CHAPTER III
RESEARCH METHOD

A. Research Design

This research used quantitative research because the data in the form of numerical and statistical analysis. It includes on the experimental research.The types of experimental design used by the researcher is quasi experiment. Creswell (2012:309) says that quasi experiments include assignment, but not random assignment of participants to groups. Quasi experimental design is the development of true experimental design, which has a control group but cannot fully function to control external variables that affect the execution of the experiment. In addition, quasi experimental design is a type of research design that has groups control and experimental groups were not chosen randomly. Researchers use quasi experimental design because in this study there are variables from outside that cannot be controlled by the researcher.

In this research design, there were two groups of classes involved. The researcher gave some steps, they are pre-test, treatment, and post-test. The researcher gave different treatment to both group, the first group was experimental group which used Talking Chips Technique (TCT), while the second group was control group which did not use TCT technique. The table of the research design as conducted by Sugiyono (2010:112) as follow:

Table 3.1
Research Design

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

Note:
C : Experiment Class
D : Control Class
O1 : Pre-test
X : CAI
- : Conventional Technique
O2 : Post-test
(Sugiyono, 2010:112)

Based on the explanation above the researcher has given the pre-test to know the students' real competence in reading comprehension. The researcher

conducted the pre-test before the treatment X (TCT). After implementing the treatment, the researcher gives a post-test to measure the students' speaking ability.

B. Research Variable

According to Sugiyono (2016:38) 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. Indenvendent 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 ''Talking Chips Technique (TCT)'' as an independent variable to indicate the students' speaking score, and in a dependent variable the researcher chose "students' speaking ability". The description as follows:

Table 3.2

Research Variables

Group	Independent Variable	Dependent Variable
Experimental Group	TCT technique	Students' Speaking Ability
Control Group	-	Student' Speaking Ability

Based on the explanation above, the researcher concluded that there are two variable in this study, they are X as a (TCT) and Y as (students' speaking ability).

C. Research Population, Technique Sampling and Sample

1. Research Population

Sugiyono (2016:80) 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 on the eleventh grade students of in academic year 2019/2020. It consists of 245 students of MAN 1 Poncowati Lampung.

Table 3.3
Reserch Population

No.	Class	Number of Students
1.	XI IPS 1	35
2.	XI IPS 2	35
3	XI IPS 3	35
4	XI IPS 4	35
5	XI IPA 1	35
6	XI IPA 2	35
7	XI IPA 3	35
Total Number of Students'		245

(Source: By English Teacher of the eleventh grade of MAN 1 Poncowati Lampung*)*

Based on the table, the population of this research is the eleventh grade of MAN 1 Poncowati Lampung in the academic year 2019/2020. There are seven classes of this grade. The total of the population in this research is 245 students.

2. Sampling Technique

Setiadi (2013:81) 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. It is the sample selection in which all members of the population are naturally grouped in units, it states by (Wiersma and Jurs, 2010:355). The researcher used random selection to determine the class of the experimental group and the control group.

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

a. The researcher wrote a number of classes from A until G 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 was C class (XI IPS 3) became the subject of the experimental class.
e. The second roll of paper was D class (XI IPS 4) became the subject of the research as control class.

3. Research Sample

According to Arikunto (2010:173) sample of the research is a part of the population that has all the main characters from the population. Sugiyono (2010:124) explains that the sample is a part of the total and characteristics of the population. In this research, the researcher used two classes that XI IPS 3 class as the experimental which consist of 35 students, while class XI IPS 4 as the control class which consists of 35 students.

Based on the explanation above, it can be concluded that the sample is part of the population. After all the class labeled with XI IPS 3 and XI IPS 4, It has become a sample of this research where the researcher conduct this study at those classes researcher took the ips class because the population in the ips class is more than in the other XI class . Finally, the researcher took two classes in the eleventh grade of MAN 1 Poncowati Lampung in the academic year 2019/2020. There are class C as an experimental class and class D as a control class.

D. Research Instrument

1. Kinds of Research Instrument

Instrument of the research is a part of activities to detect the accurate data. Ali in Aisrani (2014:28) 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. The pre-test is given to the students to measure their speaking skill before the treatment and the post-test given 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 reading test in pre-test and post-test is used an oral test.The score of the test is based on criteria on the reading test rubric, those are main idea , context, reference, fact, conclution.

E. Validity and Reliability

1. Validity

Sugiyono (2012:177) 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 (2010:211) 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 that will be 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 will be represented by the material that is discussing. The validity instrument was corrected by the validator. Ther experts which gives the evaluation, namely Mr.Tiza Octa Kurniawan,S.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

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 (2010:221) 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.

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 reliability test is calculated by the formula as stated by Arikunto (2006, p:148) as follows :

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

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 :276)

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, 2013)

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 4.3. 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. According to Robert and Dennis (2012: 6) argues that tests are a measurement technique used to measure behavior or help understand and predict behavior. Furthermore, an improvement of students' achievement can be tested by using a test as a method. The researcher used a test to measure students' reading comprehension. The detail explanation can be seen below:

1. Pre-Test

A pres-test is conducted to identify the students problem in speaking learning. Pretest is gives to the students before get a treatment. the researcher gave the pretest to the students to speaking before using TCT technique. The pretest was administrated on , 15th March 2020 at 08.00 - 10.00 a.m..

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 XI IPS 3 class. The following is a description of the steps of using TCT technique .

a. Researcher makes group according to the topic in each group consist of 5 until 10 students.
b. Researcher provides an explanation of the material about giving asking opinion and suggestion expression using TCT..
c. Researcher give a topic and chips will be used.
d. Researcher gave the time 1 minutes for every students in the group to speak according to the topic in giving asking opinion and suggestion expressions until all of the students.
e. Directing students' to make conclusion in learning process

3. Post-Test

Post-test has been given after giving the treatment in an experimental study or after teaching speaking by using 'Talking Chips Technique. The aim is to see how the students speaking ability after giving treatment. The researcher gave a sequence steps is like pre-test. The score of the post-test is based on criteria on the speaking test rubric, those are pronuncition, grammar, vocabulary, comprehension, and fluency.

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

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 Arikunto (2010:273)follow:

a)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.

b)Statistic formula:

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

Arikunto (2006:273)

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. The formula can be seen as follow:

a)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.

b)The used statistic formula of the test is:

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

c)The test criterion

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

(Setiadi, 2006:249)

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 TCT could increase the students' achievement in reading 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.