

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This study employs a quantitative research approach with a pre-experimental design to investigate the effect of the Reciprocal Teaching strategy on students' reading comprehension in English. The pre-experimental design is selected because the researcher uses only one group of participants and does not randomly assign students to different groups. Quantitative research methods can be defined as research methods based on the philosophy of positivism, used to study specific populations or samples, collect data using research instruments, and analyze data quantitatively or statistically with the aim of testing predetermined hypotheses (Sugiyono, 2023).

The research design used in this study is the one-group pre-test–post-test design. A single class serves as the experimental group throughout the study. At the beginning of the research, the students are administered a pre-test to measure their initial reading comprehension ability before the treatment is implemented. Following the pre-test, the students receive treatment through the implementation of the Reciprocal Teaching strategy for a specified period of time to ensure that they experience the complete instructional process of the strategy.

After the treatment has been completed, the students are given a post-test to measure their reading comprehension achievement after being taught using the Reciprocal Teaching strategy. The purpose of administering the post-

test is to determine whether there is an improvement in the students' reading comprehension after the implementation of the strategy. The data obtained from the pre-test and post-test scores are then compared and analyzed using appropriate statistical techniques to examine whether there is a significant effect of the Reciprocal Teaching strategy on students' reading comprehension and to test the research hypothesis.

Tabel 3.1

Procedure of the Experimental Design (One-Group Pre-test–Post-test Design)

Stage	Activities	Purpose	Time
Pre-test (O□)	The researcher administers a reading comprehension test to the students before the treatment is conducted.	To identify the students' initial reading comprehension ability and obtain baseline data before the implementation of the Reciprocal Teaching strategy.	First meeting
Treatment (X)	The researcher teaches reading comprehension by implementing the Reciprocal Teaching strategy. The treatment includes the four main activities of Reciprocal Teaching: predicting, questioning, clarifying, and summarizing.	To provide students with learning experiences using the Reciprocal Teaching strategy and improve their reading comprehension skills.	Several meetings according to the research schedule

Post-test (O□)	The researcher administers the same or an equivalent reading comprehension test after the treatment has been completed.	To measure the students' reading comprehension after receiving the treatment and identify any improvement in their achievement.	Final meeting
Data Analysis	The researcher compares the students' pre-test and post-test scores and analyzes the data using appropriate statistical techniques.	To determine whether the Reciprocal Teaching strategy has a significant effect on students' reading comprehension and to test the research hypothesis.	After all data have been collected

Table 3.2 The Research Design

Pre-test	Treatment	Post-test
O□	X	O□

Notes:

O□: Pre-test administered before the treatment.

X: Treatment using the Reciprocal Teaching strategy.

O□: Post-test administered after the treatment.

B. Population and Sample

1. Population

In quantitative research, the term population refers not only to the number of individuals in a group, but also to the entire generalized area consisting of objects or subjects possessing certain quantities and

characteristics determined by the researcher to be studied and then conclusions drawn. In other words, population encompasses all the properties or characteristics possessed by the objects or subjects of research, not just their numbers (Sugiyono,2023).

In the context of this research, the population consists of all eighth-grade students of SMP Negeri 2x11 Enam Lingkung who are registered as active students during the academic year in which the study is conducted. The population includes all students enrolled in the eighth-grade classes of the school. This population serves as the basis for determining the sample, allowing the researcher to draw conclusions and generalize the findings to all eighth-grade students at SMP Negeri 2x11 Enam Lingkung.

Tabel 3.3 Population of the Research

Class	Number of Students
VIII A	31
VIII B	32
VIII C	32
VIII D	32
VIII E	32
VIII F	32
VIII G	18
VIII H	16
Total	226

2. Sample

In this study, a sample is defined as a portion of the population being studied, including its characteristics. According to Sugiyono, a sample is a portion of the population, as well as its characteristics. A sample is chosen because, when a population is too large, not all members can be studied directly due to time, funding, and personnel constraints. Therefore, sampling is carried out to represent the entire research population.

