CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

According to Gay *et.al*., (2012:227) causal-comparative design isthe researcher attempts to determine the cause, or reason, for existing differences in the behavior or status of groups or individuals. In other words, established groups are already different on some variable, and the researcher attempts to identify the major factor that has led to this difference. This research will be conducted by using pre-test and post-test.

There are three variables in this research, first is audio media as independent variable 1 (X_1), audio-visual media as independent variable 2 (X_2) listening comprehension as the dependent variable (y variable). Therefore, both experimental classes will be provided with pre-test, treatment, and post-test.

Table III.1
Research Design

Groups	Pre test	Treatment	Post test
A 2	O1	X1	O2
A 4	O3	X2	O4

Notation:

O_1 = Pre-test group Audio media

O_2 = Pre-test group Audio-visual media

O_3 = Post-test group Audio media

O_4 = Post-test group Audio-visual media

X_1 = Intervention with Audio media

X_2 = Intervention with Audio media-visual media

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B. Subject and Object of the Research

The subject of this research is the tenth grade students' of State Senior High School 1 Kampar, Kampar regency. The object of this research is the comparison of students' English proficiency between using audio media and audio visual media.

C. Location and Time of the Research

This research was conducted at the tenth grade students of State Senior High School 1 Kampar from October to November2016.

D. The Population and Sample of the Research

The population of this research was the tenth grade students of State Senior High School 1 Kampar, Kampar regency. There are 4 classes of Science class (MIA) and 4 classes of Social class (MIS). In science class, there were 4 classes. X MIA 1, X MIA 2, X MIA 3, and X MIA 4. And for Social class there were 4 classes, X MIS 1, X MIS 2, X MIS 3, and X MIS 4.

Table III. 2
Distribution of the Research Population

No	Class	Population
1	X A 1	36 Students
2	X A 2	35 Students
3	X A 3	37 Students
4	X A 4	35 Students
5	X S 1	38 students
6	X S 2	37 Students
7	X S 3	38 Students
8	X S 4	36 Students
Total		**293 Students**

Considering that this population of the research is bigger, thus the writer should take some sample of the population of the research. In this research, the writer used cluster random sampling technique. According to Gay *et. al.* (2012:123) cluster random sampling technique is the process of selecting a sample in such a way that all individuals in the defined population have an equal and independent chance of being selected for the sample. Cluster random sampling technique is most useful when the populations are very large or spread out over a wide geographic area. So, the writer used cluster random sampling in choosing the sample. Cluster random sampling selects groups, not individuals.

Based on the explanation above, to find out the sample, the writer usedlottery by passing out small rolled paper marked by sequence name of the class, they are XA^1, XA^2, XA^3, XA^4, XS^1, XS^2, XS^3, XS^4 Then after passing out the paper, the samples of this research are X^2 as experiment class 1 and X^4 as experimental class 2. The specification of the sample can be seen on the table below:

Table III. 3
Sample of Research

Class	Male	Female	Total
X A2	12	23	35
X A4	13	22	35

E. The Technique of Collecting Data

In order to get some data needed to support this research, the writer was used technique observation and some test such as pre-test and post-test. And test

was used to measure the data of students' English proficiency especially in listening skills.

In this research, the writer used test instrument to collect the data needed.

1. Test

This technique was used to measure the students' English proficiency, to collect the data it is divided into two:

a. Pre-test

Pre-test was given in the beginning or before the treatment. It is given to every participant both experimental group 1 with audio media and experimental group 2 with audio-visual media. It was used to find out if they were in same level at the starting point or not.

b. Post test

Posttest was given to students after giving treatment of the using audio and audio-visual media to the class. This test was used to know the effect the treatments given to the students whether it makes difference or not in students' English proficiency at the tenth grade of State Senior High School 1 Kampar, Kampar Regency.

Table III.4
Blueprint of the test

No	Statements	Position of the number
1	Comprehend the surface structure elements	3,6,10,12,15
2	Understanding pragmatic contents	1,2,5,7,9
3	Determining meaning of auditory input	4,9, 16, 18, 19,20
4	Developing gist, aglobal or comprehensive understanding	8,11,13,14,17

2. Validity

Every test, whether it is a short, informal classroom test or a public examination should be as valid as the test constructor can make it. According to Gay, et al., (2012:160) validity refers to the degree to which a test measures what it is supposed to measure and, consequently, permits appropriate interpretation of scores.The test must aim at providing a true measure of the particular skill intended to measure. There are three kinds of validity that consist of content validity, construct validity, and empirical validity.

To obtain the data about to compare the result of the test of Audio media and audio visual media on students' English proficiency, the writer acquired to use content validity. It will be used based on the most important characteristic of an item to be accurately determined by its difficulty. Then, the test given to students will considerate not too difficult or not too easy than often show the low reliability. Item difficulty is determined as the proportion of correct responses. This is held pertinent to the index difficulty, in which it is generally as the percentage of the students who answer the questions correctly.

According to Hartono (2010:81), testvalidityisameasure that indicatesthe levels ofthe validityof an instrument. To determine the validity of the instruments used Pearson Product Moment Correlation formula as follows:

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

Where:

r_{xy}	= The correlation coefficient of each item
N	= The number of test subjects
$\sum X$	= Total scores of items
$\sum Y$	= Number of total score
$\sum X^2$	= The number of items squared scores
$\sum Y^2$	= Sum of squares total score
$\sum XY$	= The number of multiplications scores of items and the total score

After testing the 30 respondents, if the item being tested is valid then the item is used, if the item drop or invalid then the item is discarded or not in use. The criteria used to determine the validity of the items presented on Table III.5.

