

CHAPTER III

RESEARCH METHOD

A. Research Design

Quantitative research requires a researcher to explain how one variable affects other variable (Creswell, 2012). This research used quantitative research and experimental design as research design. Experimental design includes two variables which are dependent and independent variables. Dependent variable is variable that is affected by experimental. Where independent variable is variable that affects other variable.

An experimental design used in this research is especially Quasi-Experimental Design. In this research, the research conducted pre-test and post-test to find out the result of students' speaking ability before and after being taught using tongue twister strategy.

1. Pre Test

Pre-test to students for the first meeting, to get data on essential speaking skills and to ensure that both groups have the same ability and learn English before they receive treatment. In the pre-test, the experimental group and the control group received the same test.

In the pre-test, the researcher used a test in the form of an oral test in which the students were asked to answer questions given by the researcher regarding the prohibition of littering.

in the pre-test process students were given a picture about the prohibition of littering, then students were given 2 minutes to observe the picture. After observing the picture, students are asked to come forward one by one to answer the questions given by the researcher with a time limit of 5 minutes.

2. Post-test

This study will conduct a post-test at the end of the study. This is done to measure students' speaking ability after being given treatment. It will be give to both experimental and control groups. This is intend to determine the significant difference between the scores of students in the two groups.

In this post-test, the test used is still the same as the pre-test, which is an oral test. However, in this post-test the questions given to students were about bullying.

In the post-test, students were given a picture of bullying, then students were given 2 minutes to observe the picture. After observing, students were asked to come forward one by one to answer the questions given by the researcher with a time limit of 5 minutes.

The table of the research design as adopted by (Sugiyono, 2010) as follows:

Table 3.1

Class	Pre-Test	Treatment	Post-Test
C	O1	-	O2
E	O1	X	O2

Note:

E : Experiment Class

C : Control Class

O1 : Pre-Test

- : Treatment without using Tongue Twister strategy

X : Treatment by using Tongue Twister Strategy

O2 : Post-Test

B. Research Variable

According to Arikunto (2016) variable is research subject or as to focuses some research. The research has two variables examined in this experimental research, they are dependent variable and independent variable. Dependent variable is a variable that emerge in function relationship influence by the independent variable. Independent variable can appear and exist by itself without other supported. It influences and gives special effect independent variable. The description as follows:

1. The Independent variable is Tongue Twister Strategy (X)

2. The dependent variable is Speaking Ability (Y)

In conclusion, there are two variables in this research, they are X (tongue twister strategy) as independent variable and Y (speaking ability) as dependent variables (Arikunto, 2016).

C. Research Population, Sample and Sampling Technique

To do this research, the researcher determined the population, sample and sampling technique

1. Population

Sugiyono (2013) states that 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, 2013). The population of this research is the students' on the eleventh grade MA Muhammadiyah Purbolinggo. There are five classes, those are XI 1 class consists of 20 students, XI 2 class consists of 20 students, XI 3 class consists of 22 students, XI 4 class consists of 21 students and XI BS class consist of 15 students. Then, total of the students on the eleventh grade are 98 students.

2. Sampling Technique

The research use cluster random sampling. According to Sugiyono (2013) the cluster random sampling is area sampling technique that is used to choose the sample if the object or sources of the research are wide (Sugiyono, 2013).

From some classes, the researcher took two classes that will be the sample of this research. Below the steps used by researcher to get result in the sample :

- a. The researcher wrote the class numbers, namely XI 1, XI 2, XI 3, XI 4 and XI BS on a piece of paper
- b. The papers were rolled and then put into glass
- c. The glass is shaken until one roll of paper comes out.
- d. The first paper that came out was XI.
- e. Then, the paper is put back into the glass and shaken again until one roll of paper comes out. The second paper comes out, namely XI 2. In this case, the two

rolls have the same opportunity to become the experimental class and the control class.

- f. The two rolls of paper that have come out are shuffled again to determine the experimental class and control class
- g. The first roll of paper that come out is class XI 1 which will be the experimental class
- h. The second roll of paper that come out is class XI 2 which will be the control class.

3. Sample

A sample of the research is a part of the total and characteristics of the population. In this research, the researcher used two classes that XI 1 class as the experimental class which consist of 20 students, while class XI 2 as the control class which consist of 20 students.

Based on the explanation above, it can be concluded that the sample is part of population. After all the class labeled with XI 3 and XI BS, it will be a sample of this research where the researcher conducted this research at those classes. Finally, the researcher took two classes in eleventh grade of MA Muhammadiyah Purbolinggo. There are class XI 1 as the experimental class and class XI 2 as control class.

D. Research Instrument

According to Sudjana (2014) tests as an assessment tool are questions that are given to students to get answers from students in oral form (oral tests), in written form (written tests), or in the form of actions (Sudjana, 2014). As for Zainal (2016) the test is a technique used in order to carry out measurement activities, in which there are various questions, or a series of tasks that must be done or answered by students to measure aspects of student behaviour (Zainal, 2016).

Based on the opinions of experts regarding the meaning of the test, it can be concluded that the test is a procedure carried out to measure the ability of students whether they have achieved the learning objectives that have been set.

The researcher will be use a test as an instrument in this research. The pre-test will give to the students to measure students' speaking ability

before the treatment and the post-test will give to measure their speaking ability after giving the treatment.

After all of the test is reliable then the reseracher conducted pre-test before treatment and gave post-test after the treatment. In this research, 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 assessment rubric, those are pronunciation, grammar, vocabulary, fluency and comprehension. The students' speaking is recorded by a recorder application on a smartphone. In the pre-test and post-test, students were given two minutes to observe and understand the pictures given by the researcher and then given five minutes to answer the test questions. The pictures and questions that will be used as tests can be seen in appendix.

