CHAPTER III
RESEARCH METHOD

A. Research Design

According to Creswell (2012), research designs are the specific procedure involved in the research process: data collection, data analysis, and report writing. In other words, research design is the researchers' way to arrange the conditions for collecting the data, analyzing the data, and reporting the result of the research in written form. In this research, the researcher decided to use experimental design to investigate whether or not using pechkucha technique can promote students' speaking skill at Muhammadiah University of Metro. According to Creswell (2012), an experimental design is the traditional approach to conducting quantitative research. In other words, to accomplish a quantitative research, it is needed to use an experimental design.

When conducting an educational research, it is not always possible to select or assign subject at random. The use and applications of various experiments depend on the type of design used. In the case of this research, the researcher decided to use quasi-experimental research because the availability of participants were limited and the number of population in the school was appropriate with the number of sample expected by researcher. Moreover, the researcher decided to choose quasi experimental design because the participants were organized well in the class.

According to Creswell (2012), quasi experiments include assignment, but not random assignment of participants to groups. In this research design, there were two intact groups of classes involved. The researcher gave different treatment to both group, the first group was experimental group which used pechakucha tecnique, while the second group was control group which did not use pechakucha technique. The table of quasi-experimental designs could be illustrated as follows.

Table 3.1

Research Design

Class	Pre-test	Treatment	Post-test
C	O*1*	-	O*2*
E	O*1*	X	O*2*

Note:

E : Experiment Class
C : Control Class
O1 : Pre-test
X : Pecha Kucha
- : Conventional Technique
O2 : Post-test
Sugiyono (2016)

Based on the explanation above the researcher has given the pre-test to know the students' real competence in speaking ability. The researcher conducted the pre-test before the treatment X (Pecha Kucha). After implementing the treatment, the researcher gave a post-test to measurethe students' improvement in speaking English.

B. Research Variable

According to Sugiyono (2016) research variable is an attribute investigation, variable is everything that planed by the researcher to learn. Variable is a constructor character to studied there are two kind of variables in common, they are Indenpendent variable and dependent variable. Indenpendent variable is a variable that is affected or to influence another variable. Dependent variable is a 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 Indenpendent (X) and Dependent (Y) variable.

The researcher conducted Pecha Kucha as an independent variable to indicate the technique and in dependent variable the researcher chose students' speaking skill.The description as follows:

Table 3.2

Research Variables

Group	Independent Variable	Dependent Variable
Experimental Group	Pecha Kucha technique	Students' Speaking Skill
Control Group	-	Students' Speaking Skill

Based on the explanation above, the researcher concluded that there were two variables in this study, they are X as a (Pecha Kucha) and Y as (students' speaking skill).

C. Research Population, Technique Sampling and Sample

In this study, the researcher determined the population, technique sampling, and sampleas follow:

1. ResearchPopulation

Sugiyono (2016) states that population is composed of the generalization object or subject that has quality and certain characteristics set by the researcher to learn and then take a conclusion. Therefore, the population of this research was the students atfourth semester of English department in Muhammadiyah University of Metro in academic year 2020/2021. It consists of 42 undergraduate students of English Departement at Muhammadiyah University of Metro.

Table3.3

ReserchPopulation

No.	Class	Number of Students
1.	A	21
2.	B	21
Total Number of Students'		42

Based on the table, the population of this research is fourth semester at Muhammadiyah University of Metro in the academic year 2020/2021. There are two classes of this semester. The number of students in A class are 21 students and 21 students in B class. Therefore, the total of the population in this research are 42 students.

2. Sampling Technique

Sugiyono (2016) argues that the sampling technique is one of technique to take a sample. Sampling technique is the way for the researcher to take the sample of the population. In conducting the research to get the sample from the population, the researcher used cluster random sampling as the technique. It is the sample selection in which all members of the population are naturally grouped in units, it states by Wiersma and Jurs (2009).The researcher used random selection to determine which the class be the experimental group and the control group.

There are two classes which labeled with A and B class. From these classes, and the researcher took two classes that be the sample of this research. Below the steps done by the researcher:

a. The researcher wrote a number in a piece of paper.
b. The papers were rolled and then put into the glass.
c. The glass has shaken until getting the rolling of paper out.
d. The first roll of paper wasA class as the subject of the experimental class.
e. The second roll of paper wasB class as the subject of control class.

3. ResearchSample

According to Arikunto (2010) sample of the research is a part of the population that has all the main characters from the population. Sugiyono (2016) explains that the sample is a part of the total and characteristics of the population. In this research, the researcher used two classes that B class as the experimental which consist of 21 students, while class A as the control class which consists of 21 students.

