CHAPTER III

THE RESEARCH METHODOLOGY

A.   The Research Design

This research is included in a correlational research with regression analysis, and it is as one of the quantitative researches. This research was aimed to disclose the contribution of prior knowledge toward listening comprehension. There were two variables in this research; The students' prior knowledge that was symbolized by "X" as independent variable and as dependent variable was the students' listening comprehension that was symbolized by "Y".

As Gay says that correlation research attempts to determine whether, and to what degree, a relationship exist between two or more variables. She says that the purpose of this research is to determine relationship between variables or how to use these relationships to rank prediction quantitatively.[1]

B.   The Location and Time of the Research

The location of this research was at MAN 02 Model Pekanbaru, located on JL. Diponegoro, Pekanbaru. This research was conducted from September to October.

C.   The Subject and Object of the Research

The subject of this study was the second year students of MAN 02 Model Pekanbaru. Meanwhile, the object of this study was the students' prior knowledgeand listening comprehension.

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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), p. 12

D.   The Population and Sample

The second grade students at MAN 02 Model Pekanbaru was the population of this research, consisting 154 students classified into 7 classes from XI 1 until XI.7.

Table III. 1

The Total Population of the first year students at MAN 02 Model Pekanbaru

No.	Classes	Total
1	XI 1	23
2	XI 2	23
3	XI 3	23
4	XI 4	21
5	XI 5	21
6	XI 6	21
7	XI 7	22
Total		154

The population above was large enough to be all taken as a sample of the research. The researcher took the sample by using cluster sampling. Based on the limitation of the research, According to Gay, Cluster sampling randomly selects group, not individuals. All the members of selected groups have similar

characteristics.[2] It means that the subject of this research has the same material, the same grade, and the same teacher in teaching these classes. As the result, the researcher used lottery and the researcher took XI IPA 1 as the researched class.

E.   The Technique of Data Collection

In order to get the data which are needed to support this study, the researcher used the techniques as follows:

1. Prior Knowledge

   The independent variable which is symbolized by "x" is prior knowledge, it was investigated by using a test for the second year students at MAN 02 Model Pekanbaru. There were 10 items of true or false question.

Table III. 2

Blue Print of Prior Knowledge Test

No	Indicators	Item Number
1	Identifying familiarity	1, 2, 3, 5, 8
2	Guessing the context of the question	4, 6, 7, 9, 10

2. Listening Comprehension

   The dependent variable which is symbolized by "y" is the students' listening comprehension. As known, by conducting a test to the second year students at MAN 02 Model Pekanbaru. The test consisted of 15 items in multiple choice. (a, b, c, and d).

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[2] L.R. Gay and Peter Airasian, *Educational Research Competencies for Analysis and Application Sixth Edition* (New Jersey: Pearson Education, 2000), p. 129

Table III. 3

Blue Print of Listening Comprehension Test

No	Indicators	Item Number
1	Identifying topic	1, 6, 11
2	Identifying supporting details	2, 7, 14
3	Identifying the specific information	4, 9, 12
4	Identifying implied question	3, 8, 15
5	Making inference	5, 10, 13

F.   The Technique of Data Analysis

In order to find out whether or not there is a significant contribution between students' prior knowledge towards listening comprehension, the data are analyzed statisticallyby using simple linear regression with SPSS 16 calculation, and the formula of linear regression is as follows[3]:

$$\hat{Y} = a + bX$$

$$a = \frac{(\sum Y)(\sum X^2) - (\sum X)(\sum XY)}{n \sum X^2 - (\sum X)^2}$$

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[3]Hartono, *Statistik Untuk Penelitian.* (Pekanbaru: Pustaka Pelajar, 2010), p.10

$$b = \frac{N\sum XY - (XY)(\sum Y)}{N\sum X^2 - (\sum X)^2}$$

Furthermore, to analyze the data of student' prior knowledge and students' listening comprehension, the researcher gave the criteria of assessment below:

Table III. 4

Criteria of Assessment

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

G. Validity and Reliability of Instrument Test

The test used for testing students' listening comprehension has to have validity and reliability in order to get an accurate data. Gay explained validity is concerned with the appropriateness of the interpretations made from test scores.[4]

Furthermore, according to Gay, reliability is the degree to which a test consistently measures whatever it is measuring.[5] It is reflected in the obtaining how far the test or instrument test that enables to measure the same subject on different occasions indicating the similar result. In short, the characteristic of reliability is sometimes termed consistency.

