

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

The design of this research was experimental research, because the researcher wants to know the effect and relationship by implementing the stimulus. According to Gay, the experimental method is the only method which can test truly hypothesis concerning cause and effect relationship (Gay, 1987.p.367). In this research, researcher uses experimental research, that uses two classes consisting of one class control and one class experiment. Generally, researcher in study experiments use two groups: groups that get treatment and group controls that don't get treatment. So, the research focus on using the jigsaw technique as a treatment in the class experiment, and then the writer compared the result with that of class controls that did not get treatment at the end of the of study.

B. The Population and Sample

1. Population

According to Marczyk et al., (2010) a group of individuals having the same characteristic was called as the population. The population of this research was students class 9 MTsN 3 Pariaman which consist of 6 classes contain 180 students. The population of the students was shown on the table below:

Table 3. 1 Population of the Research

Class	Number of students
IX.1	32
IX.2	32
IX.3	32
IX.4	28
IX.5	21
IX.6	20

2. Sample

According to (Creswell & Creswell, 2018) A subgroup of the target population is called as a sample that the researcher's plans to study for generalizing about the target population. The sample of this research consists of 52 students from two classes. Researcher apply the jigsaw technique in class IX.2, but the jigsaw technique is not implemented in IX.6. Before the researcher does this research, it is important to ensure that the two classes had the same characteristics or the same achievement on the verbal test and this was proven by a statement by teacher that at the last exam both classes had almost the same average score. Researcher found that students from IX.6 and IX.2 class have the same characteristics and achievements in the test verbal based on the results of the pretest conducted in both classes.

Table 3. 2 Sample of the Research

NO	Class	Total
1.	IX.2 (experiment class)	32
2.	IX.6 (control class)	20

C. Techniques of Data Collection and Instrument

In research this, the researcher take two classes. One class is for experiments and the other for control. Class experiments will treated with use jigsaw technique, meanwhile, class control will treated with the conventional method.

Before activity teaching, researcher give a pre-test against class experiments and class control. In research, this material is procedure text. In tests like this, the researcher gives a procedure text in class. The procedure text is held For an oral achievement test with five criteria of grammar, comprehension, fluency, vocabulary, and accuracy, was scored by Hughes theory (Hughes, 2003, p.131).

Table 3. 3 Weighting Table

Criteria	1	2	3	4	5
Accent	1	2	3	4	5
Grammar	12	18	24	30	36
Vocabulary	8	12	16	20	24
Fluency	4	6	8	10	12
Comprehension	8	12	16	20	23
Total Score	33	50	67	84	100

In addition, after the teaching process, researcher will give a post-test with a verbal test. it is a test similar to a pre-test. This matter aims for know

is ability speak students significant after using the jigsaw technique.

Finally, the results of individual pre-test and post-test scores are given as research data.

D. Techniques of Data Analysis

The data in this study underwent statistical analysis to examine the effect of the Jigsaw Technique on students' speaking skills. The researcher compared the pre-test and post-test scores between the experimental and control classes. The t-test formula was employed to assess the significance of the Jigsaw Technique on speaking skills. Prior to conducting the t-test analysis, it was necessary to assess the normality and homogeneity of the data. These preliminary steps ensured the validity of the subsequent statistical analysis.

1. Preliminary Test

The preliminary test was conducted as the initial step after collecting all the research data. Its purpose was to assess the quality and suitability of the collected data. This step involved analyzing the normality and homogeneity of the data. The normality test examined whether the data followed a normal distribution, while the homogeneity test evaluated whether the data from different groups exhibited similar variances. These tests provided valuable insights into the data's characteristics and helped ensure the reliability of the subsequent analyses.

2. Normality Test

The process of conducting a normality test involves evaluating whether a given dataset adheres to a normal distribution, also referred to as a bell curve or Gaussian distribution. This examination is crucial in statistics since many statistical methods assume data follows a normal distribution. The procedure typically unfolds as follows: Firstly, data is collected, forming the basis for the analysis. Then, the data is visualized through tools like histograms, providing an initial glimpse of its distribution's shape. Subsequently, various statistical tests come into play. The Shapiro-Wilk test calculates a W statistic to test whether data derives from a normal distribution, while the Kolmogorov-Smirnov test compares cumulative distribution functions. Interpretation of results hinges on p-values obtained from these tests. If the p-value surpasses a chosen significance level, often 0.05, it may be inferred that the data is distributed normally.

3. Homogeneity Test

The homogeneity test, also known as the test for homogeneity of variances, is a statistical procedure designed to evaluate whether the variances of multiple groups are approximately equal. This test holds significance when comparing means or conducting analyses of variance (ANOVA), as many statistical methods assume similarity in group variances. The primary objective of the homogeneity test is to ascertain

the presence of significant differences in variance among the groups, which can impact the validity of subsequent statistical analyses.

The process of conducting a homogeneity test encompasses several sequential steps. Firstly, data is collected from the different groups under examination. This data is then entered into a statistical software, such as SPSS, with careful labeling to differentiate between the various groups. Subsequently, an appropriate statistical test, like Levene's test, is selected for evaluating homogeneity of variances. The chosen test calculates a statistic based on within-group variance, which is then compared to a critical value derived from a specific distribution, often an F-distribution. This comparison aids in determining whether the observed differences in variances are statistically significant.

Interpreting the results involves comparing the calculated test statistic to the critical value associated with a predefined significance level, commonly set at 0.05. If the calculated statistic exceeds this critical value, it indicates significant variance differences between the groups. Conversely, if the calculated statistic falls below the critical value, the null hypothesis is not rejected, implying no significant variance disparities among the groups.

4. t-Test

To assess the impact of the jigsaw technique on students' speaking abilities, a t-test was employed. This test aimed to determine whether the null hypothesis should be accepted or rejected. Specifically,

the researcher utilized the independent sample t-test with a two-tailed test of significance level set at $\alpha = 0.05$ (5%). If the p-value obtained from the test is greater than the significance level ($\alpha = 0.05$), the null hypothesis is accepted. Conversely, if the p-value is lower than the significance level ($\alpha = 0.05$), the alternative hypothesis is accepted. The t-test analysis was conducted using SPSS version 2.5 software. It involved the following steps: first, click on "analyze," then select "compare means," and choose "Independent sample t-test." Next, fill in the test variable with the post-test score, the group variable with "group," and define the group. To define the group, click on the "define group" option and assign "1" to group 1 as the experimental class, and "2" to group 2 as the controlled class. Finally, click "continue" and proceed to click "OK" to complete the analysis. By following these steps, the t-test was conducted to evaluate the impact of the jigsaw technique on students' speaking abilities.