

CHAPTER III

METHOD OF INVESTIGATION

This chapter discusses sources of data, research design, research setting, sample and sampling technique of research, variable and indicator of research, data collection technique, and data analysis technique.

A. Research Design

This study used quantitative approach, because the analysis of the study stressed on the numerical data that processed with statistically. This research focused on students' learning environment and students' learning achievement in English Main and Optional subject. The writer used statistical analysis to calculate the numerical data that are gathered and to analyze them by using predictor analysis. The result of the analysis is then interpreted to find out the influence of learning environment to the students' learning achievement.

B. Time and place

This research was undertaken on 11st of April to 15th of April 2016 at Walisongo State Islamic University Semarang. The students of this university are not only from Semarang, but also come from the others cities, it makes some different characteristics of the students because they have different culture and different parent educational background.

C. Population and Sample

1. Population

According to Arikunto, population is the whole of research data.¹ The researcher conducted this research at English Education Department Students of Walisongo State Islamic University Semarang. The population of this research is 6th semester students of 2013 English Education Department students which consist of three classes and the number of students are 106.

2. Sample

Sample means a part of population that will be observed, whose characteristic can represent and describe the real population.² In this research, the researcher used random sampling in choosing the sample, because it is one of the techniques that all individual of population may have the same opportunity and have been chosen as the sample.³ If population less than 100 respondents, all population can be sampled, but if population more than 100 respondents, the researcher can take 10%-15%, 20%-25% from all population

¹ Arikunto, *Prosedur Penelitian*, (Jakarta: Rineka Cipta, 2010), P.173

² Sugiarto, *Teknik Sampling*, (Jakarta: Gramedia Pustaka Utama, 2003), 2nd Ed, P. 2

³ Sukardi, *Metodologi Penelitian Pendidikan*, (Jakarta, PT Bumi Aksara, 2009), P.58

as sample.⁴In this case the students' population are 106 respondents, researcher took 25% as sample. The sample in this research is 27 students.

D. Variable and indicator

Variable is a certain attribute, characteristic, value of human, object, or activity that has specific variation which has been determined by the researcher to be observed and concluded.⁵

There are two types of variables based on the term of causation:⁶

1. Independent variable (x)

Sugiyono said that, independent variable can be called *stimulus*, *predictor*, or *antecedent*. Independent variable is variable which has the influence or the cause of change or make the existence of dependent variable.⁷ So, the independent variable in this research is learning environment, and the indicators are:

⁴ Suharsimi Arikunto, *Prosedur Penelitian*, (Jakarta: Rineka Cipta, 2006), p. 134

⁵ Arikunto, *Prosedur Penelitian*, (Jakarta: Rineka Cipta, 2010), p. 131

⁶ Sugiyono, *Metode Penelitian Kualitatif dan Kuantitatif dan R&D*, 2008), 5th ..., P.39

⁷ Sugiyono, *Metode Penelitian Kualitatif dan Kuantitatif dan R&D*, 2008), 5th ..., P.39

Internal environment

- a. Foods and drinks

External environment

- a. School environment

Condition of the class:

- 1) The condition of air in the class
- 2) The condition of temperature in the class
- 3) The condition of classroom
- 4) The condition of building
- 5) The condition of laboratory
- 6) The condition of library

- b. Living environment

The condition of living environment:

- 1) The condition of air
- 2) The condition of temperature
- 3) The condition of building

Social environment

- a. Family environment

Relation between learner and their parents

- 1) The Interaction between learner and their parents
- 2) The atmosphere in their family

- b. School environment

Relation between learner and lecturer

- 1) The interaction between student and lecturer
- 2) The interaction among students

c. Mass Media

- 1) How long learner spend their time to watching TV
- 2) How long learner spend their time to read magazine
- 3) How long learner spend their time for watching Movie

2. Dependent variable (y)

Dependent variable is a variable which is influenced the independent variable.⁸Dependent variable in this study is learning achievement of the student. The researcher measured it based on students' grade point average.

E. Data collection technique

To get the accurate data, in this study the writer used two ways in the collecting data, they are as follows:

1. Questionnaire

Questionnaire is the list of questions provided to others who are willing to respond (respondents) as requested by the researcher.⁹ In this research the questions consist of positive questions and negative questions. The students have to answer by choosing five responses. Those are point,

⁸ Sugiyono, *Metode Penelitian Kualitatif dan Kuantitatif dan R&D*, 2008), 5th ..., P.39

⁹ Riduan , *Skala variabel-variabel penelitian*, (Bandung: Alfabeta, 2009) p. 25.

A/Always, B/Often, C/Sometimes, D/Seldom, E/Never that have five option with different point.

Frequency of the responses

- a. Always means every day in a week
- b. Often means 5 days in a week
- c. Sometimes means 3 days in a week
- d. Seldom means 2 days in a week
- e. Never means 0 in a week

The data analysis started by summing up the item credits of questionnaire, which had been answered by the respondents. Their individual total scores were graded into five categories Very high, High, Fair, Low, Very low.

2. Documentation

Besides data from result of the questionnaire. The documentation is needed to help the researcher run the research. According to Arikunto, the documentation method is used to look for the data concerning matters or the variable that took the form of the note, transcript, book, newspaper, magazine, inscription, notes of a meeting, agenda, etc.¹⁰ the documents that is used to acquire data about the subject is students' grade point average and the result of questionnaire.

¹⁰ Arikunto, *Prosedur Penelitian*, Jakarta: Rineka Cipta, 2010)P.274

F. Data Analysis Technique

The data analysis method that was used in this research is quantitative analysis. Quantitative is concerned with the amount or number.