In this study, the sample consisted of one eighth-grade class at SMP N 1 2×11 Enam Lingkung, specifically class VIII A. This class was selected because it represented the characteristics of the eighth-grade students at the school and had the same curriculum and learning materials as the other eighth-grade classes. The class consisted of 31 students. Class VIII A was selected as the research sample and received the Reciprocal Teaching Strategy to improve students' reading comprehension. Before the treatment was given, the students took a pre-test to measure their initial reading comprehension. After the implementation of the Reciprocal Teaching Strategy, the students took a post-test to determine their reading comprehension achievement and to identify the improvement after the treatment.

3. Sampling Technique

To determine the sample for this study, the researcher used cluster random sampling. According to Sugiyono, a sampling technique is a method or procedure used to determine a sample from a population to be studied, so that the resulting sample can represent the entire population. In this technique, members of the population are divided into groups or clusters based on characteristics or natural units within the population, then the selected groups are randomly selected.

Cluster random sampling was used because the population in this study consisted of students who were already organized into several existing classes. In this technique, each existing class was considered a cluster. The researcher identified all eighth-grade classes at SMPN 1 2X11 Enam Lingkung and randomly selected one class to become the sample of the research. The random selection was conducted through a lottery technique to give each class an equal opportunity to be selected.

According to Sugiyono (2023), cluster random sampling is a technique in which the population is divided into groups or clusters and one cluster is randomly selected as the sample. In this study, the eighth-grade classes at SMPN 1 2X11 Enam Lingkung were treated as clusters, and one class was randomly selected to participate in the pre-test, treatment, and post-test.

C. Instrument

The instrument used in this study was a reading comprehension test that measured students' reading comprehension before and after the implementation of the Reciprocal Teaching Procedure. The reading comprehension test consisted of multiple-choice questions based on English reading texts that were appropriate for eighth-grade students' level and aligned with the current curriculum.

The test items were developed to measure several indicators of reading comprehension, including:

1. Identifying the main idea of the text.
2. Finding specific and detailed information.
3. Understanding the meaning of vocabulary in context.
4. Making inferences
5. drawing conclusions from the text.

The same test format was used for both the pre-test and the post-test to ensure consistency in measuring students' reading comprehension. Before the test was administered, the instrument was validated through expert judgment to ensure its content validity. In addition, the reliability of the test was examined to ensure that the instrument provided consistent and dependable results.

The scores obtained from the reading comprehension test were used as quantitative data for analysis to determine the effect of the Reciprocal Teaching Strategy on students' reading comprehension.

In addition, documentation in the form of photographs of learning activities and students' work was collected as supporting data to strengthen the findings from the test. This instrument provided a comprehensive picture of the effect of the Reciprocal Teaching Strategy on students' reading comprehension skills at SMPN 1 2x11 Enam Lingkung.

D. Data Collecting Technique

In this research, the researcher used several techniques to collect the data. The data were collected through a pre-test, treatment, and post-test. These techniques were intended to measure the students' reading comprehension before and after the implementation of the Reciprocal Teaching Strategy.

1. Pre-test

The pre-test was administered before the treatment process. The purpose of the pre-test was to determine the students' initial ability in reading comprehension. The test was administered to the students in the selected class as a pre-test before the treatment and as a post-test after the treatment. The researcher used a multiple-choice reading comprehension test consisting of several reading passages and comprehension questions.

According to John W. Creswell, a pre-test is used to measure participants' abilities before receiving a treatment in experimental research. The results of the pre-test will help the researcher identify the students' prior knowledge and compare it with the post-test results after the treatment.

2. Treatment

After conducting the pre-test, the researcher provided treatment to the selected class by implementing the Reciprocal Teaching Strategy. The treatment was conducted over several meetings to ensure that the students fully experienced the instructional process and activities involved in the strategy.

During the treatment, the students learned reading comprehension through the four main activities of the Reciprocal Teaching strategy, namely predicting, questioning, clarifying, and summarizing. These activities were designed to encourage students to actively engage with the text, improve their comprehension skills, and enhance their understanding of reading materials through discussion and collaboration.

According to Annemarie Sullivan Palincsar and Ann L. Brown, Reciprocal Teaching is an instructional strategy that encourages students to become active learners through dialogue and interaction in constructing meaning from texts.

