CHAPTER III

RESEARCH METHOD

A. Research Design

Research design plays an important role in this research because the researcher that specify how data should be collected and analyzed. The research design uses in this research is experimental research with a quantitative approach. In this research, the researcher uses Quasi-Experimental Design. According to Nursalam (2003, p.89) states that quasi-experimental design is to seek to unravel the causal relation by engaging the experimental group and the control group but not the selection of the two groups were randomized.

There are two kinds of quasi-experiment design, the types are Time Series Design and Non-Equivalent Control Group (Non-Random Control Group Pretest-Posttest Design).In this research, the researcher chooses Non-Equivalent Control Group Design. The experimental research uses two groups, one group as the experimental group and another group as the control group. An experimental group received a new treatment while the control group received the usual treatment. The design of the experiment could be described as follows:

E	O_1	X	O_2
C	O_3	-	0_4

Where:
E = Experimental class
C = Control class
O_1 = Pre-test for experimental group
O_2 = Post-test for experimental group

O_3 = Pre-test for control group
O_4 = Post test for control group
X = Treatment by using video
- =Treatment without video
Adopted from Sugiyono (2017, p.122)

Based on the explanation above, this design is used in this research. This research is conducted at tenth grade of SMK N 1 Metro in academic year 2019/2020.

B. Research Variable

Variable is a constructor character to the study. Sugiyono (2017, p.55) states that variable is anything that formed what established by researchers to be studied in order to obtain information about it, and then take the conclusions. There are two kinds of variables in common. They are the independent and dependent variable. Those variables were:

1. The Independent Variable

Sugiyono (2017, p.57) states that an independent variable is a variable that affects or is the cause of change or emerge the dependent variable. The independent variable in this research is TED Talks Video.

2. The Dependent Variable

Sugiyono (2017, p.57) states that the dependent variable is a variable that is affected or which become due, because of the independent variable. The dependent variable of this research is Vocabulary Mastery.

C. Conceptual and Operational Definition of Variable

1. The Conceptual Definition of Vocabulary Mastery

Vocabulary mastery is one of basic mastery before holding the four skills of English; they are listening, speaking, reading, and writing. The

vocabulary mastery is not a spontaneous process which is easy to be done. The process of vocabulary mastery begins when someone is still an infant. Basically, the baby's first language comes from the mother tongue. They will master the vocabulary through the simple words by listening to the words which are uttered by someone else. It is known that English vocabulary learning cannot run successfully without English ability (English skills) because both of them are very important in English teaching and learning process.

Based on the Indonesia ministry of education and culture in curriculum 2013 (known as K13) the ideal of student's vocabulary mastery for vocational high school is 2000 vocabulary for English lessons (Kemendikbud, 2013: no.65).

2. Operational Definition of Vocabulary Mastery

Vocabulary mastery is score gotten from the students who the test which calculates from the aspect of the vocabulary mastery and when the students have many vocabularies that can be used in English learning by using TED Talks Video.

3. The Conceptual Definition of TED Talks Video

TED is an acronym for Technology, Entertainment, and Design. TED Talks, although typically fewer than 18 minutes long, pack a punch: unique ideas presented with passion. TED Talks are powerful and captivating. They keep you hooked into every word. The speakers on the TED stage are confident and powerful.

4. Operational Definition of TED Talks Video

An Operational definition of TED talks video In this research is the assignments give to the students in the form of a TED video from 5 to 12 minutes, the students will be given one theme as their reference for making the conversation and introduction of your self based on the TED talks video.

D. Research Population and Sample

1. Research Population

The population is composed of the generalization: object or subject that has quality and certain characteristics set by the researchers to learn and then take a conclusion (Sugiyono, 2017: p.130). Then, the population of this research was the students on the tenth-grade students of SMK N 1 Metro in academic year 2019/2020.