Table III.5
ItemValidityCriteria

Score of r	Interpretation
$0.80 < r \leq 1.00$	Very High
$0.60 < r \leq 0.79$	High
$0.40 < r \leq 0.59$	Enough
$0.20 < r \leq 0.39$	Low
$0.00 < r \leq 0.19$	Very Low

Thetestvalidity of items presented on the table III.6.

Table III.6

The Items Validity

No	Coefisien Correlation	r_{tabel} n=30	Decision	Interpretation
1	0.770	0.361	Valid	High
2	0.564	0.361	Valid	Enough
3	0.407	0.361	Valid	Enough
4	0.632	0.361	Valid	High
5	0.578	0.361	Valid	Enough
6	0.543	0.361	Valid	Enough
7	0.591	0.361	Valid	Enough
8	0.768	0.361	Valid	High
9	0.694	0.361	Valid	High
10	0.578	0.361	Valid	Enough
11	0.543	0.361	Valid	Enough
12	0.520	0.361	Valid	Enough
13	0.679	0.361	Valid	High
14	0.691	0.361	Valid	High
15	0.392	0.361	Valid	Low
16	0.579	0.361	Valid	Enough
17	0.591	0.361	Valid	Enough
18	0.766	0.361	Valid	High
19	0.649	0.361	Valid	High
20	0.694	0.361	Valid	High

Based on the table, coefficient correlation was bigger than r_{table} the all items was valid which interpretationlow until high. The details of calculated of test validity of items presented on the appendix.

3. **Reliability**

Toget thereliability ofmeasuring instrumentsin whole orreliabilityof thequestionnaireinstrument, using the formula Alpha Cronbach.

a) SeekingVariancefor eachitemwiththe formula:

$$\sigma^2 = \frac{\sum x^2 \ (\sum X)^2}{N}$$

Number ofscoressquared

N   = Number ofrespondentstrials

σ^2 = Variance

$\sum X$ = scoresof eachitem

$\sum X^2$ = Add upall the variantsof eachitemisdeclaredvalid

b) Findingthe totalvariancewiththe formula

$$\sigma^2 = \frac{\sum Y^2 \left(\frac{\sum Y}{N}\right)^2}{N}$$

c) Looking forreliabilityby the formula

$$r11 = \left(\frac{n}{n-1}\right)\left(1 - \frac{\sum \sigma_1^2}{\sigma_1^2}\right)$$

Description:

r_{11} = Reliabilityissought

n   = Number ofitems

$\sum \sigma^2$ = Amount ofvariancescorefor eachitem

σ_t^2 = Total variance

Table III.7

ProportionofReliability Test

Reliability Test	Interpretation
$0.70 < r_{11} < 1.00$	Very High
$0.40 < r_{11} < 0.70$	High
$0.30 < r_{11} < 0.40$	Enough
$0.20 < r_{11} < 0.30$	Low
$0.00 < r_{11} < 0.20$	Very Low

Table III.8

Cronbach Alpha Table Reliability Statistics

Reliability Statistics

Cronbach's Alpha	N of Items
.912	20

Based on the test reliability of all items, can concluded reliability coefficiens the test was 0.912. If the score compared with r_{table} score 0.361, it is reliability coefficiens $> r_{table}$ or 0.912 > 0.361. That the decision of all items was reliable with criteria is very high.

4. **Normality of the Data**

    Before analyzing the data by using t-test formula, the researcher had to find out the normality test of the data. Normality of the data test can be analyzed by using lilliefors, one sample Kolgomorov Smirnov or Shapiro-Wilk. In this research, the researcher using Shapiro-Wilk through SPSS 17 version.

    Analysis:

    If the probability > 0.05 Ho was accepted

    If the probability < 0.05 Ho was rejected

5. **Homogeneity of the Data**

    The purpose of homogeneity test is to know whether the object of the research has the same variance or not. The method used in this test was comparing the biggest variance with the smallest one.

F. The Technique of Analyzing Data

In analyzing the data, the writer analyzed the data by using statistical method. The writer used the score from the post- tests of the experimental classes. The technique of data analysis used in this research is t-test formula by using SPSS (Statistical Packages for the Social Science). The data appropriate technique is T-test. The writer used independent sample T-test to identify the difference on students' English proficiency in using audio media and using audio-visual media. The formula can be seen as follows:

$$t_o = \frac{Mx - My}{\sqrt{\left(\frac{SDx}{\sqrt{N-1}}\right)^2 + \left(\frac{SDy}{\sqrt{N-1}}\right)^2}}$$

Where:

to   : The value of T-obtained

Mx   : Mean score of experimental sample

My   : Mean of control sample

SDx   : Standard deviation of experimental class

SDy   : Standard deviation of control class

N   : The number of the students

Determining whether there is a significant different of the students' listening skill after being taught by using audio media for experimental class 1 and those who are being taught by using audio-visual media for experimental class 2, the writer used independent sample t-test by using SPSS 17.

To know whether there is any significant difference of research, the writer analyzes it by orienting number of significance. If probability>0.05, null

hypothesis (H_o) is accepted. If probability<0.05 alternative hypothesis (H_a) is accepted. By compared t_o (t- obtained) to t- table from df (degree of freedom), the level of significance of 5% and 1%. If t-obtained>t-table alternative hypothesis is rejected. The result of this research based on considering the degree of freedom:

(df) = (N1-N2)-2 statically hypothesis

Where:

Ha : t- obtained > t – table (accepted)

H_0 : t- obtained < t- table (rejected)