Following the completion of the treatment, the students were administered a post-test to measure their reading comprehension achievement after learning through the Reciprocal Teaching Strategy. The results of the pre-test and post-test were then compared to determine the effect of the Reciprocal Teaching Strategy on students' reading comprehension.

3. Post-test

The post-test was administered after the treatment process had been completed. The purpose of the post-test was to determine whether the Reciprocal Teaching Strategy had a significant effect on students' reading comprehension achievement.

The post-test was given to the students in the selected class using a reading comprehension test that was similar to the pre-test. The researcher compared the students' pre-test and post-test scores to identify any improvement in their reading comprehension after receiving the treatment through the Reciprocal Teaching Strategy.

According to L. R. Gay, a post-test is used to measure the effect of a treatment in experimental research by comparing students' achievement before and after the treatment. Therefore, the comparison between the pre-test and post-test scores provided evidence of the effectiveness of the Reciprocal Teaching Strategy in improving students' reading comprehension.

E. Technique Data Analysis

The researcher analyzed the data from the pre-test and post-test by using statistical analysis. The analysis helped the researcher determine the students' average scores, score distribution, and the significance of the difference before and after the implementation of Reciprocal Teaching Strategy.

The researcher calculated the data manually and also use SPSS to support the statistical calculation.

1. Descriptive Statistic

Descriptive statistics were used to describe the students' reading comprehension scores in the experimental class and control class. The researcher calculated the mean score and standard deviation of the students' pre-test and post-test scores.

a. Calculating the Mean Score

The mean score was used to determine the average score of the students.

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

Where:

$\bar{X}$ = Mean score

$\sum X$ = Total score of students

N = Number of students

According to L. R. Gay, the mean score is used to determine the average achievement of students.

b. Calculating the Standard Deviation

The standard deviation was used to determine the spread of the students' scores.

$$SD = \sqrt{\frac{\sum(X - \bar{X})^2}{N - 1}}$$

Where:

SD = Standard Deviation

X = Individual score

$\bar{X}$ = Mean score

N = Number of students

c. Comparing the Mean Difference

The researcher compared the pre-test and post-test mean scores to determine the improvement of students' reading comprehension after the treatment. If the post-test mean score was higher than the pre-test mean score, it indicated that the students' reading comprehension had improved after the implementation of Reciprocal Teaching Strategy.

2. Hypothesis Testing

a. Formulating the Hypotheses

The researcher formulated two hypotheses:

- 1) Null Hypothesis (H_0)

There was no significant effect of Reciprocal Teaching Strategy on students' reading comprehension.

2) Alternative Hypothesis (H_1)

There was a significant effect of Reciprocal Teaching Strategy on students' reading comprehension.

b. Determining the Level of Significance

The researcher used a significance level of 0.05 (5%).

The criteria will be:

- 1) If the significance value (Sig.) is lower than 0.05, H_0 was rejected and H_1 was accepted.
- 2) If the significance value (Sig.) is higher than 0.05, H_0 was accepted.

c. Calculating the t-test

The researcher used paired sample t-test to compare the students' pre-test and post-test scores.

$$t = \frac{\bar{D}}{SD/\sqrt{N}}$$

Where:

t = t-test value

$\bar{D}$ = Mean difference between pre-test and post-test

SD = Standard deviation

N = Number of students

d. Comparing the t-value and t-table

In this step, the researcher compared the obtained t-value with the t-table value at the degree of freedom and significance level of 0.05 ($\alpha = 0.05$).

The degree of freedom was calculated by using the following formula:

$$df = N - 1$$

Where:

df = Degree of number

N = Number of students

The comparison between the t-value and t-table determined whether the hypothesis is accepted or rejected.

- 1) If $t_o > t_t$ (t-value was higher than t-table), it means there was a significant effect of Reciprocal Teaching Strategy on students' reading comprehension. Therefore, the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted.
- 2) If $t_o < t_t$, it means there was no significant effect of Reciprocal Teaching Strategy on students' reading comprehension. Therefore, the null hypothesis (H_0) was accepted.