CHAPTER III

THE RESEARCH METHODOLOGY

A. The Research Design

This research was an experimental research. According to Gay, the experimental method is the only method of research that can truly test hypotheses concerning cause and effect relationships.[1] The design of this research was quasi experimental design, which used the nonequivalent control group design. According to Cresswell, quasi experimental design is experimental situations in which the researcher assigns, but not randomly, participants to groups because the experimenter cannot artificially create groups for the experiment.[2] The writer used intact groups, the first class was as the experimental group and the second class was as the control group. They are treated differently, however, the teacher, the length of the time, and material are the same. Experimental class and control class were using pre-test and post-test, but, treatment will be conducted to experimental group only.

This research consisted of two variables in this reserch.the first is independent variable and second one is dependent variable. The use of inference strategy is independent variable symbolized by "X" and the students' listening comprehension is dependent variable symbolized by "Y". This research also used two groups for comparison. The first was experimental group treated by using inference strategy. The second one was control group treated by using conventional strategy or not treated by inference strategy.

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[1] L.R. Gay and Peter Airasian, *Educational Research Competencies for Analysis and Application Sixth Edition* (New Jersey: Pearson Education, 2000), 367.
[2] John W. Cresswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research* (New Jersey: Pearson Education, 2008), 645.

They can be drawing in the following scheme:

Table III.1

Research Design

Group	Pre-Test	Treatment	Post-Test
A	X1	T	Y1
B	X2	-	Y2

Where: A = Experimental Group

B = Control Group

X_1 = Pre-Test in experimental group

X2 = Pre-Test in control group

Y_1= Post-Test in experimental group

Y2 = Post-Test in control group

T = Treatment

The nonequivalent control group design can be seen as below:[3]

O1   X   O2 (Experimental Group)

O3   O4 (Control Group)

O_1 and O3   = Pre Test

O_2 and O4   = Post Test

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[3] Louis Cohen, Lawrence Manion and Keith Morrison, *Research Methods in Education* (New York: Routledge, 2007), 283, http://Iibraty.nu.com (accessed September, 2013).

X   = Treatment by using inference strategy.

B. Location and The Time Of The Research

This research was conducted on January to March 2014. It is located at State Senior High School 2 Bangkinang Kampar Regency.

C. Subject And Object Of The Research

The subject of this research was the second grade students of Senior High School 2 Bangkinang in 2013/2014 academic year. The object of this research was the effect of using Inference strategy toward students listening comprehension.

D. Population and Sample

The population of this research was all of the second year students of SMA N 2 Bangkinang in 2013-2014 academic years. It consisted of 2 classes and which consist of one class for XI IPS 1 as an experimental class and XI IPS 2 as a control class. Those were as the sample of the research by number 68 students; 34 students for experimental class and also 34 students for control class.

Table III.2

The Sample of the Research

No	Class	Female	Male	Total
1	XI IPS 1	19	15	34
2	XI IPS 2	23	11	34

E. Technique of Collecting Data

The technique used for collecting the data was listening test. In this research, the test was designed to provide information about how well the students comprehend of what they listened to. This test was designed into two tests; they were pre test and post

test. Then, the tests were contributed into two classes, namely experimental class and control class. Next, to get information about the effect of the strategy, the test was arranged based on the indicators of listening that have been stated in operational concept. Pre test was done before treatment and post test was done after treatment. Testing is the way in which the information about people language ability can be gathered. The test was distributed to measure the student's listening comprehension in monologue form. The test would be multiple choices. Then, the writer was taked the total score from the result of the listening comprehension test. The classification of the students' score is shown below.[4]

Table III.3

The Classification of Students' Score

Score	Categories
80 – 100	Very good
66 – 79	Good
56 – 65	Enough
40 – 55	Less
30 – 39	Fail

F. Validity and Reliability of the Instrument Test

1. Validity

Before getting the data, the researcher used all of items in try out. Try out was intended to know the value of the test. The value itself was used to find out the level of difficulties of each item. The standard of value used was   0.30 and   0.70[5].

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[4]Suharsimi Arikunto. *Dasar-Dasar Evaluasi Pendidikan.* (Jakarta: Bumi Aksara. 2009). p. 245
[5] *Ibid.* p.208

The items that could not fulfil the standard value were replaced. The facility value under 0.30 is considered difficult and above 0.70 is considered easy.

