

CHAPTER III

METHOD OF THE RESEARCH

A. The Research Design

The research was a correlational research. According to Anderson and Arsenault, this research is “one way of describing in quantitative terms the degree to which the variables are related”.¹In line with Anderson, Creswell stated that this research is a quantitative method of research in which investigators measure the degree of association or relation between two or more variables using the statistical procedure of correlational analysis.²There were two variables used in this research. The students’ language aptitude was as the independent variable symbolized by ‘x’ and the students’ English learning achievement was as the dependent variable symbolized by ‘y’.

B. The Time and Location of the Research

This research was conducted at State Senior High School 3 Pekanbaru, located on Pekanbaru. This research was carried out on April 2014.

¹ Gary Anderson and Nancy Arsenault, *Fundamentals of Educational Research*, USA: Taylor and Francis e-Library, 2005, p. 118.

² John W. Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research 3rd Edition*, New Jersey: Pearson Prentice Hall, 2008, p. 356.

C. The Subject and Object of the Research

1. Subject of the Research

The subject of this research was the eleventh gradestudents of State Senior High School 3 Pekanbaru.

2. Object of the Research

The object of this research was the correlation between students' language aptitude and their achievement in learning English.

D. The Population and Sample of the Research

According to Sugiyono, population is the generalization area which consists of subject/object which has specific quality and characteristic and stated by researcher to be learnt and then taken the conclusion.³ Generalization is a way to take a conclusion to group of individual that have amount broader based on the data that we take from some groups of individual that have amount narrower. A part of individual as representative in research is called as sample. Sampling is the process of selecting a number of individuals for the study that they represent the larger group from which they were selected.

The Target of population of this research was the eleventh gradestudents of Senior High School 3 Pekanbaru. They consisted of nine classes (307 students), five classes for science department and four classes for social department. The description can be seen in the table below:

³ Sugiyono, *Metode Penelitian Administrasi: Dilengkapidengan Metode R&D*, Bandung:Alfabet, 2011, p. 90.

Table III.1

Population of the Eleventh Grade Students at State Senior High 3 Pekanbaru

NO	Class	Population	Male	Female
1	XI science 1	34	10	24
2	XI science 2	35	10	25
3	XI science 3	35	11	24
4	XI science 4	34	12	22
5	XI science 5	35	11	24
6	XI social 1	35	11	24
7	XI social 2	33	7	26
8	XI social 3	33	13	20
9	XI social 4	33	10	23
	Total Population	307	95	212

The researcher took only two classes for the samples by using Cluster Sampling Technique. In relation to the idea above, Gay stated that cluster sampling randomly select groups, not individual. The total number of two classes was about 68 students. So, it was clear that the total of sample was 68 students.

Table III.2

Sample of the Research

No	The Number of Students				Sample
	Class	Male	Female	Total	
1	XI IPA 1	10	24	34	34
2	XI IPA 4	12	22	34	34
Total				38	38

E. The Technique of Collecting Data

1. The Instruments

In order to get some data needed to support this research, the instrument used were:

a. Test

The researcher used a set of standardized test called Modern Language Aptitude Test (MLAT) in order to know the students' language aptitude in learning English of the second year at State Senior High School 3 Pekanbaru. The test consisted of 25 items. This test was adapted from test that was expanded by Carol and Sapon, meaning that the test was not fully copied but had been modified by considering it with the need, culture and background knowledge of Indonesian students'.

Table III.3

Matrix of Students' Language Aptitude

VARIABLE	INDICATORS	ITEMS
Students' Language Aptitude (x)	1. Number Learning	1, 2, 3, 4, 5
	2. Phonetic Script	6, 7, 8, 9, 10
	3. Spelling Clues	11, 12, 13, 14, 15
	4. Words in Sentences	16, 17, 18, 19, 20
	5. Paired Associates	21, 22, 23, 24, 25

b. Documentation

The documentation was used to get the information about students' learning achievement in English. Since the data about the students' achievement were obtained through the examination conducted by the school, the researcher interpreted the students' score of achievement into some measurable categories as follows:

Table III.4

The Category of Students' Achievement

Scores	Category
80 – 100	Excellent
66 – 79	Good
56 – 65	Fair
40 – 55	Poor
30 – 39	Failed

2. The Validity and Reliability of Instrument

To obtain data from the respondents, the researcher made try out of the test to determine the validity and reliability of the instruments.

a. Validity

Howit and Cramer stated that validity refers to whether a measure actually measure what it is supposed to measure.⁴ It means that the validity of the instruments is the extent to which inference made from assessment results is appropriate, meaningful and useful in terms of the purpose of the assessment.

⁴ Dennis Howit and Duncan Cramer, *First Steps in Research and Statistics: A Practical Workbook for Psychology Students*, USA: Taylor & Francis e-Library, 2005, p. 28.

To analyze the validity of instruments, the researcher used formula item difficulty as follows:

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

P : index of difficulty or facility value

B : the number of correct answers

JS : the number of examines or students taking the test

The standard level of the difficulty used is >0.30 and <0.70 , it means that the level of difficulty is between 0.30 and 0.70. Then, the proportion correct is represented by “p”, which the proportion incorrect is represented by “q”, it can be seen in the following tables:

Table III.5

Number Learning Indicator

Variable	Number Learning					N
Item No	1	2	3	4	5	68
Correct Item	46	32	34	44	38	
P	0.68	0.47	0.5	0.65	0.56	
Q	0.32	0.53	0.5	0.35	0.44	

Based on the table III.4, the proportion of correct answer for item number 1 shows the proportion of correct 0.68, item number 2 shows the proportion of correct 0.47, item number 3 shows the proportion of

correct 0.5, item number 4 shows the proportion of correct 0.65, and item number 5 shows the proportion of correct 0.56. Based on the standard level of difficulty, “p” > 0.30 and < 0.70, all items of number learning are accepted.