Table 3.2

Speaking Assessment Rubric

No	Categories	Rating Score	Description
1	Pronunciation		
	Excellent	5	Easy to understand, there is no miss pronunciation and has a native speaker accent.
	Good	4	Easy to understand events with a certain accent.
	Fair	3	There are mispronunciation that makes listeners have to concentrate fully and sometimes there is a misunderstanding.
	Poor	2	It is difficult to understand because there is mispronunciation which often asked to repeat.
	Failed	1	Serious pronunciation problems so they

			cannot be understood.
2	Grammar		
	Excellent	5	There are no grammatical errors.
	Good	4	Sometimes it makes some grammatical errors but does not affect meaning.
	Fair	3	Often make grammatical mistakes that affect meaning.
	Poor	2	Many grammatical errors that hinder the meaning and often rearrange sentence.
	Failed	1	Grammar errors are so severe that the listener is difficult to understand.
3	Vocabulary		
	Excellent	5	Use vocabulary and phrases like native speaker
	Good	4	Sometimes using incorrect vocabulary
	Fair	3	Often using inappropriate vocabulary, conversations are limited due to limited vocabulary.
	Poor	2	Using vocabulary incorrectly and vocabulary is limited so it's hard to understand
	Failed	1	Vocabulary is very limited so the conversation is not possible.
4	Fluency		
	Excellent	5	Speech as fluent like a native speaker
	Good	4	Fluency seems a little disturbed by language

			problems
	Fair	3	Fluency is somewhat disturbed by language problems
	Poor	2	Often hesitated and stopped because of language is limitations.
	Failed	1	Talk is intermittent and stops so the conversation is not possible
5	Comprehension		
	Excellent	5	Understand all of the content without experiencing difficulties
	Good	4	Understand the meaning of nearly everything, even though there are repetitions in certain parts
	Fair	3	Understanding most of what was said, the speaker speaks slowly and there was a slight repetition
	Poor	2	Difficult in following what is said, and repetition often occurs
	Failed	1	Can't understand even though it's a simple conversation

E. Validity and Reability Instrument

1. Validity

According to Arikunto (2010) validity is a standart which shows the degree of validity or valid instrument. So, validity is to know the result of test is good. It means, validity also us a tool that can be used to see the validity of an instrument that will be use by the researcher

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 will be represented by the material that is discussing. in the content validity, the material is given was suitable with the material from the teacher.

There are two expert have given the evaluation, they are Mr. Refa'I, M.Pd as the valuator 1 and Khoirun Nisa, S.Pd as the valuator 2. The experts were reviewer the process that is used in developing the test as well the test it self and make judgment concerning how well items represent the intended the content. The set of equipment which is is used to measure the criteria of validation are (1) Failed. (2) Poor, (3) Fair, (4) Good, (5) Excellent.

2. Reliability

Reliability refers to the extension to which the test is consistent in it is score and give an indication of how accurate the test score is. (Arikunto, 2010) state that the reliability of the test is an instrument can be believed to be ued as an instrument. 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 measure consistently from one time to another.

This research, the research 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 :

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

Where :

K : Cohen's Kappa Index Value

Pr(a) : Relative Observed Agreement

Pr(e) : Hypothetical probability of chance agreement

With :

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

Where :

Pr(a) : Relative Observed agreement

N : Number of subject

$$\Pr (e) = (n_{i+} \times n_{+i}) + (n_{ii+} \times n_{+ii}) + (n_{+iii} \times n_{+iii})$$

Where :

$\Pr (e)$: hypothesis 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 result of reability which based on Sugiyono's criteria as follows :

Table 3.3

Kappa Score Criterion

K Value	Strength 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)

F. Data Collecting Technique

The technique of collecting data have a purposes to get the data by several method. To get the data, the researcher will use test. The technique of data collection explain as follows :

1. Pre-test

The first is pre-test,which conducted in the first step of collecting the data. The pre-test will be given before the researcher give the treatment to the experimental and control group. First, the researcher comes to the class. Then the researcher explain to the students what they have to do. After explaining how the form of the test, students were asked to come forward one by one to answer the questions given by the

researcher orally. The questions given are in the form of giving opinions about "Don't Litter".

2. Treatment

During the class, the teacher divided the students into two groups. Each group was given a chance to practice 10 numbers that consisted of ten tongue twister sentences within three session namely slow, medium, fast. During the treatment, the researcher did not score the students' work as the researcher purposefully gave the tongue twister as the treatment to the students and there was no other material given to the students. Therefore, the researcher also corrected the students' pronunciation when the students made error during the practice.

3. Post-test

The students in both experimental and control groups will give post-test. In this post-test students are given two minutes to observe and understand the pictures given by the researcher and then given five minutes to answer the test questions orally about the picture. The question given are in the from of giving opinioins about "Bullying".

G. Data Analyzing Technique

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

The procedure to treat the data as follow :

1. Normality Test

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 of students' score is crucial. The detail explanation can be seen as follow :

Normality test using the formula Kolmogorov-Smirnov as follow :

The hypothesis formula :

H_0 : Normal population distribution

H_1 : The population distribution is not normal

Statistic Formula :

$$D = \max_{1 \leq i \leq n} \left(\left| F(z_i) - F_{n-1}(x_i) \right|, \left| F(z_i) - F_{n_i}(x_i) \right| \right)$$

The researcher calculated the data with SPSS Version 25.

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 research, the researcher used ANOVA and the researcher calculate the data with SPSS Version 25.

H. Statistic Hypothesis

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 realia 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 :

$$t_{\text{-test}} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

Notes:

\bar{X}_1 = the means of the experiment class

\bar{X}_2 = the means of the control class

S = the standard deviation

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.