Table 3.1. List of Population

No	Class	Number
1.	X. Accounting 1	37
2.	X.Accounting 2	38
3.	X.Accounting 3	36
4.	X. Office Administration 1	36
5.	X. Hospitality 1	33
6.	X. Hospitality 2	35
7.	X. Hospitality 3	34
8.	X. Culinary Program 1	36
9.	X. Culinary Program 2	36
10.	X. BDP 1	36
11.	X. BDP 2	36
12.	X. BDP 3	36
13.	X. UPW 1	34
Total of students		463

Source: Based on the SMK N 1 Metro

2. The Sample of Research

A sample is a part of the sum and a character has in the population (Sugiyono, 2017: p.131). Selection of a sample is a very important step in conducting a research study. A good sample is one that representative of the

population from which selected. It is called sample research when the researcher wants to generalize the sample research result. The researcher selects two groups of students from the population as a sample in this study. The total numbers of the population are 463 students which are divided into fourteen classes. The process of selection would be discussed in the sampling technique.

3. Sampling Technique

In order to get the representative samples, the sampling must be done in the correct way. According to Sugiyono (2017, p.133) state that the sampling technique is one of technique to take the sample. Sampling technique is the way to take the sample of the population. In selecting the sample, the researcher used *cluster sampling*. Sukestiyarno and Wardono (2009) state that if the characteristic of a population is homogeneous and placed in different classes, and in order not to change the class composition which has been homogeneous, the sampling can be done by selecting the class randomly. The steps which are done by the researcher as follows:

a. The whole students of fourteen class likely become the sample of the research.
b. The researcher takes two classes as a sample. Determine which one is the Experimental group, and which one is the Control group.
c. It has done based on the writing down the name of majors in a piece of paper, then the papers are rolled, put into the glass and shaking the glass until getting the rolling of paper out.
d. The first roll of paper will the sample of the subject and the subject of this research is the class of hospitality.

e. The second roll of paper will be opened is the paper with the name of X. Hospitality 2 as the experimental group and the third paper with the name of X. Hospitality 3 as the control group.

Finally, the researcher takes the sample was divided into two groups; Experimental group and Control group. The experimental group consisted of 35 students and the control group consisted of 34 students. Students in class X. Hospitality 2 is taught by using TED Talks Video and considered as the experimental group. While students in class X. Hospitality 3 is taught without TED talks video (using textbook) and considered as the control group.

E. Research Instrument

The research instrument is the most important thing when doing an experiment used to collect the data and for the final goal of the research. According to Sugiyono (2013, p.102) research instrument is a device that used by the researcher while collecting data to make his work become easier and get a better result, complete and systematic in order to make the data easy to be processed. There are three kinds of instrument, such as a test, questioner, an interview. But, in this research, the researcher used multiple-choice tests to measure the result of students' vocabulary mastery before and after treatment. The researcher administered try out to know whether the question test valid and reliable or not to be pre-test. After knowing the reliability, the researcher administers pre-test before treatment, and after treatment, the researcher administers post-test. The type of vocabulary test is a conversation and mention the new vocabulary from the TED Talks video.

Table 3.2. Specification Table of Instrument of Vocabulary Mastery

No	Basic Competence	Indicator	Material/Aspects	Doma-in	Items Program	
					No.Item	No.Qu-est
1.	to express the introduction of your self in short functional written and text is very simple with pay attention in social functions, generic structure of the text and elements of the language correctly and it can be used in the real context.	Students identify Word meaning of some vocabulary.	Word Meaning	C2	1,2,3,4, 5,12,14, 16	8
		Students identify word class of some vocabulary	Verb	C2	9, 10, 11,19, 35,36, 37, 38	8
		Students identify synonym of some vocabulary	Noun	C2	6,7,8,13,15,20,21,40	8
		Students identify the word class of some vocabulary	Adjective	C2	17,18, 22, 23, 32,33,34,39	8
		Students identify the word class of some vocabulary	Adverb	C2	24,25,26,27,28,29,30,31	8
	Total					**40**