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[4]L.R. Gay and Peter Airasian, *Op Cit*, p. 161.
[5]*Ibid*, p.169.

1. Validity

An instrument is valid if it is able to measure what must be measured. The test is said to be valid if it measures accurately what is intended to be measured.[6] Gay stated that there are three kinds of validity. They are content validity, criterion-related validity, and construct validity.[7]

In this research, the researcher used content validity. Content validity is if a test actually samples the subject matter about which conclusions are to be drawn, and if it requires the test taker to perform the behavior that is being measured.[8] Finally, the researcher determined the validity by referring to the materials that were given to the students based on the students' text books that were Look Ahead 2 and Interlanguage.

a. Validity of Prior Knowledge

In validity of the instrument of the test, it can be seen by the difficulties of the test. On the other hand, the test is not too easy and the test is not too difficult. The standard level of difficulty is < 0.30 and > 0.70.[9] It means that the items are accepted if the level of difficulty is between 0.30-0.70 and rejected if the level of difficulty is below 0.30 (too difficult) and over 0.70 (too easy). Therefore, there were four tryouts, two tryouts for each variable, 10 items of questions for prior knowledge which were categorized into 2

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[6]Arthur Huges, *Testing for Language Teacher, 2ⁿᵈ Edition* (New York: Cambridge University Press, 2003), p.26

[7] L.R. Gay and Peter Airasian, *Op.Cit*., p. 163-167.

[8] H.Douglass Brown, *Language Assesment: Principles and Classroom Practices*. (New Rock: Pearson Education Inc, 2003), p. 22.

[9]SuharsimiArikunto. *Dasar-DasarEvaluasiPendidikan.* (Jakarta: BumiAksara, 2009), p. 208

indicators and 15 items of questions for listening comprehension which were categorized into 5 indicators. Then, the proportion of correct is represented by "p", whereas the proportion of incorrect is represented by "q". It can be seen in the following tables:

Table III. 5

The students are able to identify the familiarity of the question in a sentence

Indicator	Identifying the familiarity of the question in a sentence					N
Item no.	1	2	3	5	8	
Correct	14	12	14	16	14	23
P	**0.61**	**0.52**	**0.61**	**0.70**	**0.61**	
Q	0.39	0.48	0.39	0.30	0.39	

Based on the Table III. 5 above, the proportion of correct answers for item number **1** shows the proportion of correct **0.61**, item number **2** shows the proportion of correct **0.52**, item number **3** shows the proportion of correct **0.61**, item number **5** shows the proportion of correct 0.**70**, and for item number 8 shows the proportion **0.61** level of difficulty "p" < 0,30 and > 0,70, it was pointed out that item difficulties in average of each items number to identify the familiarity of the question in a sentence.

Table III. 6

The students are able to analyze the context of the question in a sentence

Indicator	Analyzing the context of the question in a sentence					N
Item no.	4	6	7	9	10	
Correct	14	14	14	13	15	23
P	0.61	0,61	0.61	0.57	0.65	
Q	0.39	0.39	0.39	0.43	0.35	

Based on the Table III. 6 above, the proportion of correct answers for item number **4** shows the proportion of correct **0.61**, item number **6** shows the proportion of correct **0.61**, item number **7**shows the proportion of correct **0.61**, item number **9** shows the proportion of correct **0.57**, and for item number **10** showed the proportion **0.65** level of difficulty "p" < 0.30 and > 0.70, it was pointed out that item difficulties in average of each items number to analyze the context of the question in a sentence.