Based on the explanation above, it can be concluded that the sample is part of the population. After all the class labeled with A and B, It was a sample of this research where the researcher conduct this study at those classes. Finally, the researcher took two classes in fourth semester of English Education study

program at Muhammadiyah University of Metro in academic year 2020/2021. There are A class A as experimental class and B classas control class.

D. Research Instrument

Instrument of the research is a part of activities to detect the accurate data. Ali in Aisrani (2014) argues that research instrument is equipment that can be used in the research conducted to get the final goal of the research.An instrument is a tool when the researcher administered the research through a certain technique. The researcher gave a test as an instrument in this research. An oral test is used in pre-test and post-test. The pre-test is given to the students to measure their speaking skill before the treatment and the post-test gave to measure their speaking ability after giving the treatment.

After all of the test is reliable then the researcher conducted pre-test before treatment and gave post-test after the treatment. In this study, the type of speaking test in pre-test and post-test is used an oral test.The score of the test is based on criteria on the speaking test rubric, those are pronunciation, grammar, vocabulary, fluency, and comprehension.

E. Validity and Reliability

The validity and reliability of the instrumentexplained by the researcher, validity is supposed to measure the instrument of the test that must be valid. Besides,reliability test refers to the degreewhich a test is consistent and stable in measuring what is intended measure.

1. Validity of Instrument

Validity means that how far the neatness or the coincidentally of the measure instruments in a measuring the data. Sugiyono (2016) Validity is refers to the degree to which a study accurately reflect or assesses the specific concept that the researcher is attempting to measure. Validity is concerned with the study success at measuring what the researcher set out, In this case after the instrumen is constructed about some aspects which are measured based on the particular theory, it can be consulted by the experts.

Arikunto (2010) claims that validity is a standard which shows the degree of validity or valid instruments. Therefore, validity is a tool that can be used to see the validity of an instrument used by the researcher. In this study 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. It means that the item of the test represented by the material that is discussing. The validity instrument was corrected by the validator. There were two experts which gave the evaluation, namely Mr. Refai, M.Pd and Mr. Amirudin Latif, M.Pd. The experts were reviewer the process that is used in developing the test as well the test itself and make judgment concerning how well items represent the intended.

2. Reliability Test

Reliability refers to the extension to which the test is consistent in its score and give an indication of how accurate the test score is. Arikunto (2010) says that the reliability of the test is an instrument can be believed to be used as an instrument for collecting data because it has been good. Based on the explanation above, the measurement of whether the test has good reliability or not.

Reliability of the test shows whether the instrument is reliable and can be used as a device to collect the data. Reliability means the stability of test scores when the test is used. A test is reliable to the extent that it measures consistently, from one time to another.

This research, the researcher tried to find out the reliability after computing the validity of the instrument, to measure the reliability of the test, the formula can be seen below:

$$K = \frac{\Pr(a) - \Pr(e)}{1 - \Pr(e)}$$

Where:

K : Cohen's Kappa Index Value

Pr(*a*) : Relative Observed Agreement

Pr(*e*) : Hypothetical probability of chance agreement

With:

$$\Pr(a) = \frac{a}{n}$$

Where:

Pr(*a*) : Relative Observed Agreement

n : Number of Subjects

Pr (e) = $(n_{i+}$ X $n_{+i})$ + $(n_{ii+}$ X$n_{+ii})$ + $(n_{iii+}$ X$n_{+iii})$ .....

Where:

Pr(*e*) : Hypothetical probability of chance agreement

n_{i+} : Total score of the first category of Inter-rater I

n_{+i} : Total score of the first category of Inter-rater II

n_{ii+} *:* Total score of the second category of Inter-rater I

n_{+ii}: Total score of the second category of Inter-rater II

n_{iii+} *:* Total score of the third category of Inter-rater I

n_{+iii} : Total score of the third category of Inter-rater II

Mary (2012)

The criteria of reliability which based on Sugiyono's criteria as follows:

Table 3.4

Kappa Score Criterion

K Value	Strenght of Agreement
< 0.20	Poor
0.21 – 0.40	Fair
0.41 – 0.60	Moderate
0.61 – 0.80	Good
0.81 – 1.00	Very good

Source: Sugiyono (2016)

Based on the data obtained, it could be seen that the value of Kappa index (K) was 0.600. Then, the K value was consulted to the Kappa score criterion which was presented in Table 1.6. It could be concluded that the reliability of the instrumen is reliable get into moderate category.

