimental design with one pre-test, post-test and control group to compare with the experimental group (Creswell, 2014). The researcher used this design to find out the difference before and after using Memrise App as a medium to teach vocabulary.

This research used a quasi-experimental approach to the learning process, which clearly separated the experimental and control groups. The experimental group underwent teaching facilitated by the Memrise app, while the control group adhered to the conventional teaching process. The choice of these different techniques was based on the need to ascertain the efficacy of Memrise compared to existing pedagogical methods. Referring to Sugiyono's 2019 research, the structure and delineation of this research was carefully outlined, most likely summarizing variables such as sample size, treatment duration, and assessment criteria. By adopting a rigorous methodology and transparent reporting, this research aims to alleviate concerns.

In this case, the researcher wants to research the achievement of vocabulary comprehension of class V A using Memrise application, while class V B conventional teaching process. Before giving the treatment, the researcher given a pre-test first to find out the achievement of students' vocabulary mastery. After giving the pre-test and knowing the results, the researcher began to provide treatment. Finally, to find out the final results of students' vocabulary mastery achievement after being given treatment, the researcher gave a post-test as the last step to find out the final results of students' vocabulary mastery achievement. By giving the post-test, the researcher find out whether the students' vocabulary mastery achievement has increased or not.

B. Research Variables

Urdan (2016) discussed in Saraswati, E., & Mahriani, (2020) the concept of variables, defining them as attributes of individuals or objects that exhibit variances between different entities. These research variables encompass traits,

characteristics, or values of subjects, objects, or phenomena, which researcher manipulate to observe and analyze outcomes. The fundamental notion underlying variables is that not all entities possess identical attributes or values, and thus, when quantified or measured, they exhibit variability. Consequently, researcher designate these measurable attributes as variables. Within a research context, variables are typically categorized as either dependent or independent. Independent variables, as elucidated by (Yusri, 2020), are factors that influence or impact other variables, known as dependent variables, which in turn are influenced by or contingent upon the independent variables. This differentiation in variables allows researcher to delineate and analyze the intricate relationships between various elements under investigation.

The descriptions of both variables are as follow:

1. Dependent Variable/(y) was vocabulary mastery.
2. Independent Variable/(x) was using the Memrise App.

C. Research Population, Sample and Sampling Technique

1. Population

Population according to (Sugiyono, 2019) is a generalization area that consisting of objects or subjects that have certain qualities and characteristics which are determined by the researcher to study and then draw conclusions. Population is not only humans but also objects and other natural objects. Population is also not just the number of objects or objects studied, but includes all characteristics or properties possessed by the subject or object. The subject or object. The population in this research was fifth grade students of SD Negeri 2 Kalibening which amounted to two classes, consisting of 11 students in class V A and 11 students in class V B. The total research population was 25 students.

2. Sampling Technique

According to Sugiyono (2019) the sample is part of the population that is the source of data in the research, be the source of data in research, where the population is part of the number of characteristics possessed by the population.Number of characteristics possessed by the population. Sampling technique according to Sugiyono (2019) is a sampling technique, to determine the sample to be used. In this research, the sampling technique used based on the population, by using Non-probability sampling with purposive sampling method where the technique in sampling has considerations that have been made. This sample has considerations that have been determined to the

respondents. The researcher delineates a systematic procedure to determine both the experimental and control groups.

a. First, write class V A and V B on a piece of paper.
b. Second, the papers were rolled up and put into a glass.
c. Third, the glass was shaken until a roll of paper came out to determine which class was the experimental class and which class was the control class.
d. The first roll of paper that came out was class V B which would be the control class.
e. The second roll of paper that came out was class V A which would be the experimental class.

3. Sample

According to Sugiyono (2019) suggests that the sample is part of the number and characteristics possessed by the population. Characteristic possessed by the population, so the number of samples taken must be able to represent the population in the research. However, in SD Negeri 2 KaliBening,there are only 2 classes in V grade (V A and V B), Where the researcher use all these classes for the sample of the research.

The researcher obtained class V A as the experimental class group and class V B as the control class group by using the Total Sampling method. Class V B amounted to 11 students who acted as the control class and class V A as the experimental class amounted to 11 students.

Table 3 Table of Sample Research

Experimental Group	11
Control Group	11
Total	22

Source: Data of students of class fifth grade at SD Negeri 2 Kalibening

D. Research Instrument

Research instruments are methods used to measure and collect data in scientific work. Research instruments are very important because they can affect the validity of the data used in research. If it is inappropriate or wrong, it can affect the results of the research. according to Arikunto (2018) esearch

instruments are tools and facilities used by researcher in the collection process so that data collection is easier and the results are more careful, complete, and consistent. The research conducted also be easier to process.

In this investigation, a specific examination method was employed as the primary research tool. The test is elucidated as a written instrument aimed at documenting or observing student accomplishments congruent with the assessment objectives. The researcher undertakes both a pre-test and a post-test, with each serving distinct purposes. Pre-tests and post-tests constitute two variants of formative evaluations designed to gauge student advancement or growth in learning. The pre-test, administered at the outset of the learning journey, aims to establish a baseline understanding, while the post-test, conducted at the culmination of the learning process, seeks to assess the acquired knowledge and skill development.