b. Validity of Listening Comprehension

Table III. 7

The students are able to identify the topic in monologue text listenend accurately

Indicator	identifying the topic monologue text listenend accurately			N
Item no.	**1**	**6**	**11**	
Correct	9	12	14	23
P	**0.39**	**0.52**	**0.61**	
Q	0.61	0.48	0.39	

Based on the Table III. 7 above, the proportion of correct answers for item number **1** shows the proportion of correct **0.39**, item number **6** shows the proportion of correct **0.52**, item number **11** shows the proportion of correct **0.61.**Thus, based on the standard level of difficulty "p" < 0.30 and > 0.70, it was pointed out that item difficulties in average of each items number to identify the topic in monologue text listenend accurately were accepted.

Table III. 8

The students are able identify the specific information of monologue text listened accurately

Indicator	identifying the specific information of monologue text listened accurately			N
Item no.	2	7	14	
Correct	16	14	12	
P	0.70	0.61	0.52	23
Q	0.61	0.39	0.48	

Based on the Table III. 8 above, the proportion of correct answers for item number **2** shows the proportion of correct **0.70**, item number**7** shows the proportion of correct **0.61**, item number **14** shows the proportion of correct **0.52.**Thus, based on the standard level of difficulty "p" < 0.30 and > 0.70, it was pointed out that item difficulties in average of each items number to identify specific information of the monologue text listened accurately were accepted.

Table III. 9

The sstudents are able to identify details informationin monologue text listenend accurately

Indicator	identifying details information in monologue text listenend accurately			N
Item no.	4	9	12	
Correct	13	16	12	23
P	0.57	0.70	0.52	
Q	0.43	0.30	0.48	

Based on the Table III. 9 above, the proportion of correct answers for item number **4**shows the proportion of correct **0.57**, item number **9** shows the proportion of correct **0.70**, item number **12** shows the proportion of correct **0.52.**Thus, based on the standard level of difficulty "p" < 0.30 and > 0.70, it was pointed out that item difficulties in average of each items number to identify the specific information in monologue text listenend accurately were accepted.

Table III. 10

The sstudents are able to make inference of the monologue text listened accurately

Indicator	Making inference of the monologue text listened accurately			N
Item no.	3	8	15	
Correct	11	12	15	
P	0.48	0.52	0.65	23
Q	0.52	0.48	0.35	

Based on the Table III. 10 above, the proportion of correct answers for item number **3** shows the proportion of correct **0.48**, item numbers **8** shows the proportion of correct **0.52**, and item number **15** shows the proportion of correct **0.65.**Thus, based on the standard level of difficulty "p" < 0.30 and > 0.70, it was pointed out that item difficulties in average of each items number to make inference of the monologue text listened accurately were accepted.

Table III. 11

The students are able to detect key words of the monologue text listened accurately

Indicator	Detecting key words of the monologue text listened accurately			N
Item no.	**5**	**10**	**13**	
Correct	7	13	13	23
P	**0.30**	**0.57**	**0.57**	
Q	0.70	0.43	0.43	

Based on the Table III. 11 above, the proportion of correct answers for item number **5**shows the proportion of correct **0.30**, item number**10** shows the proportion of correct **0.57**, item number **13** shows the proportion of correct **0.57.**Thus, based on the standard level of difficulty "p" < 0.30 and > 0.70, it was pointed out that item difficulties in average of each items number to detect key words of the monologue text listened accurately were accepted.

2. Reliability

Brown said that, "reliability has to do with accuracy of measurement. This kind of accuracy was reflected in obtaining similar results when the measurement was repeated on different occasions or with different instruments or by different

persons. The characteristic of reliability was sometimes termed consistency".[10]It means that the test is reliable when an examiner's results are consistent with repeated measurement.

