

## CHAPTER III

### RESEARCH METHODOLOGY

#### 3.1. Location of Research

This research was conducted at the Integrated Al-Ulum Islamic Junior High School on the street Tuasan Number 35 Medan, Sidorejo Hilir, Medan Tembung District, Medan City, North Sumatra Province.

#### 3.2. Population and Sample

##### 3.2.1. Population

The population is a generalization area consisting of objects or subjects with specific qualities and characteristics determined by researchers to be studied and then conclude Sugiyono (2009). According to Syaokani (2017), a population is a group of people where the researcher wants to conclude after the research. Based on an understanding of the population, the population in this study were all students class VIII of SMP Islam Al-Ulum Medan consist of five classes. The number of students was 159 students. It can be seen as follow:

**Table 3.1**  
**Population of the research**

No	Class	Student
1	VIII A	31
2	VIII B	28
3	VIII C	32
4	VIII D	28
5	VIII E	32
Total		151

##### 3.2.2. Sample

The sample is part of the number and characteristics possessed by the population Sugiyono (2009). The sampling technique in this study is clustering random sampling. According to Sugiyono (2009), clustering random sampling is

to determine the sample when the object under study or the data source is very broad. The sample take randomly by using lottery technique (Sugiyono:2015).

It was done writing each class on the slip of paper in the box. The box was shaken and two slips of paper were taken. The result of sampling was two classes VIII B consisting of 28 students and VIII E consisting 28 students. So, the total sample was 56 students'. Based on the number of student population of 151 people, a sample percentage of 40% was obtained, which is 56 students.

**Table 3.2**  
**Sample of the research**

No	Class	Student	Method
1	VIII B	28	Experimental class
2	VIII E	28	Control class
Total		56 student	

### **3.3. Research Methods and Procedures**

#### **3.3.1. Method of the study**

This study collected data in three stages: post-test, treatment and pre- test. The researcher employed quantitative methods to examine the acquired data. Quantitative research is research that employs quantitative data and numbers to anticipate future demographics or trends. Quantitative research allows for generalizations of statistically computed outcomes (Mukhid, 2021).

Quasi-experiments feature assignments, but not random groupings of individuals Creswell (2012), it became the researcher's motivation for employing a quasi-experimental approach in this research. To conclude, the researcher employed a quantitative method with a quasi experiment study design to determine the significant influence of collaborative technique on students' ability in writing descriptive text.

The experiment group and the control group are the two types of research samples. The first class is the experiment group, in which students are treated with collaborative writing technique, whereas the second class is the control group, in which students are treated with individual technique. According to Harmer (2007), individual learning occurs when students organize their own learning without the need for a teacher to assist them.

The design in this research is conducted by Ali (1984) as follows:

**Table 3.3**  
**Research Design**

Group	Pre-test	Treatment	Post-test
Controlled	T1	Individual Technique	T2
Experimental	T1	Collaborative Technique	T2

Note:

T1: Pre-test

T2: Post-test

### 3.3.2. Procedures of Research

The method used in this study is a quantitative method, therefore there are three steps in collecting quantitative data, they are:

- Pre-test

The first stage is to give a pre-test to both the controlled and experiment classes before to the class treatment activity. The purpose of the pre-test is to determine the student's prior understanding of producing descriptive text. The pre-test instructions are to write descriptive text freely and they are the ones who determine the theme of their writing.

- Treatment

After administering the pre-test to students, the teacher must treat the experiment class while not treating the control class. The treatment

supplied to the experimental class in this case is the application of collaborative techniques to students. The strategy is being implemented in the student class.

- Post-test

The final task is the post-test. Following the treatment, the students are given a post-test. The post-test will be given to both classes. The purpose of administering post-tests to the experimental and control groups is to assess the effectiveness of the treatment.

### **3.4. Instrument of Study**

The descriptive text writing test was utilized as the research instrument to assess students' writing skills and the effect of applying collaborative techniques. The writing test has two parts: pre-test and post-test. Both classes of samples were asked to create a descriptive text, with a pre-test prior to treatment with the collaborative writing method and a post-test following treatment with the collaborative writing technique. The students were given a pre-test to determine their foundational knowledge of descriptive text, and a post-test to determine how collaborative method improves student writing skills. The writing test questions have been reviewed and approved by both classes' English teachers.

In order to get data, the test must meet certain criteria. The test's validity and reliability are factors being test.

#### **3.4.1. Validity of the Instrument**

Validity is a tool for measuring what should be measured. According to Kimberlin & Winterstein (2008), validity is the extent to which an instrument measures what it promises to measure. The researchers employed content validity to validate the tests in this study. The concordance between the program objectives and the exam objectives is referred to as content validity.