1. Validity

Heaton states that validity is the extent to which it measures what is supposed to measure and nothing else.¹¹ The result of questionnaire was consulted to critical score for r-product moment, If the obtained coefficient of correlation was higher than the critical score for r-product moment, it meant that the question was valid at 5% alpha level significance. To calculate the validity, the researcher used the formula¹² as 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 of correlation between X and Y

N = the number of students

$\sum X$ = total score Questionnaire item

$\sum Y$ = total score

$\sum XY$ = the sum of multiplication X times Y

¹¹ J.B. Heaton, *Writing English Language Test*, P.153.

¹² Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, P213.

2. Reliability

To calculate the reliability the researcher used Half split formula r-score product moment and continues it with spearman-brown the formula as follow¹³:

$$r_{11} = \frac{2xr_{1/21/2}}{(1+r_{1/21/2})}$$

where :

r_{11} : index reliability

$r_{1/21/2}$: r_{xy} index correlation between half split data

3. Introductory Analysis

Introductory analysis is to simply the data in order to be able to be read and interpret easily. There are two data namely:

a. Independent variable

The researcher categorized the scores resulted of questionnaire or also called independent variable (x) as follows:

Learning Environment	Score
A	5
B	4
C	3
D	2
E	1

¹³ Suharsimi Arikunto , *Prosedur Penelitian Suatu Pendekatan Praktik*, P223-224.

b. Dependent variable

The dependent variable (y) was students' learning achievement in the main and the optional subjects and the researcher categorized the score as follow:

Learning achievement	Score
A	4.0
B	3.5 – 3.9
B+	3.0 – 3.4
C+	2.5 – 2.9
C	2.0 – 2.4
D	1.5 – 1.9
D+	1.0 – 1.4
E	0.00 ¹⁴

4. Analysis descriptive

At the first, the writer put in the data that collected into the table distribution. After that, the score were put in the table of score each the data collections. Then, interval and the quality score of each variable are found in this step:

a. Finding out the highest score (H) and the lowest score (L)

b. $K = 1 + 3.3 \log N$ ¹⁵

K = interval Total

¹⁴ Ruswan, dkk, *Buku Panduan Program Sarjana(S1) dan Diploma 3(D.3)*, (Semarang: UIN Walisongo, 2012), P.169

¹⁵ Sugiyono, *Statistika untuk Penelitian*(Bandung:Alfabeta, 2014)
P.35

c. $R = H - L + 1$

R = range

H = the highest score

L = the lowest score¹⁶

d. Class interval with the formula $i = \frac{R}{K}$

i = interval¹⁷

e. look for the mean with the formula $Me = \sum \frac{f \cdot xi}{n}$ ¹⁸

f. look for the quality of the students' learning environment and the students' learning achievement in Walisongo State Islamic University.

g. using normality test to know the normality distribution of the students' learning environment and students' learning achievement.

h. Hypothetical Analysis

To know the influence of learning environment to the students learning achievement.

a) Looking for the correlation between predictor and criterion by using technique of correlation product moment. The formula is as following:

¹⁶ Shodiq, *Aplikasi Statistika Dalam Penelitian Kependidikan* (Semarang: CV Karya Abadi Jaya, 2016)P.44

¹⁷ Sugiyono, *Statistika untuk Penelitian*(Bandung:Alfabeta, 2014)P.36

¹⁸ Sugiyono, *Statistika untuk Penelitian*(Bandung:Alfabeta, 2014)P.49

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

$$\text{Where : } \sum xy = \sum XY - \frac{(\sum X)(\sum Y)}{N}$$

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

$$\sum y^2 = \sum Y^2 - \frac{(\sum Y)^2}{N}$$

b) Looking for simple regression

A simple regression analysis is a regression analysis that includes both a dependent and independent in its measurement. This method is used to calculate what extend the influence of learning environment to the students' learning achievement.

1) Using the one variable linear regression analysis technique with the formula as follows

$$Y = aX + K$$

$$a = \frac{N\sum xy - \sum x \sum y}{N\sum x^2 - (\sum x)^2}$$

$$K = \frac{\sum y}{n} - a \frac{\sum x}{n}$$

Y = criterium

X = predictor

a = predictor coefficient

K = constanta

Looking for the F score is using deviasi score with the formula

Varian source	Db	JK	RK	F_{reg}
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Regresi (reg)	1	$\frac{(\sum xy)^2}{\sum x^2}$	$\frac{JK_{reg}}{db_{reg}}$	$\frac{RK_{reg}}{RK_{res}}$
Residu (res)	N - 2	$\sum y^2 - \frac{(\sum xy)^2}{\sum x^2}$	$\frac{JK_{res}}{db_{res}}$	
Total	N - 1	$\sum y^2$		

N = amount of respondent

db = Aquitted quadrate

Jk = quadrate amount

RK = mean of quadrate amount

F = score of F in regression¹⁹

From the result above the writer interpreted that category based on the following statement:

0,900-1,000 means very high correlation

0,700-0,899 means high correlation

0,400-0,699 means enough correlation

0,200-0,399 means low correlation

0,000-0,199 means very low correlation²⁰

5. Final analysis

After getting F_{reg} , the next step is comparing the price of F_{reg} with the value. The table is 1% or 5%. It is significant if $F_{reg} > F_t$ 1% or 5%. There is positive influence of learning environment toward students learning achievement. It is not

¹⁹ Sutrisno Hadi, *Analisis Regresi*, (Yogyakarta: Andi Offset, 2004). P.4-16.

²⁰ Shodiq, *Aplikasi Statistika Dalam Penelitian Kependidikan*, (Semarang: CV Karya Abadi Jaya, 2016). p.114.

significant if $F_{reg} < F_t$ 1% or 5%. There is no positive influence of students' learning environment toward students' learning achievement.