Source: Based on the Syllabus of SMK N 1 Metro

1. Determining of Instrument Alternative

The researcher uses a multiple choice test. There are four multiple choices, such as; A, B, C, or D. The students should choose one of them for the answer. There is one the only correct answer and three of them are wrong answers. That was instructed that from the correct answer will be given one point and the wrong answer is zero. So, for determining the score such as:

a. If the students answer the correct answer so will be given 1 point, and the wrong answer is 0. So, if the students get correct answers to all items, it is meant that they get score 1x30 =30.
b. If the students answer all of the items is wrong, so they get a score 0x30= 0. It is meant that the data can use to measure students vocabulary mastery.

2. Scoring Specification of Instrument

Based on the determination of alternative can be made in the guidelines to assign a score to each alternative answer. The determination of score on these multiple choices as follows:

$$S=\frac{R}{n}x100$$

Note:
S: Score
R: Right answer
n: Number of items

F. Validity and Reliability

1. Validity

a. The Concept of Validity

Validity is to measure the extent to which the precision and accuracy of a measurement instrument to measure the data. Validity is

concerned with the study success at measuring what the researcher set out to measure. To measure wheatear the test has good validity, the researcher analyzed the test from content validity. Content validity examines whether the test is a good representation of the material that needs to be tested. This mean, the item of the test should represent the material being discussed. In the content validity, the material given was suitable with the material from the teacher.

b. Expert Assessment

An expert assessment conducted to test the validity of an instrument by theoretical concepts and contextual instrument that will use. There are two experts which give the evaluation. They are Mrs. Fitri Palupi, M.Pd. B.I. as the first validator and Mrs. Suci Lestari, S.S as the second validator, the evaluation of expert is done in order to complete developing instructional capability component, an indicator for each component, description of each indicator and correlation each item with indicator and component to support operational definition.

2. Reliability

Reliability refers to the extension to which the is consistent in its score and it gives an indicator of how accurate the test score is. To measure whether the test has good reliability, the researcher used product moment formula (Arikunto, 2006: p.178).

In this research, the researcher will use *Split half* reliability. The test is administered twice at two different points of time. This kind of reliable is used to assess the consistency of a test across time and for more reliable, the researcher will do some steps:

a. Giving the students exam to the rater.

b. Average equitable assessment result from the odd item and even item.

c. Dividing the score into the first score and second score.

d. Correlating between the first score and second score by using product moment.

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

Where:
rxy = Coefficient between variable X and variable Y
X = Score of odd item
Y = Score of even item
n = Number of subject

The result got from product moment formula was analyzed by using the Spearman-Brown formula as follows:

$$r_{11} = \frac{2\,(r_{xy})}{(1 + r_{xy})}$$

Where:
r_{11} = Coefficient reliability is appropriate
r_{xy} = Coefficient between variable X and Y

The criteria of reliability based on Arikunto criteria as follows:

Table 3.3. The Criteria of Interval Coefficient

Interval Coeffiecient	Criteria
0,00 – 0,199	Very low
0,200 – 0,399	Low
0,400 – 0,599	Medium
0,600 – 0,799	High
0,800 – 1,000	Very High

(Source: Arikunto, 2006: p.216)

Based on the table above, it can be seen that the calculation of reliability is (0.873). It means that the reliability is very high reliable so the test can be used as data collection.

G. Data Collecting Technique

The most important thing in this research is collecting the data that can determine the result of the research. Some technique will be used in collecting data in this research are:

1. Test

In this research, the researcher uses a test to collect data. Brown (2004) states that test is a method of measure a person's ability, knowledge, or performance in a given domain. This test is similar to class progress test in the sense that they are generally based on syllabus and measure what has been taught and learned. The test is an examination or trial to find its quality, value, composition, and etc. Based on the statements above, the researcher conducted the test as follows:

a. Pre-Test

The pre-test is given before the researcher gives the treatment to the experimental group and control group. First, the researcher comes to the class. Then, she explains to the students what they have to do. Finally, she distributes the instruments and asks them to do the test. The type of this instrument is multiple choices, there are 30 items as pre-test instrument. The students must answer the questions. The students answer all questions correctly, they get 100. This score as a first data to know how far the students' vocabulary mastery before treatment.