In this study, to determine the level of instrument validity, the product moment formula was used (Sugiyono:2016), namely:

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\{N\sum X^2 - (\sum X)^2\} \{N\sum Y^2 - (\sum Y)^2\}}}$$

Where:

$r_{xy}$  = product moment correlation

N = the number of students

X = question item score

Y = student question score

The price of  $r_{x,y}$  is compared to  $r$  in the product moment criticism table with a significant ce level of 5% if  $r_{x,y} > r_{table}$  then the item is valid. Meanwhile, if  $r_{x,y} < r_{table}$  , then the item is said to be invalid.

### 3.4.2. Reability of the Instrument

Reliability is a trustworthy and consistent test. According to (Sugiyono, 2012), an instrument of reliability is one that delivers consistent results when used to measure the same item multiple times. The measurement results can be said to be reliable if in several times carrying out measurements on the same subject, relatively the same results are obtained, as long as the aspects of the subject being measured have not changed.

After knowing the number of valid items, then procesed with the instrument reliability test which emphasizes the understanding that the questionnaire used in this study can be trusted to be used as a data collection tool.

$$\text{Formula: } r_{11} = \left( \frac{n}{n-1} \right) \left( 1 - \frac{\sum \sigma_i^2}{\sigma_t^2} \right)$$

$r_{11}$  = Instrument reliability

$\sum \sigma_i^2$  = Total variance score of each question

$\sigma_t^2$  = Total variance

To provide an interpretation of  $r_{11}$ , the price of  $r_{11}$  can be compared with rtable the significance level of 5%. If  $r_{11} > r_{table}$ , then the item is reliable. Meanwhile, if  $r_{11} < r_{table}$ , then the item is said to be invalid.

### 3.5. Data Analysis Technique

The study's data was examined statistically, and the writer then compared the students' pre-test and post-test scores from the experiment and control groups. The data is analysis by the required tests, which include normality test, homogeneity test, and T-test. The writer employed the t-test formula to determine the influence of collaborative technique on students' descriptive text writing when assessing the data that was obtained. Before utilizing the t-test to analyze the data, the normality and homogeneity must be determined.

#### a. Normality test

One of the most important tests to do while analyzing research data is the normality test. It investigates the normality of data acquired from the experiment and control classes that have been disseminated. In this study, the test was done by using lilliefors test. According to (Jaya & Ardat:2013), testing the normality of the data obtained in the study used the test steps using the Liliefors test, namely:

1. Make  $H_0$  and  $H_a$
2. Calculate the average and standard deviation with the formula:

$$\bar{X} = \frac{\sum xi}{n} \text{ and } S = \frac{n \sum x^2 - (\sum x)^2}{n-1}$$

3. Every data  $x_1, x_2, \dots, x_n$  is used as a standard number  $Z_1, Z_2, \dots, Z_n$  using the Zscore formula  $= \frac{x_i - \bar{X}}{S}$ , ( $\bar{X}$  and  $S$  are the mean and standard deviation of the sample)

4. For each of these standard numbers, use the standard normal distribution list, then calculate the probability  $F_{(z_i)} = P(Z \leq Z_i)$ . Calculation of probability  $F_{(z_i)}$  can be done using a list of areas under the normal curve.
5. Next, the proportion of  $Z_1, Z_2, \dots, Z_n$  that is smaller or equal to  $Z_i$  is calculated. If this proportion is expressed by  $S(Z_i)$ .

So,  $S_{(Z_i)} = \frac{\text{banyaknyaz1,z2,...,zn yang } \leq z_i}{n}$  to make it easier to calculate this proportion, sort the data from smallest to largest.

6. Calculate the difference  $F(Z_i) - S(Z_i)$  then determine the absolute price
7. Take the biggest price among the absolute prices of the difference. Name this biggest price  $L_0$ .
8. To accept or reject the null hypothesis, we compare this  $L_0$  with the critical value  $L$  for the significance level  $\alpha = 0.05$ . The criterion is accept  $H_0$  if  $L_0$  is smaller than  $L$  table.

#### **b. Homogeneity test**

Following the normality test, the researcher moves on to the homogeneity test. This test is conducted to determine whether the population variance comes from the same population.

1. In this case what is being tested is the similarity of the variances of the two sample populations.

$$H_0 : \sigma_1^2 = \sigma_2^2 \text{ (the data comes from a population with the same variance)}$$

$$H_a : \sigma_1^2 \neq \sigma_2^2 \text{ (the data comes from populations with different variances)}$$

2. The equality of these variances will be tested by the formula (Sugiono:2012)

$$F \frac{\text{variance biggest}}{\text{variancesmallest}}$$

### 3. Examiner Criteria

If  $F_{hitung} < F_{tabel}$  then  $H_0$  is accepted, if  $F_{hitung} \geq F_{tabel}$  then  $H_0$  is rejected and  $H_a$  is accepted. Thus taking  $df = (n_1 - 1)$  with a significant level  $\alpha = 0.05$  or 5%.

