

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This research will be carried out at SMP Negeri 4 Lembah Melintang which is located in Kampung Juar, Ujung Gading. This research employs a quantitative method. Quantitative research methods are research approaches that employ data collection and analysis in the form of numerical values or variables to address research questions and test hypotheses. The purpose of quantitative research is to provide a clearer understanding of the research phenomenon through the collection of quantifiable data. This method entails designing the research to systematically collect data, employing standardized measurement instruments, and applying statistical analysis to interpret the data.

In addition, this research uses the quasi-experimental design includes two groups: an experimental group and a control group. The students in these groups receive different types of instruction. The experimental group is taught using the Peer Tutoring technique, while the control group is taught using the conventional technique. According to Creswell (2014), the experimental Group A and the control Group B are selected without random assignment. This research used a post-test-only design. Because this research used the post-test-only design, it gave just a post-test to the students, it was given after giving treatment for speaking ability. this design takes the following form:

Table 3.1
Post-test only design

Group	Treatment	Post-test
A	X	O
B	-	O

Where :

Group A : Experimental Class

Group B : Control Class

X= Treatment

O = Post-Test

Table 3.2
Research Schedule

Days	Class	Activity
Tuesday/11-26-2024	Experiment	Treatment 1
Wednesday/11-27-2024	Control	Conventional
Saturday/11-30-2024	Experiment and Control	Treatment 2/ Conventional
Tuesday/12-03-2024	Experiment	Treatment 3
Wednesday/12-4-2024	Control	Conventional
Thursday/12-05-2024	Experiment and control	Treatment 4
Friday/12-06-2024	Control	Post-test
Friday/12-13-2024	Experiment	Post-test

B. Population and Sample

1. Population

The population refers to the group to which a researcher aims to apply the findings of a study Gay (2012). The population of this research is the eighth-grade students at SMP Negeri 4 Lembah Melintang. Another definition of Population is a collection of all elements that possess specific characteristics relevant to the research question being posed and that are intended to be generalized in the study.

Table 3.3
Population of the Students at the eighth grade at
SMP Negeri 4 Lembah Melintang

Class	Amount of the students
VIII-1	20
VIII-2	20
Total	40

Source: English Teacher of SMP Negeri 4 Lembah Melintang

2. Sample

The sample is a part of the population that is selected to represent the whole group. This sample is taken so that researchers can analyze and draw conclusions without having to test the entire population. According to Gay (2012:121), sampling is the process of selecting a group of individuals for a study in a manner that ensures they represent the larger population from which they are drawn. The selection of the sample is done to ensure that it represents the characteristics

present in the population, and enables the research findings to be applied to a broader population.

In this study, the researcher selected classes VIII₁ and VIII₂ as the samples. Additionally, the students in both classes have similar English knowledge because they were taught by the same teacher using the same materials. This study used a total cluster random sampling technique to determine the sample class, the researcher flipped a coin to divide the class into experimental and control groups. The result of the flipped coin determined the class that got the number as the control group and the class that got the picture as the experimental group. As a result of flipping a coin, class VIII.1 was the experiment class, and class VIII.2 was the control class.

C. Technique of Collecting Data

1. Collecting data

Data collection techniques are methods used by researcher to collect information or data needed in a study. Creswell (2014) states that the technique of data collection involves systematic and structured methods for gathering measurable information that can be statistically analyzed. Data collection techniques in this research is test. The researcher collects data through post-test scores, the post-test is administered at the end after doing four meetings treatment to know students' speaking ability, after providing the treatment. Finally, both groups received the post-test to know the student's ability after giving treatment and whether the peer tutoring technique had a significant effect on students' speaking ability or not. The researcher evaluates students' speaking ability by using a speaking rubric by Hughes (2003):

Table 3.4
Indicator Assessment of Speaking by Hughes (2003)

Categories	Criteria		Score
Accent (Pronunciation)	1	Pronunciation frequently unintelligible.	0
	2	Frequent gross errors and a very heavy accent make understanding difficult, require frequent repetition.	1
	3	Foreign accent” requires concentrated listening, and mispronunciations lead to occasional misunderstanding and apparent	2
	4	Marked “foreign accent” and occasional mispronunciations which do not interfere with understanding.	2
	5	No conspicuous mispronunciations, but would not be taken for a native speaker.	3
	6	Native pronunciation, with no trace of “foreign accent.”	4
Grammar	1	Grammar almost entirely inaccurate except in stock phrases.	6
	2	Constant errors showing control of very few major patterns and frequently preventing communication.	12
	3	Frequent errors showing some major patterns uncontrolled and causing occasional irritation and misunderstanding.	18
	4	Occasional errors showing imperfect control of some patterns but no weakness that causes misunderstanding.	24
	5	Few errors, with no patterns of failure.	30
	6	No more than two errors during the interview.	36
Vocabulary	1	vocabulary inadequate for even the simplest conversation.	4
	2	Vocabulary limited to basic personal and survival areas (time, food, transportation, family, etc.)	8