b. Treatment

Treatment is something given in the activities in the learning process. It is given after pre-test and before post-test. In this research, the researcher uses Ted Talks Video as the treatment in delivering the lesson

to the students. The aim of treatment is to develop the students' vocabulary mastery.

c. Post-Test

Post-test is given after the experimental group and control group have been given treatment. Post-test is used to knowing the students' vocabulary mastery after teaching by using Ted talks video, especially vocabulary video; how far the students understand and remember about some vocabulary that given after giving treatment process is done. In the post-test, the question is multiple choices that consist of 30 questions. The students must answer the question, if the students answer all question correctly, they will get score 100.

H. Technique of Data Analysis

In this research, the researcher explains the procedures of how to analyze the data. There are some steps in analyzing the data. They are normality and homogeneity tests after that hypothesis test. Below is the explanation.

1. Normality Test

It is used to know whether the data of the two classes are normally or not. Normality tests are used to determine whether a data set is well-modeled by a normal distribution or not. Some statistic technique, especially parametric statistic ordered that should be followed normal distribution form. With the hypothesis are:

$H_a = L_{ratio}$ is lower than L_{table} (the distribution of data is normal)

$H_o = L_{ratio}$ is higher than L_{table} (the distribution of data is not normal)

Notes:

H_o = The variance of the data are homogenous

H_a = The variance of the data are not homogenous

2. Homogeneity Test

Homogeneity means the size can use to know the variance of data or homogeneity test is a measurement which can be used to determine a data variation. It has many methods of use to test homogeneity a sample. It is used to know the data are homogenous or not. The formula of the homogeneity test as follows:

$$F = \frac{S_1}{S_2}$$

Note:

S2: The largest variance

S1: The smallest variance

To calculate the homogeneity test is easy to do, below is the procedure of the data calculating:

a. The researcher compares the variance score of data post-test both of experiment group and control group.
b. Next is dividing the biggest variance and smallest variance.
c. The result of that score is compared with significant α = 0,05 and 0,01. If $f_{hit} > f_{table}$ So the data is homogenous.

The criteria are:

Ha = F_{ratio} is lower than F_{table} (The distribution of the data is homogenous)

Ho = F_{ratio} is higher than F_{table} (The distribution of the data is not homogenous)

(Sugiyono, 2010, p.276)

3. Hypothesis Test

This test is used to know whether the hypothesis proposed by the researcher are accepted or rejected. To analyze the data, the researcher used formula T_{test}. Based on Ahmad (2009, p.4) the statistic formula is used:

$$t_{hit} = \frac{\bar{X}_1 - \bar{X}_2}{S_g \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

with $S^2_g = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$

Hypothesis 1

H_a : μ 1 > μ 2 : There is effectiveness of using ted talks video toward students' vocabulary mastery.

H_0 : μ 1 ≤ μ 2 : There is no effectiveness of using ted talks video toward students' vocabulary mastery.

Hypothesis 2

$H_{a:}$ μ 1 ≠ μ 2 : There is a significant difference of using TED talks video toward students' vocabulary mastery

$H_{0:}$ μ 1 = μ 2 : There is no significant difference of using TED talks video toward students' vocabulary mastery

Test Criteria

- If value t_{count}>value t_{list}, so H_0 rejected.
- If value t_{count}<value t_{list}, so H_0 accepted.

(Ahmad, 2011, p.45)

Based on the explanation above, the researcher concludes that statistic hypothesis is an assumption about population parameter. This assumption may or not be true. If sample data are not consistent with the statistical hypothesis, the hypothesis is rejected, because the test will be used to know whether the hypothesis that is proposed can be accepted or reject.