### 3.6. Statistical Hypothesis

This study aims to study the effect of collaborative technique on student ability in writing descriptive text. In this research, the researcher uses two hypotheses, namely the alternative hypothesis ( $H_a$ ) and the opposite is the null hypothesis ( $H_0$ ).

The researcher states the hypothesis of this study followed the rule from Sujarweni (2019) as follows:

1. The null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_a$ ) is accepted if the significant value is less than 0.05. This indicates that the use of the collaborative technique in the eight grade of Al-Ulum Islamic Junior High School is effective for student ability in writing descriptive text.
2. The alternative hypothesis ( $H_a$ ) is rejected and the null hypothesis ( $H_0$ ) is accepted if the significant value is greater than 0.05. This indicates that the use of the collaborative technique in the eight grade of Al-Ulum Islamic Junior High School is ineffective for student ability in writing descriptive text.

#### 3.6.1. T-test

Following the normality and homogeneity test, the writer must assess the pre-test and post-test result from the experimental and controlled classes. To determine the difference, the researcher employs a one-way hypothesis test.

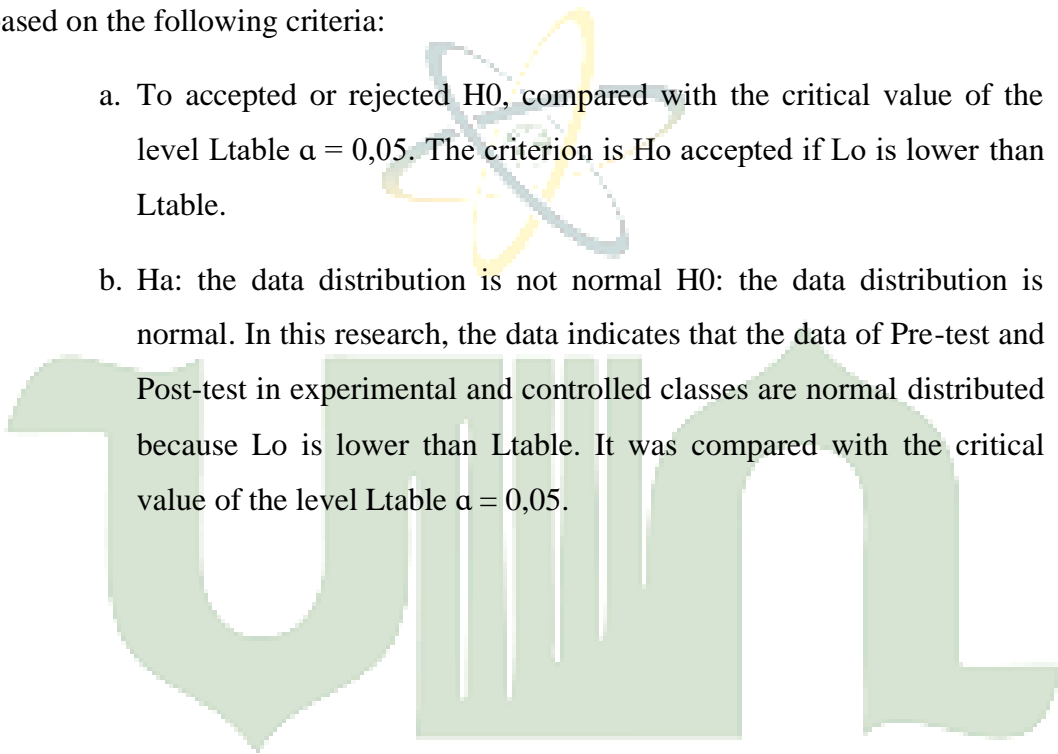
$H_0 : \mu_1 > \mu_2$  (not better the ability of students in writing descriptive texts that are taught with collaborative techniques compared to students who are taught with individual techniques in the eight grade of Al-Ulum Islamic Junior High School)



$H_a : \mu_1 > \mu_2$  (better the ability of students in writing descriptive texts that are taught with collaborative techniques compared to students who are taught with individual techniques in the eight grade of Al-Ulum Islamic Junior High School)

Researchers investigate whether or not collaborative strategies are effective. The t-test is a statistical analysis tool used to assess whether there is a statistically significant difference between two groups' sample means. To decide whether to accept or reject a hypothesis. The lilliefors test is used to determine data normalcy based on the following criteria:

- a. To accepted or rejected  $H_0$ , compared with the critical value of the level  $L_{table} \alpha = 0,05$ . The criterion is  $H_0$  accepted if  $L_o$  is lower than  $L_{table}$ .
- b.  $H_a$ : the data distribution is not normal  $H_0$ : the data distribution is normal. In this research, the data indicates that the data of Pre-test and Post-test in experimental and controlled classes are normal distributed because  $L_o$  is lower than  $L_{table}$ . It was compared with the critical value of the level  $L_{table} \alpha = 0,05$ .



UNIVERSITAS ISLAM NEGERI  
SUMATERA UTARA MEDAN