1. Pre-test

Before doing the treatment, the students given a pre-test to find out their previous vocabulary knowledge. The researcher assessed the participants in the trial before they receive the treatment. There are 20 multiple choice questions. Students get 100 points if they can answer all questions correctly.

2. Treatment

After the implementation of the initial assessment, the researcher proceeded to provide treatment to the students. The purpose of this treatment was to improve students' proficiency in vocabulary acquisition. The treatment entailed the utilization of the Memrise application tailored to the subject under consideration. This treatment took place in four sessions, where the experimental group consisting of students of class V A received the teaching materials explained through the Memrise application. In contrast, the control group consisting of grade V B students received conventional learning delivery without the integration of Memrise application.

3. Post-test

After the researcher provides treatment, students were given a post-test. Just like the pre-test, there are 20 multiple choice questions. The content of this test is different from the previous test but still maintains the same form and quality. Students receive 100 points if they answer all questions correctly. The post-test is designed to assess the success of students' vocabulary acquisition after the treatment.

E. Validity and Reliability

1. Validity

Conducting research should follow the rules of research, so that the results of the research get correct conclusions. One of the processes that are passed is in data collection and measurement by using the validity test.The validity test is carried out to determine whether an instrument is said to be valid or invalid in measuring a research variable.

According to Sugiyono (2019) the factors that affect validity are a measuring instrument (instrument) besides the instrument are the measuring instrument user who taking measurements and the subject being measured. A test or measuring instrument can be said to has high validity if the tool performs its measuring function, or provides results measuring results that are in accordance with the purpose of the measurement.

According to Sugiyono (2013) testing the validity of instrument is divided into 3, namely: (1) Validity testing (1) Testing the validity of construction (construct validity), to test validity of the construction, can be used the opinion of experts (judgment experts). Instruments that have been constructed about the aspects that measured based on certain theories, then further based on a certain theory, then next consulted with experts. (2) Content validity testing content, content validity testing for instruments that test can be done by comparing the content of the instrument with the subject matter that has been taught. (3) External validity testing external validity, the external validity of the instrument is tested by comparing (to find similarities) between the criteria in the instrument and the empirical facts in the field.

In this research, the researcher used face validity to determine whether the measuring instrument used actually measured the concept to be measured. Face validity pertains to the outward appearance and initial impression of the instrument being utilized. Essentially, it gauges whether the test seems to be a suitable measure for its intended purpose. Thus, the test items should accurately reflect the content being assessed. In essence, face validity ensures alignment between the content presented and the expert evaluations. Expert evaluations serve as a crucial component in validating an instrument, aligning its theoretical and contextual framework with its intended application. Assessment by experts carried out in this validity test to test the validity of the instrument to be used. There were two experts who provide an assessment. The experts reviewed the

test instrument regarding how well the test instrument given to students. There were five validation criteria given by experts as follows: (1) Failed, (2) Poor, (3) Fair, (4) Good, and (5) Excellent.

2. Reliability

Reliability test is a tool to measure a questionnaire that has indicators of variables orconstruct (Ghozali, 2024). Reliability test is used to determine the consistency of the measuring instrument, whether the measuring instrument used is reliable and remains consistent if the measurement is repeated. consistent if the measurement is repeated. Measuring tool said to be reliable if it produces the same results even though measurements are taken many times. Reliability is the similarity of measurement or observation results when facts or observations are repeated.Measurement or observation when facts or reality was measured or observed many times at different times. Tools and ways of measuring or observing both play an important role important at the same time. So the reliability test is a test or test to determine the accuracy or the accuracy of the test, meaning that whenever the test is used it given the same results or relatively the same or relatively the same.

In this research, the reliability test used internal consistency which uses the Spearman Brown with SPSS, while the manual calculation used in the Spearman Brown stated by Nurgiyantoro et al. (2015) as follows:

$$r11 = \frac{2.\ rb}{1 + rb}$$

Note:

r11 : reliability coefficient of all items

rb : product moment coefficient between halves

The table of criteria for the reliability test according to Sutrisno (2016) as follows:

Table 4 Score Criteria

Reliability Index	Criteria

$0,81 < r_{xy} \leq 1,00$	Very Good
$0,61 < r_{xy} \leq 0,80$	Good
$0,41 < r_{xy} \leq 0,60$	Quiet
$0,21 < r_{xy} \leq 0,40$	Poor
$0,00 < r_{xy} \leq 0,20$	Very poor

(Sutrisno, 2016)

F. Data collecting technique

In the technique of data collection the researcher used quantitative data or test. The tests were pre-test and post-test. The former was administered at the start of the investigation. This research was conducted in both the experimental and controlled class. The second was the post-test, which was given after the class treatment. This test was offered to both the experimental class and the controlled class. The aim of the test was to determine the progress of student learning and also the effect of the Memrise application. Data collection techniques as follows:

1. **Pre-test**
   a. Measureing the level of students' vocabulary ability before treatment (use of Memrise application).
   b. Creating a test that is appropriate for the grade level and curriculum.
   c. Selecting vocabulary that is relevant and covers a range of difficulty levels.
   d. Giving multiple-choice question types
   e. Soliciting input from linguists or English teachers to ensure content validity.
   f. Administering the test under conducive and controlled conditions.
   g. Ensureing all students understand the instructions and have sufficient time to complete the test.
   h. Then students collect the test results and analyze the scores to determine the initial ability level of each student.
   i. This data used as the basis for measuring improvement after treatment.
2. **Post-test**
   a. Comparing the results of the post-test with the pre-test to assess the effectiveness of the Memrise app.

b. Create a test similar to the pre-test both in format and difficulty level with the vocabulary learned during the treatment.
c. Ensure the post-test is valid and reliable through expert consultation or limited trial.
d. Administer the test under the same conditions as the pre-test to ensure consistency.
e. Ensure all students understand the instructions and test conditions are well maintained.
f. Collect test results and compare with pre-test scores.
g. Interpret the data to draw conclusions about the effectiveness of using memrise in improving students' vocabulary.

G. Data analyzing technique

After the result of pre-test and post-test are known, the researcher analysis the data. The researcher uses requirement test to find the result. Normality andhomogeny test are two part of it.

1. Normality test

The normality test is a procedure that researcher use to determine if there is any discrepancy in data derived from normally distributed populations or in normal dissipation. Then normality testing is an important way before T-test the purpose to know the sample are normality distributed or no in this research the researcher to the analysis ofnormality test used Shapiro-Wilk (Anggara & Anwar, 2017), and the rule is **α = 0.05:**

a. The normality test result < α = 0.05 the data not normally distributed and H0 is rejected.
b. If the normality test result > α = 0.05 the data is distributed normally and H0 is accepted.

2. Homogeneity test

Homogeneity tests were tested by researcher to see if the students were the same or homogeneity.The test to get the student’s scores, the research then reduce the lowest to the highest and a range higher class is more heterogeneous. In this research, the researcher use SPSS application to find out the homogeneity test (Anwar, 2009). Discovering a standard deviation also helps research to find out the different classes, to reach this data the research usd prevent test statistics to apply by rules of **a = 0.05.**

a. If the homogeneity test result < α = 0.05 the data not homogeneous distributed and H0 is rejected.
b. If the homogeneity test result > α = 0.05 the data is distributed homogeneous and H0 is accepted.

3. Hypothesis Test

A statistical hypothesis is a precise speculation that defines a process of generating data regarding the distribution parameters of random variables. There are two hypothesizes in this research that was explained in chapter II above. The first hypothesis tested using Paired Sample T Test and the second hypothesis tested using Independent Sample T Test (Anwar, 2009). The following are the criteria for statistical inferences, which involve two types of t-tests: the t-test represented by t-count and the t-table represented by t-table. The statistical hypotheses of research are:

a. **Ha:** If the value of t-test (t-count) > t-table with a significant degree of 0.05 H0 is rejected and Ha is accepted.
b. **H0:** If the value of t-test (t-count) < t-table (tt) with a significant degree of 0.05 H0 is accepted and Ha is rejected.

CHAPTER IV
FINDINGS AND DISCUSSION

A. General Description

This research aims to find out the effect and significant difference of Memrise application in vocabulary mastery at Class V A of SD Negeri 2 Kalibering. The general description section contains the activities carried out by the researcher in the pre-test, treatment and post-test in the control class and experimental class. A pre-test conducted for both the control and experimental groups to assess their initial vocabulary knowledge. The experimental group received treatment using the Memrise application, while the control group continued with traditional teaching methods. After the treatment period, a post-test was given to both groups to evaluate their vocabulary improvement, allowing comparison of the effectiveness of Memrise with conventional approaches.

1. Pre Test

In this research, the researcher conducted a pre-test on the control and experimental classes in one meeting. The pre-test was conducted on September 2, 2024. In determining students' vocabulary skills, the researcher gave 20 multiple-choice questions. Students were given 45 minutes to complete the multiple-choice questions.

2. Treatment in Experimental Class

The treatment in the experimental class was carried out in 3 meetings. Class V A of SD Negeri 2 Kalibering acted as an experimental class consisting of 11 students. In implementing the treatment, SD Negeri 2 Kalibering gave the researcher time from 7:15-08:00. The first meeting was held on Tuesday, September 3, 2024. At the first meeting, the researcher introduced and explained the Memrise application, chose the introduction basic expression part, and students worked on questions on the Memprise application. The second meeting was held on Wednesday, September 4, 2024. At the second meeting, the researcher asked students to choose the basic part of the name of the day. The third meeting was held on Thursday, September 5, 2024. At the third meeting, the researcher asked students to choose the basic part of the color.

3. Treatment in Control Class

Treatment in the control class was carried out in 3 meetings. Class V B of SD Negeri 2 Kalibering acted as the control class consisting of 11 students. In implementing the treatment, SD Negeri 2 Kalibering gave the researcher time