To obtain the reliability of the test, it must be obtained the mean and standard deviation of the test. Reliability in general refers to the appropriateness of a given test of its component part as a measure of what it was purposed to measure. It means the test is valid to the extent that is measured what it is supposed to measure.

The reliability coefficients for good identified kinds of monologue texts and listening comprehension test were expected to exceed 0.0 and closed 1.00. According to Arikunto, there are the interpretations of reliability as follows:[11]

a. Between 0.800 – 1.00: very high
b. Between 0.600 – 0. 800: high
c. Between 0.400- 0.600: enough
d. Between 0.200 – 0.400: low
e. Between 0.00 – 0.200: very low

To obtain the reliability of the test given, the researcher used the formula KR20 as follows:

$$ri = \frac{k}{(k-1)} \frac{s_t2 - \sum piqi}{s_t2}$$

Where:

k : number of items in the instrument

pi : proportion of subject who answered the item correctly

qi : proportion of subject who answered the item wrong (1-pi)

piqi : the multiplication result between p and q

$S_t{}^2$: total variance[12]

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[10] H.Douglass Brown, *Op.Cit.*p.19

[11]Suharsimi Arikunto, *Op.Cit.,* p. 65

Firstly the writer calculates the total variance:

$$s_{t^2} = \frac{x^2}{n}$$

Where:

n   : number of respondents

1. Reliability of Prior Knowledge Test

$$x^2 = \sum xt^2 - \frac{(\sum xt)^2}{n}$$

$= 960 - \dfrac{(140)^2}{23}$

$= 960 - \dfrac{19600}{23}$

$= 960 - 852.17$

$= 107.83$

$s_{t^2} = \dfrac{107.83}{23}$

$= 4.68$

$\mathrm{ri} = \dfrac{k}{(k-1)} \ \dfrac{s_{t^2} - \sum piqi}{s_{t^2}}$

$\mathrm{ri} = \dfrac{10}{(10-1)} \ \dfrac{4.68 - 2.36}{4.68}$

$\mathrm{ri} = \dfrac{10}{9} \ \dfrac{2.32}{4.68}$

$\mathrm{ri} = 0.550$

[12]Sugiyono.*StatistikuntukPenelitian* (Bandung: Alfabeta, 2007), p.359

Based on the result above, the reliability value was **0.550** categorized intothe good category. It also can be depicted that to know whether the test was reliable or not, the value of *ri* must be compared with r product moment. The value of *ri* must be higher than r table. From the calculation above the value of *ri* was 0.550. Then the significance of r table at 5% was 0.413. While the significance of r table at 1% was 0.526. So, it can be concluded that 0.413<0.550>0.526. In other words, the instrument was reliable because the value of*ri* was higher than r table.

2. Reliability of Listening Comprehension Test

$$x^2 = \sum xt^2 - \frac{(\sum xt)^2}{n}$$

$$= 1737 - \frac{(189)^2}{23}$$

$$= 1737 - \frac{35721}{23}$$

$$= 1737 - 1553.08$$

$$= 183.92$$

$$s_{t^2} = \frac{183.92}{23}$$

$$= 7.99$$

$$ri = \frac{k}{(k-1)} \frac{s_{t^2} - \sum piqi}{s_{t^2}}$$

$$ri = \frac{15}{(15-1)} \frac{7.99-3.33}{7.99}$$

$$ri = \frac{15}{14} \frac{4.66}{7.99}$$

$$ri = 0.623$$

Based on the result above, the reliability value was **0.623** categorized intothe good category. It also can be depicted that to know whether the test was reliable or not, the value of *ri* must be compared with r product moment. The

value of *ri* must be higher than r table. From the calculation above the value of *ri* was 0.623. Then the significance of r table at 5% was 0.413. While the significance of r table at 1% was 0.526. So, it can be concluded that 0.413<0.623>0.526. In other words, the instrument was reliable because the value of*ri* was higher than r table.