The level of difficulty was used to show how easy and difficult an item was. It was calculated by using the formula:

$$P = \frac{B}{JS}$$

Where:

P : index of difficulty

B : the number of correct answer

JS : students taking test

For example, if the number 1 was correct by 8 students of 20 students, the difficulty could be calculated as follows:

$$P = \frac{B}{JS}$$

$$P = \frac{8}{20}$$

$$P = 0.4$$

If the value was changed into percentage, it could be calculated 0.4 x 100% = 40. The value was considered standard, and could be used to get the data. In other words, the item did not need to be changed. After doing try out, the researcher found that there were no any items modified because the level of difficulty reached the standard item of difficulty. Then, the proportion correct was represented by "p", whereas the proportion incorrect was represented by "q".

The data obtained by using post test and was evaluated in 5 component:

1. The students are able to identify the main idea of the monologue text listened accurately.

2. The students are able to identify the figure of story of the monolgue text listened accurately.

3. The students are able to identify incident from the text of the monolgue text listened accurately.

4. The students are able to identify the case of the monolgue text listened accurately.

5. The students are able to identify arguments of the monolgue text listened accurately.

Table III. 4

The Students Identify main idea/topic of the monologue text listened

Indicator	Identifying topic of the monologue text listened accurately				N
Item no.	1	5	13	17	
Correct	20	20	16	19	30
P	0,66	0,66	0,53	0,63	
Q	0,34	0,34	0,47	0,37	

$$P = \frac{B}{JS} \qquad Q = 100 - P$$

The table III. 4 above, it can be seen that there were 30 respondents. The students identifying main idea of monologue text listened for the items number 1, 5, 13 and 17. There were 75 was correctly and 45 was wrong. Based on the standard level of difficulty "p" < 0.30 and > 0.70, it is pointed out that item difficulties in average of each items number for identifying topic of the monologue text listened accurately are accepted.

Table III. 5

The Students Identify the figure of story of the monologue text listened

Indicator	Identifying the figure of story of the monologue text listened accurately				N
Item no.	2	6	9	20	
Correct	19	20	18	18	30
P	0,63	0,66	0,60	0,60	
Q	0,37	0,34	0,40	0,40	

$$P = \frac{B}{JS} \qquad\qquad Q = 100 - P$$

Based on the Table III.5 above, the proportion of correct answers. It can be seen that there were 30 respondents. The students identifying the figure of story of the monologue text listened for items number 2, 6, 9, and 20. There were 75 was correctly and 45 was wrong. Thus, based on the standard level of difficulty "p" < 0.30 and > 0.70, it is pointed out that item difficulties in average of identifying the figure of story of the monologue text listened accurately each items number to are accepted.

Table III. 6

The Students Identify incident from the monologue text listened

Indicator	Identifying incident from the monologue text listened accurately				N
Item no.	3	8	10	14	
Correct	21	20	20	18	30
P	0,70	0,66	0,66	0,60	
Q	0,30	0,34	0,34	0,40	

$$P = \frac{B}{JS} \qquad\qquad Q = 100 - P$$

Based on the Table III.6 above, it can be seen that there were 30 respondents. The students identifying incident from the monologue text listened for the items number 3, 8, 10 and 14. There were 79 was correctly and 41 was wrong. Thus, based on the standard level of difficulty "p" < 0.30 and > 0.70, it is pointed out that item difficulties in average of each items number to identify incident from the the monologue text listened accurately are accepted.

Table III. 7

The Students Identify the case of the monolgue text listened

Indicator	Identifying the case of the monolgue text listened accurately				N
Item no.	4	11	15	19	
Correct	20	20	16	19	30
P	**0,66**	**0,66**	**0,53**	**0,63**	
Q	0,34	0,34	0,40	0,37	

$$P = \frac{B}{JS} \qquad Q = 100 - P$$

The table III. 7 above, it can be seen that there were 30 respondents. The students identifying the case of the monolgue text listened for the items number 4, 11, 15 and 19. There were 75 was correctly and 45 was wrong. Based on the standard level of difficulty "p" < 0.30 and > 0.70, it is pointed out that item difficulties in average of each items number for identify the case of the monologue text listened accurately are accepted.

