CHAPTER III
RESEARCH METHOD

A. Research Design

The researcher will be use Quantitative Method. Quantitative research is a type of educational research in which the researcher decides what to study , asks specific, narrow questions, collects quantifiable data from participants, analyzes these numbers using statistics, and conducts the inquiry in unbiased, objective manner. Quantitative data typically is in numerical form such as averages, ratios or ranges. According to Creswell (2012) Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue. In this study, the researcher use experimental research. Experimental research is also a form of research based on how the survey was conducted. Experimentation is a way of knowing causality. Intentionally increased by researchers and known effects process.

In this study the researcher used an Experimental Design especially used Quasi Experimental. A quasi-experimental design identifies a comparison group that is most similar to treatment grouping on baseline characteristics (pre-intervention). The comparison group consequences if the program/policy were not implemented (i.e. counterfactual). The researcher will compare two media of teaching reading. So, the researcher will involve two classes as the objects namely XII IPA 1 and XII IPA 4 classes. In this case the researcher would like to examine the reading comprehension achievement class of XII IPA 1 by using digital media, while the XII IPA 4 will investigated by using print media. In this research, the researcher use non-equivalent XII IPA 4 design. It means that, before giving the treatment, the researcher will give the pre-test first to know the students reading comprehension achievement. After giving pre-test and know the result, the researcher start to give the treatment. Finally, to know the final results of the students reading comprehension achievement after the treatment is given, the researcher give the post-test as the final steps to know the final results of the students reading comprehension achievement. By giving the post-test, the researcher will know that the students reading comprehension achievement were increasing or not.

B. Research Variable

According to (Arikunto S., 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. The independent variable is the antecedent, the dependent variable is the outcome. If the independent variable is the active variable, manipulate and explore variable values affect on another variable. While the dependent variable is the variable that is affected by independent variables.

1. Independent Variable

   The independent variables of the research are print media and digital media which is symbolized by X_1 (print media) and X_2 (digital media).

2. Dependent Variable

   The dependent variable of tyhis research is the students reading comprehension achievement which is symbolized by Y.

C. Research Population, Technique Sampling, and Sampling

   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.The population of this research is the students of class XII MAN 1 Lampung Timur. There is a tweleve science class consists of 4 classes. For class XII IPA 1, class XII IPA 2, class XII IPA 3 and class XII IPA 4 . The total of students in class XII IPA is 135 students.

   2. Sampling Technique

   The researcher will 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. In this research, the researcher will choose two classes from all the population Tweleve Grade Sains class at MAN 1 Lampung Timur.

   Below the steps used by researcher to get result in the sample :

   a. The researcher wrote the class numbers, namely XII IPA 1, XII IPA 2, XII IPA 3, and XII IPA 4.

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 XII IPA 4.

e. Then, the paper is put back into glass and shaken again until one roll of paper comes pout. The second paper comes out, namely XII IPA 1.

f. The two rolls of paper that have come out are shuffled again to determine the digital media and print media.

g. The first roll of paper that come out is class XII IPA 1 which will be the digital media.

h. The second of paper that come out is class XII IPA 4 which will be the print media.

3. Sample

In this research , the researcher use two classes that XII IPA 1 class as the experimental class which consist of 20 students, while class XII IPA 4 as the control class which consist of 20 students. Based on the explanation above, it can be conclude that of all class XII IPA researchers only used 2 classes in their research. which is 2 class 12 IPA MAN 1 Lampung Timur.

D. Research Instrument

In this research, the researcher used a multiple choice test, there are two instruments to complete the data. the first one is pre-test and the second one is post- test.

1. Test

a. Pre-Test

In this pre-test, it will be given to class XII IPA 1 and XII IPA 4 before giving treatment. This test is given to know the students reading comprehension achievement. This test is the form of multiple choice, where students can choose one of the answer between A,B,C,D, or E.

b. Post-Test

In this post- test, it will be given to class XII IPA 1 ad XII IPA 4 after doing the treatment. The purpose of this test to determine the

students reading comprehension achievement after the treatment is given. The form of the test for the post test is the same as the pretest.