		Criteria	Score
	3	Choice of words sometimes inaccurate, limitations of vocabulary prevent discussion of some common professional and social topics.	12
	4	Professional vocabulary adequate to discuss special interests; general vocabulary permits discussion of any non-technical subject with some circumlocutions.	16
	5	Professional vocabulary broad and precise; general vocabulary adequate to cope with complex practical problems and varied social situations.	20
	6	Vocabulary apparently as accurate and extensive as that of an educated native speaker	24
Fluency	1	Speech is so halting and fragmentary that conversation is virtually impossible.	2
	2	Speech is very slow and uneven except for short or routine sentences.	4
	3	Speech is frequently hesitant and jerky; sentences may be left uncompleted.	6
	4	Speech is occasionally hesitant, with some unevenness caused by rephrasing and groping for words.	8
	5	Speech is effortless and smooth, but perceptively non-native inspeed and evenness.	10
	6	Speech on all professional and general topics as effortless and smooth as a native speaker's.	12
Comprehension	1	Understands too little for the simplest type of conversation.	4
	2	Understands only slow, very simple speech on common social and touristic topics; requires constant repetition and rephrasing.	8
	3	Understands careful, somewhat simplified speech when engaged in a dialogue, but may require considerable repetition and rephrasing.	12

		Criteria	Score
	4	Understands quite well normal educated speech when engaged in a dialogue, but requires occasional repetition or rephrasing.	15
	5	Understands everything in normal educated conversation except for very colloquial or low-frequency items, or exceptionally rapid or slurred speech.	19
	6	Understands everything in both formal and colloquial speech to be expected of an educated native speaker	23

Table 3.5
Weighting Table by Hughes (2003)

	1	2	3	4	5	6
Accent	0	1	2	2	3	4
Grammar	6	12	18	24	30	36
Vocabulary	4	8	12	16	20	24
Fluency	2	4	6	8	10	12
Comprehension	4	8	12	15	19	23
						Total

2. Instrument

Research instruments can also be interpreted as tools for collecting, processing, analyzing, and presenting data systematically and objectively to solve a problem or test a hypothesis. So all tools that can support research can be called research instruments or data collection instruments. Arikunto in Makbul (2021) a research

instrument is a tool selected and utilized by researchers to facilitate data collection activities, making the process more systematic and easier. So instruments are tools used by researchers to collect and measure quantitative information about the variables being studied. As a tool in collecting research data, the quality of the instrument greatly determines the quality of the data collected. Some studies use test instruments to obtain data.

The instrument in this study is an oral test, the speaking test will be tested on students after being given treatment, students are given topics about asking and giving opinions then students speak directly related to the topic, when students speak the researcher will evaluate student scores using the speaking assessment rubric by Hughes (2003) which includes Accent (pronunciation), comprehension, fluency, vocabulary, and grammar.

3. Validity

The researcher used content validity in this study. Content validity is the extent to which a test measures the intended content area. In this study, the researcher asked the validator to conduct a validity test. The instrument was validated by validators Mr. Hidayat Al-Azmi, M.Pd and Miss Lailatul Husna, Ss, M.Pd.

Table 3.4
Blue Print of Test

No	Component of Speaking	Type of test	Topic	Indicators
1	Pronunciation	Oral test	Gadget	

2	Vocabulary,		New Restaurant	a) Students are able to ask for others' opinions by using appropriate phrases.
3	Grammar, Fluency		Favorite Subject	b) Students are able to give clear and structured opinions.
4	Comprehension		Holiday	c) Students are able to respond well to other people's opinions.
5			Birthday Gift	

This study utilizes the speaking indicators outlined by Hughes (2003). This is very helpful in assessing students' speaking abilities as it measures how students improve their English speaking ability. These indicators also include detailed criteria, with each indicator specifying its respective score levels. As a result, this aids in providing a clear scoring system for students' performance.

4. Procedures of Research

This study involved two classes, where at the end of the meeting students underwent a post-test. In the experimental class, students received treatment for four sessions, and took a post-test at the end of the session. Unlike the experimental class, the control class was not given treatment. The stages that the researcher used to achieve the research objectives are as follows:

The first stage, at this stage is the introduction stage regarding peer tutoring techniques, what is peer tutoring techniques and how to apply them during learning, the teacher prepares students to be able to learn with peer tutoring techniques.

Second, at this step at each meeting the teacher provides some explanations about the material first. Next, the teacher divides the students into several groups, each group consists of 4-6 people and one student as a tutor, choose as many tutors

as the number of groups. They are students who have higher achievements, students who are sensitive and have good personalities. and the others as tutees. Furthermore, the teacher lets each group study independently with their group with the guidance of their respective tutors. During the peer tutoring process, the teacher acts as a supervisor and helps if there are problems that cannot be solved by the students.

Third, after the learning process is complete, before closing the lesson the teacher gives feedback and assignments to students to find out whether the tutor has carried out his role well or not. Then the teacher reminds students to prepare for the next lesson at the next meeting. From the explanation above, it can be seen that every step the teacher and students are involved in the activity while students are asked to help each other.