Table III. 8

The Students Identify arguments of the monologue text listened

Indicator	Identifying arguments of the monologue text listened accurately				N
Item no.	7	12	16	18	
Correct	15	16	16	18	30
P	0,50	0,53	0,53	0,60	
Q	0,50	0,47	0,47	0,40	

$$P = \frac{B}{JS} \qquad\qquad Q = 100 - P$$

Based on the Table III.8 above, it can be seen that there were 30 respondents. The students identifying the arguments of the monologue text listened for the items number 7, 12, 16 and 18. There were 65 was correctly and 55 was wrong. Thus, based on the standard level of difficulty "p" < 0.30 and > 0.70, it is pointed out that item difficulties in average of each items number to identify arguments of the monologue text listened accurately are accepted.

2. The Reliability of the Test

Every test, whether it is a short, informal classroom test, or a public examination should be as valid as the test constructor that can make it. The instrument of the test must aim at providing a true measure. Grounlund in Brown states that validity is the extent to which inferences made from assessments result are appropriate, meaningful and useful in terms of the purpose of the assessment.[6]

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[6]H. Douglas brown, *Teaching by Principles: An Interactive Approach to Language Pedagogy.* New Jersey: Prantice Hall, Inc . 1994, p. 22

The purpose of try out was to obtain validity and reliability to the test. It was determined by finding the difficulty level of each item. To find validity the test, researcher used correlation product moment as follows:[7]

$$r_{xy} = \frac{\sum xy}{\sum x^2 \ \sum y^2}$$

Where:

r_{xy} : Correlation product moment x and y

$\sum xy$: Total x and y

x^2 : X quadrant

y^2 : Y quadrant

$$r_{xy} = \frac{796.82}{1474.2 \ \ 996.7}$$

$$r_{xy} = \frac{796.82}{\sqrt{1469335,14}}$$

$$r_{xy} = \frac{796.82}{1212.16} = 0.66$$

If the validity test in 0.66, it means that the validity is **good.** According to Arikunto the ranges of validity and reliability are:[8]

Table III.9

The Standard of Validity and Reliabilityof the Test

NO	The standard of Validity (r_{xy})	Score
1	Excellent	0.800-1.00
2	Good	0.600-0.800
3	Fair	0.400-0.600
4	Poor	0.200-0.400
5	Very Poor	0.00-0.200

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[7]SuharsimiArikunto, *ProsedurePenelitian*, (Jakarta: RinekaCipta). 2010, p. 213
[8]SuharsimiArikunto. *Ibid. p.319*

Arikunto states that it is possible for the test is reliable but is not valid. Whereas the test is valid automatically, it is reliable. To obtain the reliability of the test given, the writer used Spearman-Brown formula as follows:[9]

$$r_{11} = \frac{2r\,1/2\,1/2}{1+r\,1/2\,1/2}$$

Where   :

r_{11} : Instrument of reliability

$r\,1/2\,1/2$: r_{xy} that mean as correlation of index

$r_{11}: \dfrac{2x0.66}{1+0.66}$

$r_{11}: \dfrac{1.32}{1.66}$

$r_{11}: 0.79$

In conclusion, the validity of the test was categorized into **good**. Level while the reliability of the test was categorized into excellent level. To make clear about this analysis, see in the appendices.

G. Technique of the Data Analysis

The writer will analyze the data by using statistic method, I will use T-test for little sample the formula is as stated on hartono's book:[10]

$$to = \frac{Mx - My}{\dfrac{SDx}{N-1}^2 + \dfrac{SDy}{N-1}^2}$$

To   = The value of t-obtained

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[9]SuharsimiArikunto, *Ibid.* p. 223

[10] Hartono, *Statistik Untuk Penelitian*. (Yogyakarta: Pustaka Pelajar. 2008) p.191

Mx   = Mean score of experimental sample

My   = Mean score of control sample

SDx   = Standard deviation of experimental group

Sdy   = Standard deviation of control group

The t– table is used to see whether there is a significant of difference between mean score of both pre-test and post-test.

The t– obtained value is confered with the value of t-table at the degree of freedom (df) = (N1+ N2)-2 statistically hypothesis:

Ha: to > t-table

Ho: to < t-table

Ha is accepted if to > t-table or there is effect after using Inference Strategy toward students' listening comprehension.

Ho is accepted if to< t-table or there is no effect after using Inference Strategy toward students' listening comprehension.