E. Validity and Reability

1. Validity

A measurement can be said to be valid when the object being measured meets the criteria. It means the accuracy of a measurement in measuring data. The formula that will be used by correlation pearson product moment is follow :

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

Where :

r_{xy} : Coefficient correlation pearson product moment

N   : Number of the students

$\sum$: Sum

X   : The first half items of the test

Y   : The second half items of the test

X^2 : Deviation X

Y^2 : Deviation Y

The criteria are :

a. If r ratio is bigger than r table, H_0 rejected. It means that the data variable is valid.

b. But if r ratio smaller than r table, H_0 is accepted. It means that the data variable is valid.

2. Reliability

Reliability is meant the stability of the test score. According to the external, the testing can be done with stability, equivalent and combination both them. Then internal, the reliability of instrument can be examined to analyze the consistency of items which are in the instruments with the technique. When the rating of coefficient comes near 1, the test have high reliability. In this research, the researcher will use internal consistency to get the reliability of the instruments. The result of

the analysis can be used to predict the instruments reliability. The coefficient of the reliability for all of the items, correlation include Spearman-Brown formula :

$$r_{1=\frac{2.r_b}{1+r_h}}$$

Where :

r_1 : The internal reliability of all instrument

r_h : Correlation of the product moment between first and second items

F. Data Collecting Technique

The technique of collecting data have a purposes to get the data by several method. Explained as a follows :

1) Pre – Test

The first is the pre test, which in the pre test is given to two classes, namely the class XII IPA 1 and XII IPA 4, this test is carried out before being given treatment. Students will be given 30 questions and only choose one answer A, B, C, D, or E.

2) Post – Test

Post test is a final test that is carried out after the treatment is given. In this post test, the researcher know the differences beetwen students reading comprehension achievement using print media and digital media.

G. Data Analyzing Technique

After the researcher got the data and analyzed the data from the results of the pre-test and post-test related to both,through the formulas of normality test, homogeneity test and hypotheses test.

The procedure for processing data is as follows:

1) Normality Test

One of the best assumptions of statistic computation was that the data must sufficient the qualification of normal distribution. Here is the formula :

$$X^2 hit = \sum_{i-1}^{n} \frac{(O_{1-}E_1)^2}{E_1}$$

The criteria of testing :

Reject Ho If = $x^2_{hit} \geq x^2_{daf}$

Where $x^2_{daf} = x^2 (1 - \alpha)_t (K - 3)$

2) Homogenity Test

Homogenity test is a measurement that used to determined the varieties of the data. Here is the formula :

$$f = \frac{S^2 (The\ highes\ variance)}{S^2 (The\ highes\ variance)}$$

3) Hypothesis Test

This test is used to know whether the hypotheses porposed by the writer are proved or not. Here are the formulas :

$$t_{count} = \frac{\overline{x_1} - \overline{x_2}}{s_g \sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}}$$

In which:

$$s_g^2 = \frac{(n_1 - 1)s^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$$

Notes :

$\overline{X}_1$: Mean of experimental class

$\overline{X}_2$: Mean of control class

n_1 : The number of derivation in experimental class

n_2 : The number of derivation control class

S_1 : The standard of deviation of experimental class

S_2 : The standard of deviation of control class

S_g : The standard deviation of the combined

Hypothesis Statistic

The principle are :

Nol hypothesis : ($H_0 : \mu_1 = \mu_2$) $\longrightarrow$ there is no different

Alternative hypothesis : (H_a: $\mu_1 \neq \mu_2$)   different

In which :

H_0 : $\mu_1 = \mu_2$ (There is not different of students reading comprehension achievement by using print media and digital media).

H_a : $\mu_1 \neq \mu_2$ (There is any different of students reading comprehension achievement by using print media and digital media).

H_0 : $\mu_1 = \mu_2$ (Print media is not effective than digital media).

H_a : $\mu_1 = \mu_2$ (Print media is more effective that digital media).