CHAPTER III
RESEARCH METHOD

A. Research Design

This research used quantitative research. Quantitative research is a kind of research that explained some phenomena with collecting numerical data that analyse by using mathematically based method. (Watson Roger, 2015) states that quantitative research encompassed a range of concerned method with the systematic investigation of social phenomena, by using numerical or statistical data. Therefore, quantitative research involved assumes and measurement that the phenomena from the study can be measured.

In this research, the researcher used pre experimental design (one group pre-test post-test). According to (Arikunto, 2013) research design can be interpreted as a plan structured work in terms of relations between variables in a manner comprehensive in such a way that the results of his research can provide answers for research questions. (Soedibjo, 2005) defines one group pre-test-post-test design as an experimental group which is measured dependent variable or pre-test, then the treatment was given and after that is measured the dependent variable or post-test, without using the control group.

This design involved only one group as the subject and it involved three steps: pre-test, treatment, and post-test. Pre-test distributed before the treatment to know the students' ability in English vocabulary before using animation video. Post-test was distributed after the treatment. During the treatment, the researcher applied animation video as the media in teaching English vocabulary. The design of this research is:

Table 3.1

Research Design

Pre-Test	Independent Variable	Post-Test
Y1	X	Y2

Note:

Y1 : students' achievement on English vocabulary before taught by animation video

X : treatment by using animation video

Y2 : students' achievement on English vocabulary after taught by animation video

There are some procedures of pre-experimental research used one group pre-test and post-test design in this study are described:

1. Distribute the pre-test (Y1) with the aim of measuring the influence of students' English vocabulary before the treatment.
2. Applying the treatment in teaching English vocabulary by using animation video (X).
3. Distribute the post-test (Y2) with the aim of measuring the influence of students' English vocabulary after the treatment.

To find out the influence of this technique for the students' vocabulary mastery, the researcher used comparative technique. Compared the students pre-test and post test score between before and after the treatment.

B. Research Variable

According to (Pierce, 2013) variable is something that may be measured in quantitative research, for example weight, height, wellbeing or attitude. There are two kinds of variable: dependent variable and independent variable. Independent variable can be described as a variable that is affected or to influence another variable. Dependent variable can described as variable that is affected or has become effect by Independent variable. In this study, there are two variables that is used by the researcher, they are independent variable (X) and dependent variable (Y).

Table 3.2

Research Variable

Group	Independent Variable	Dependent Variable
One Group Pretest-Postest	Animation Video	Students' Vocabulary Mastery

Based on the explanation, the researcher concluded that there are two variable in this study, they are X as a (Animation Video) and Y as (students' vocabulary mastery).

C. Population, Sample, and Sampling of the Research

1. Research Population

According to (Sugiyono, 2016) population is structured of the generalization: subject or object that has certain characteristics and quality and set from the researcher to learn and take a conclusion. Therefore, the population of this research was mentally retarded students at eight C class of SLB Wiyata Dharma in the academic year of 2020/ 2021, the class consist of 5 students. The total number of the population is 5 students.

2. Research Sample

Getting sample is important in scientific research because the total number of population usually too much because of the large number of the population. According to (Arikunto, 2002) citied in (Purnama, 2018) if the population of the research is less than 100, then the researcher can take all of the population as the sample. If it more than 100, the researcher can take 10-25 percent from the population as the sample. In this research, the researcher takes one class as a population and sample of this research in terms of less than 100.

In this research, the researcher took one class of SLB Wiyata Dharma Metro in eight C class (mentally retardation class). It consists of 5 students.

3. Sampling

Sampling is the way the researcher selected the number of individuals as a sample that presents the population. (Setiadi, 2013) states that the sampling technique is one of technique to take a sample. In this research the researcher used purposive sampling. According to (Palys, 2008), purposive sampling signifies that one sampling as a series of strategic choices about where, whom, and how one does one's research. This school was chosen by purposive sampling because to apply pre experimental research, the samples should not to be too "bad" or too "good" in their English achievement.

D. Validity and Reliability Testing

1. Validity

Validity can be defined as the extent to which the test measures. According to (Streiner DL, 2008) validity is the stage to which the measurement made by an instrument measures that the researcher is interested in. To measure the test has a good validity, the researcher will analyse the test form face validity. Face validity described as the whether a test appears to be a good measure or not. So, the item of the test should represent the material which being discussed. In the face validity the material given is suitable with the material from the expert assessment.

Expert assessment is conducted to the test validity of an instrument by theoretical concepts and contextual instruments that will use. There are two experts which given the evaluation, namely Mr. Syaifudin Latif D., M.Pd. and Mr. Solihin, M.Pd.I. The experts were reviewer the process that is used in developing the test as well the test and make judgment concerning how well the items represent the intended of the content. The set of equipment which is used to measure the criteria of validation are: 1. Failed, 2. Poor, 3. Fair, 4. Good, 5. Excellent.