D. Technique of Analysis Data

Data analysis techniques are methods used to process and analyze data that has been collected in research or studies. Data analysis techniques are processes that involve processing, organizing, and interpreting data to produce a deep understanding of the phenomenon under study Creswell (2014). This process is important to ensure that the data collected can be analyzed effectively and produce valid conclusions. This technique aims to uncover patterns, relationships, or meanings that exist in the data collected. Once the data on the student's scores is collected, the researcher examines and analyzes the data. Statistical computations are employed to analyze the data in this study. After the researcher collects the post-

test data, data will be tested by t-test to compare the results of the scores from the experiment and control class.

The t-test in this study was used to test the results of the average difference in scores between the experimental and control classes, whether there was a significant difference or not. Furthermore, the score obtained is the difference between the two classes in post-test scores of each class in the experimental and control groups. After classifying the post-test data, the researcher then used the SPSS 26 program for the normal test, homogeneity test, and t-test. In this study, the researcher utilized the t-test formula to analyze the data.

To determine the influence of peer tutoring techniques on students' speaking ability in asking and giving opinions, the researcher analyzed the data using several steps, namely:

1. Data Description Analysis

Data description refers to the process of presenting and explaining the characteristics of a data set. It involves analyzing and organizing data to provide a better understanding of patterns, trends, and relationships within the data. Descriptive Statistics is the use of measures such as mean, median, mode, variance, and standard deviation to provide an overview of data.

a. Mean

The mean is a measure that represents a data set or the average value, and it is regarded as the value that most closely approximates the actual measurement results. To calculate the mean, you sum all the data values and then divide that total

by the number of data points. For further clarification, the mean can be determined using the following formula:

$$M_x = \frac{\sum x}{N}$$

b. Standard Deviation

Standard deviation measures the spread of data within a sample, indicating how far or how close the data values are to the mean. One of the purposes of the standard deviation formula is to give a summary of the data distribution in relation to the average. The following formula can be used to calculate the data deviation:

$$SD = \frac{\sqrt{\sum x^2}}{N}$$

1. Max

The max function is utilized to show the highest (largest) value or number found within a data cell or range.

2. Min

Conversely, the min function is used to display the lowest (smallest) value or number, serving as the opposite of max contained in a cell/range

3. Range

The range, which is usually given the symbol R , is a statistical measure that shows the distance between the lowest score and the highest score. it can be formulated:

$$R = H - L$$

There was :

R : The range we are looking for

H : The highest score

L : The lowest score

2. Pre-Requisite Data Analysis

a. Normality Test

The normality test is a statistical method used to determine whether data follows a normal distribution or not. The normal distribution, or Gaussian distribution, is a symmetrical, bell-shaped data distribution pattern. The Shapiro-Wilk test is a statistical method used to test the hypothesis that a dataset is normally distributed. This test is very popular because it is sensitive to deviations from normality, especially for small samples. while the Kolmogorov-Smirnov (K-S) test compares a sample distribution with a theoretical distribution (such as the normal distribution) or for comparing two sample distributions. This test measures the difference between the empirical distribution of the data and the expected distribution.

To analyze the normality the researcher analyzed the normality of data by using SPSS version 26 software a formula as follows:
 If significance > 0.05 = data is normal distribution
 If significance < 0.05 = data is not normal significance.

b. Homogeneity Test

A homogeneity test was used to test whether the data from the two groups had the same variant. Like the normality test, this kind of test also used SPSS version

26 software. The researcher used the Levene test to facilitate calculations as follows:

- 1) If $0.50 > \text{sig}$, then the distribution is homogeneous
- 2) If $0.50 < \text{sig}$, then the distribution is not homogeneous.

c. T-test

Furthermore, the data analysis by using T- test formula. The data obtained from final result analysis by following steps:

1. This formula applied to decide mean of students' score in experimental and control class:

$$\bar{x}_1 = \frac{\Sigma F_1 x_1}{\Sigma F_1} \quad (\text{Experimental Class})$$

$$\bar{x}_2 = \frac{\Sigma F_2 x_2}{\Sigma F_2} \quad (\text{Control Class})$$

2. This formula use to decide standard deviation of experimental class:

$$S_1^2 = \frac{n_1 \times \Sigma F_1 x_1^2 - (\Sigma F_1 x_1)^2}{n_1(n_1 - 1)}$$

3. This formula use to decide standard deviation of control class:

$$S_2^2 = \frac{n_2 \times \Sigma F_2 x_2^2 - (\Sigma f_2 x_2)^2}{n_2(n_2 - 1)}$$

The formula of t-test as follows

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$\text{With; } S^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

Where:

t : The value of t calculated / observer / obtained

X₁ : Mean score of experiment sample

X₂ : Mean score of control sample

n₁: The number of subject of experimental group

n₂ : The number of subject of control group

S₁² : Standard deviation of the experimental group

S₂² : Standard deviation of the control group

The t-table employe to see whether there was a significant difference between the mean score of experimental and control class. The value of t-obtained with the value of t- table. The data analys by using simple regression for hypothesis with 5 % = (0.05) of significance level. If the value of t-obtained was bigger than the value of t-table, it means that the hypothesis accept. And, the hypothesis not accept if the value of t-obtained was smaller than the value of t-table.