F. Data Collecting Technique

The most important thing in this research is collecting the data that can determine the result of the research. Brown in Shofiah (2015) argues that a test is a method of measuring a person's ability or knowledge in a given domain. So, an improvement of students' achievement can be tested by using a test as a method. The researcher used a test to measure students' speaking ability. Kind of test which is used by the researcher is an oral test. The detail explanation can be seen below:

1. Pre-Test

A pre-test is conducted as the preliminary research to identify the students' real competence and problems in speaking learning. A pre-test is done before the treatment process. The researcher took the score to get the first information.The pretest was administrated on , 14th June 2020 at 08.00 - 10.00 a.m. The researcher used Pecha Kucha as a technique to test. The researcher has given the example of Pecha Kucha presentation and after that the students have to perform one by one in front of the class.

The students asked to prepared their performance about 10 minutes, then one by one presents in front of the researcher. They have to show their performance about 6 minutes and 40 seconds. The score of the pre-test is based on criteria on the speaking test rubric, those are pronunciation, grammar, vocabulary, fluency, and comprehension.

2. Treatment

After conducting a pre-test, the researcher gave the treatment to the students. The aim of treatment is to develop the students' speaking ability.The treatment conducted by the researcher in speaking class. The researcher asked the students to have a presentation using Pecha Kucha. Before that, the researcher gave time to the students to prepare their presentation, and after that the students present in front of the class one by one.

3. Post-Test

Post-test is given after giving the treatment in an experimental study or after teach speaking by using Pecha Kucha technique. The aimed is to see how the students improvement in speaking English after giving treatment. The researcher

gave a sequence steps are like pre-test. The score of the Post-test is based on criteria on the speaking test rubric, those are pronunciation, grammar, vocabulary, fluency, and comprehension.

G. Data Analysis Technique

After the researcher collected the data, the researcher analyzed the result of data from pre-test and post-test related both of them through the formulas of normality test, homogeneity test, and hypothesis test.

The procedures to treat the data as follow:

1. Normality Test

Ghazali (2010) states the object test for normality 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 must fulfill the qualification of the normal distribution. Therefore analyzing the normality of distribution the students' score is crucial. The detail explanation can be seen as follow:

Normality test using the formula Chi-quadrateas follow:

The hypothesis formula:

Ho: sample comes from the population that has a normal distribution.

H_1: sample did not come from the population that has not a normal distribution.

Statistic formula:

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

Notes:

x^2 = Chi-quadrate

Oi = frequency observes

Ei = frequency expectation

k = Interval class

The criterion, if $X^2_{count} \leq X^2_{table}$ with dk = k – 3, so, the data is normal.

2. Homogeneity Test

A homogeneity test was applied to analyze whether or not the scores of one group have homogenous variance compared with the score of other groups. In this study, the researcher used F-test by Setiadi (2013). The formula can be seen as follow:

The hypotesis formula:

H_0 : $\sigma_{1^2} = \sigma_{2^2}$ both sample have the quality of variants.

$H1$:$\sigma_{1^2} \neq \sigma_{2^2}$ both sample have different of variants.

The used statistic formula of the test is:

$$F = \frac{biggestvariants}{smallestvariants}$$

The test criterion

Accepted H_0 if $F_{ratio} \geq F\frac{1}{2}\alpha$ (V_1 - V_2), with $V_1 = n_1$-1 and $V_2 = n_2$-1

3. Hypothesis Test

A hypothesis is an assumption about a population parameter. This assumption can be true or not. It is a method of making statistical decisions using experimental data, the best way to determine whether a statistical hypothesis is true would examine the entire population. After collecting the data, the researcher analyzed them in order to find out whether the use of Pecha Kucha technique could increase the students' achievement in speaking related to things in the

classroom.

Hypothesis testing is intended to see whether the hypothesis that is proposed in this research is accepted or not, to test the hypothesis, Repeated Measures T-test was conducted and the used formula of the test is t-test which frames at this below formula:

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

Notes:

$\overline{X}_1$ = the means of the experiment class

$\overline{X}_2$ = the means of the control class

S = the standard devitiation

N_1 = the number of students' in the experimental class

N_2 = the number of students' in the control class

Before using t-test formula the researcher would determine the average variant (S^2)

The variant (S^2) is calculated by formula:

$$S^2 = \frac{(N_1 - 1)S_1^2 + (N_2 - 1)S_2^2}{N_2(N_2 - 1)}$$

Notes:

N_1 = Number of students' in experimental class

N_2 = Number of students' in control class

S_1^2 = Variant of experimental class

S_2^2 = Variant of control class

S^2 = Variant

The criteria are:

H_0 : H_0 is accepted if t-ratio < t-table

H_a :H_a is accepted if t-ratio > t-table

Based on the explanation above, the researcher concluded that the hypothesis is an assumption about a population parameter. This assumption may

be true or not be true when sample data are not consistent with the statistical hypothesis, so the hypothesis is rejected because the test is used to know whether the hypothesis that is proposed can be accepted or rejected. The formula which is used in this test is t-test.