2. Reliability

Reliability is a significant characteristic of any good test for it to be valid at all and a test must be reliable as measuring the instruments. (Arikunto, 2013) says that the reliability of the test is an instrument can be believed to be used as instrument for collecting data because it has been good. It means that reliability is needed to know whether the test has a good quality or not.

E. Research Instrument

According to (Sugiyono, 2013) citied in (Azmi, 2016) research instrument is a tool or instrument which used to measure the social and nature phenomena that observed. In this study, the researcher collected the data through distributing the test. Test is one of instrument to measure the student's ability. In this study, the researcher distributed two kinds of test, pre- test and post-test. Pre-test was given to measure the student's ability before the treatment; post-test was given after the treatment. The number of the test is 5 questions containing: 5 image of fruits and the words. The results of pre-test

score and post-test score were compared to know whether there is significant difference between before and after the treatment.

F. Data Collecting Technique

1. Data Collecting Technique

Data collecting technique is an important thing in this study to collect the data that can determine the result of the research. The data collecting technique in this study was done in three steps:

a. Pre-Test

The pre-test conducted before the treatment. There are 5 students joined to the pre-test. The pre-test consist of four questions that show fruits image and the words, the students must choose the correct answer that same with the meaning of the image.

b. Treatment Using Animation Video

After the pre-test was done, the researcher gave the treatment for mentally retarded students. The researcher applied the treatment by using animation video. The material is fruits. Before the video was played, the researcher gave explanation about kind of fruits. Then, the researcher asked the students to pay attention on the animation video. After that, the teacher asked the students to write the new vocabulary that they get from the video.

c. Post-Test

The post-test conducted after the treatment. There were 5 students joined to the post-test. The post-test consist of 5 questions that show fruits image and the words, the students must choose the correct answer that same with the meaning of the image. Total of the question are 5 numbers.

G. Method of Data Analysis

After the researcher collected the data, the data were processed by using t-statistical analysis. Kind of steps for statistical analysis are normality test, testing with gain score test, and hypothesis test. The procedures to treat the data as follow:

1. Normality Test

The object test for normality is to determine the distribution of the data follows a normal distribution or not. One of the test assumptions of the statistic compilation is that the data should fill the qualification of the normal distribution. Analysed the normality of distribution the students' score is crucial. The detail explanation can be seen as follow:

Normality test using the formula Chi-Square (Arikunto, 2013) follow:

a. The hypothesis formula:

H_o : The sample from research population has a normal distribution.

H_1 : The sample from research population has not normal distribution.

b. Statistic formula:

$$x^2_{count} = \sum_{i=1}^{k} \frac{(O_i - E_i)}{E_i}$$

(Arikunto, 2006)

Notes:

x^2 = Chi-square

Oi = frequency observed

Ei = frequency expectations

k = class interval

The criteria of normality test, if $X^2_{count} \leq X^2_{table}$ with dk = k – 3, it means, the data is normal.

2. Gain Score

Knowing an increasing of the student's ability in vocabulary before and after using animation video can be calculated with the formula g factor (normalized gain score).

$$g = \frac{posttestscore - pretestscore}{\text{idealscore} - \text{pretestscore}}$$

Tabel 3.3

Criteria of Gain Score

Gain Score	Category
g ≥ 0,7	High
0,3 ≤ g < 0,7	Medium
g < 0,3	Low

3. Hypothesis Test

After the pre-test and post-test results are known to be normal distribution, the next step is test the hypothesis. The formulation of the alternative hypothesis (Ha) and null hypothesis (Ho) are follows as:

Hypothesis:

1. H_0 : $\mu 2 \neq \mu 1$ There are no influences of animation video toward mentally retarded students' English vocabulary mastery after and before treatment.
2. H_1 : $\mu 2 \neq \mu 1$ There are influences in of animation video toward mentally retarded students' English vocabulary mastery after and before treatment.

After collecting the data, the researcher analysed it in order to find out whether there is influence of using animation video toward mentally retarded student's achievement in vocabulary mastery. Hypothesis testing is intended to see whether the hypothesis that proposed in this research is accepted or not, to testing the hypothesis, Repeated Measures T-test was conducted and the used formula of the test is t-test :

$$t -_{test} = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{S_1{}^2}{N_1} + \frac{S_2{}^2}{N_2}}}$$

Notes:

$\overline{X}_1$ = mean score of experiment class

$\overline{X}_2$ = mean score of control class

S = standard deviation

N_1 = number of the students' in experimental class

N_2 = number of students' in control class

Based on the explanation above, the researcher concluded that the hypothesis is the temporary answer of research question. This assumption may be true or not. When the sample of the data is not consistent with the hypothesis statistical, it means that the hypothesis is rejected, because the test is used to know whether the hypothesis that proposed can be rejected or accepted. The formula which is used in this test is t-test.