Table III.6
Phonetic Script Indicator

Variable	Phonetic Script					N
Item No	6	7	8	9	10	68
Correct Item	40	38	36	42	36	
P	0.59	0.56	0.53	0.62	0.53	
Q	0.41	0.44	0.47	0.38	0.47	

Based on the table III.5, the proportion of correct answer for item number 6 shows the proportion of correct 0.59, item number 7 shows the proportion of correct 0.56, item number 8 shows the proportion of correct 0.53, item number 9 shows the proportion of correct 0.62, and item number 10 shows the proportion of correct 0.53. Based on the standard level of difficulty, “p” > 0.30 and < 0.70, all items of phonetic script are accepted.

Table III.7

Spelling Clues Indicator

Variable	Spelling Clues					N
Item No	11	12	13	14	15	68
Correct Item	34	42	44	36	35	
P	0.5	0.62	0.65	0.53	0.51	
Q	0.5	0.38	0.35	0.47	0.49	

Based on the table III.6, the proportion of correct answer for item number 11 shows the proportion of correct 0.5, item number 12 shows the proportion of correct 0.62, item number 13 shows the proportion of correct 0.65, item number 14 shows the proportion of correct 0.53, and item number 15 shows the proportion of correct 0.51. Based on the standard level of difficulty, “p” > 0.30 and < 0.70, all items of spelling clues are accepted.

Table III.8

Words in Sentences Indicator

Variable	Words in Sentences					N
Item No	16	17	18	19	20	68
Correct Item	45	40	30	36	34	
P	0.66	0.59	0.44	0.53	0.5	
Q	0.34	0.41	0.56	0.47	0.5	

Based on the table III.7, the proportion of correct answer for item number 16 shows the proportion of correct 0.66, item number 17 shows the proportion of correct 0.59, item number 18 shows the

proportion of correct 0.44, item number 19 shows the proportion of correct 0.53, and item number 20 shows the proportion of correct 0.5. Based on the standard level of difficulty, “p” > 0.30 and < 0.70, all items of words in sentences are accepted.

Table III.9

Paired Associates Indicator

Variable	Paired Associates					N
Item No	21	22	23	24	25	68
Correct Item	36	36	28	29	41	
P	0.53	0.53	0.41	0.43	0.6	
Q	0.47	0.47	0.59	0.57	0.4	

Based on the table III.8, the proportion of correct answer for item number 21 shows the proportion of correct 0.53, item number 22 shows the proportion of correct 0.53, item number 23 shows the proportion of correct 0.41, item number 24 shows the proportion of correct 0.43, and item number 25 shows the proportion of correct 0.6. Based on the standard level of difficulty, “p” > 0.30 and < 0.70, all items of paired associates are accepted.

b. Reliability

Reliability actually refers to a variety of concepts that have little in common at first sight. Reliability is really about *consistency* in response to slightly different measures of the same

thing made at the same time.⁵ This kind of accuracy was reflected in obtaining of similar results when measurement was repeated on different occasion or with different instrument or by different person. The characteristic of reliability was sometimes termed consistency. In this research, the researcher used the Kuder Richardson 20 (K-R 20) formula to calculate the reliability of the test.⁶ The formula is as follows:

$$R_{11} = \frac{n}{n-1} \frac{s^2 - pq}{s^2}$$

Where :

R₁₁ = Reliability of the test

P = Proportion subject that answer the true of item

Q = Proportion subject that answer the false of item (q= 1-p)

pq = Total equals between p and q

n = Total of the item

S = Standard Deviation

$$S = \frac{\overline{fx^2}}{N} = \frac{6058.118}{68} = 9.439$$

n = 68

⁵*Ibid.*

⁶Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, Jakarta: Bumi Aksara, 2011,

$$pq = 6.05$$

$$\begin{aligned} \text{So, } R_{11} &= \frac{n}{n-1} \frac{s^2 - pq}{s^2} \\ &= \frac{68}{68-1} \frac{9.439^2 - 6.05}{9.439^2} \\ &= 1.01 \cdot 0.93 \\ &= 0.94 \end{aligned}$$

According to Heaton in Nurhikmah, the standard reliability was considered as follows:⁷

0,00- 0,20 =Reliability low

0,21- 0,40 = Reliability Sufficient

0,41- 0,70 = Reliability High

>0,70 = Reliability very High

It means the reliability of the test was categorized into very high level.

F. The Technique of Analyzing Data

In order to find out whether there was a significantly positive correlation between students' language aptitude and their achievement in learning English, the data were analyzed statistically. In analyzing the data, the researcher used the *Pearson Product Moment Correlation Coefficient* (r) by using SPSS 16.0 program. By considering the degree of freedom (df) = N-nr; (N=Number of sample, nr= Number of variable)

Statistically the Hypotheses are:

$$H_a : r_o > r_{table}$$

⁷Nurhikmah, The Correlation Between Verb Mastery and Writing Ability on Narrative Text at the Senior High School Tarbiyah Islamiyah Seberida, Pekanbaru: Unpublished Thesis, 2012, pp.43

$$H_a : r_o < r_{table}$$

H_a is accepted if $r_o > r_{table}$ or there is a significantly positive correlation between the students' language aptitude and their achievement in learning English.

H_o is accepted if $r_o \leq r_{table}$ or there is no significant correlation between the students' language aptitude and their achievement in learning English.