CHAPTER III
RESEARCH METHOD

A. Research Design

1. Type of research

There are many kinds of research design in conducting a reseach. Quantitative research is the research which based on positivism philosophy in which is used for observed certain populations or sampling. This work is based on quantitative research. Correlation research aims at investigating the existence and the degree of relationship between two or more quantitative variables. If two variables are highly related, score on one variable could be used to predict scores on the other variable.[1]

According to Reichard and Cook in Nunan's book, "Research Method in Language Learning", Quantitative research is obtrusive and controlled, objective, general sable, outcomes oriented, and assumes the existence of facts which are somehow external to and independent of the observer or researcher.[2]

The researcher analyzes the data by using product moment and regression one predictor analysis. The result of the analysis is interpreted to find out the influence of learning achievement in vocabulary to the students' reading ability at SMP N 2 Gringsing Batang.

2. The activity of the test

The test was given to know the students' reading and vocabulary score. In this section included 40 multiple choice items. However, the type of questions asked in the reading comprehension section (main idea/topic, inference, idioms, or information from the texts), and vocabulary understanding (synonym, subject-verb agreement) are similar to other English-language tests. The students were given 90 minutes to answer this test.

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[1]Sugiyono, *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif dan R&D,* (Bandung: Alfa beta, 2008), p.4.

[2]David Nunan, *Research Method in Language learning*, (USA: Cambridge University Press,1992), p. 3.

B. Research Setting

The research was conducted at SMP N 2 Gringsing that is located on Jalan Raya Surodadi - Gringsing Telp (0294) 642113 Batang Kode Pos 51281.

The research was carried out from Mei 28th up to June 2nd, 2012. Before doing the research, the researcher prepared some tests that will be used to measure students' vocabulary and reading ability. After getting an agreement of the school principal and then consult to an English teacher who taugh at Eighth Grade Students of SMP N 2 Gringsing.

The researcher chooses SMP N 2 Gringsing because this is one of developing school in Batang district that can reach easily. The researcher also wants to investigate the students' interest of English in this district.

C. Population And Sample
1. Population

Population is generally an area which is consist of object/subject which has certain qualify and characteristic which decided by the researcher to study and then collect the summary.[3] In this research, the researcher took population of eighth students of SMP N 2 Gringsing Batang in the academic year of 2011/2012 which has four classes and each class is consist of 26 students.

Table 3.1

List of Population

No	Class	Number
1.	8 A	26
2.	8 B	26
3.	8 C	26
4.	8 D	26
Total		104

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[3]Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktek,* (Jakarta: Rineka Cipta, 2006), p.130.

2. Sample

Sample is a subset of individuals from a given population.[4] In quantitative research, sampling is the selection of a group of persons from a population with each person having an equal chance of being selected. The objective is to draw a representative sample and results obtained from the sample can be generalized to the population. Sample is a part of population.[5] Sample must be reflective with the true example in the field. The writer took the whole of 8th grade students at SMP N 2 Gringsing Batang because they have enough knowledge and motivation in their study and their reading ability is also good enough.

There are 104 students they are 8A, 8B, 8C, 8D that placed on second year of SMP N 2 Gringsing Batang. From those classes the writer took 40 students from all classes as an object of the research. The percentage of the sample in this research is 38%.

3. Area Random Sampling

In random sampling, each item or element of the population has an equal chance of being chosen at each draw. The researcher determines the sampling frame that contain the elemen of popultion. A sample is random if the method for obtaining the sample meets the criterion of randomness (each element having an equal chance at each draw). The actual composition of the sample itself does not determine whether or not it was a random sample.[6]

D. Variables and Indicators

According to Sugiyono, research variables are things that shape what is defined by the researches to be studied in order to obtain information about it, and the conclusion drawn on next.[7] There are two types of variables: independent variable and dependent variable.

Independent variables are the conditions or characteristics that are

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[4]David Nunan. *Research Methods in Language Learning*, p. 27.
[5]Suharsimi Arikunto, *Prosedur Penelitian*: *Suatu Pendekatan Praktek,* p.131.
[6]David M Lane, *Population and Sample,* Retrieved from http://davidmlane.com/hyperstat/A35563.html, Thursday, November 11th, 2011.
[7]Sugiyono, *Statistika Untuk Penelitian* (Bandung: CV. Alfa beta, 2007) p.2.

manipulated by the researcher in order to explain the relation with the observed phenomena.[8] The independent variable (X variable) of this research is the students' vocabulary achievement which is taken by the number of vocabulary that they know from the test given; with some indicators:

a) Identify synonym

b) Subject verb agreement

c) Idiomatic expression

Dependent variables are varible that the conditions are influenced by independent variables.[9] Referring to the definition, the dependent variable (Y variable) of the research is students' reading ability score which is taken from students' comprehension in reading with the texts; with some indicators:

a) Main idea/topic

b) Inference

c) Pronoun

d) Identify the information from the texts.

The rubric of the test of instrumen can be seen as follows:

Kind of tests	Indicator	Item number	Answer key
Vocabulary	a.Identify synonym	27, 30, 33, 35, 36, 50	B, A, A, C, A, B
	b. Subject - verb agreement	26, 28, 29, 31, 32, 34, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49	B, C, D, B, C, B, B, C, B, B, C, B, D, B, C, B
	c.Idiomatic Expression	37, 39	A, A
Reading	a.Main idea/topic	4, 5, 7, 8, 9, 10, 16,	B, C, C, B, B, A, D
	b.Inference	11, 17, 18, 19, 20, 21,22	B, C, D, A, A, C, A
	c.Pronoun	3, 15,	D, A
	d.Information from text	1, 2, 6, 12, 13, 14, 23, 24, 25	B, C, D, B, D, B, B, B, A

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[8]Suharsimi Arikunto, *Prosedur Penelitian*: *Suatu Pendekatan Praktek,* p.119.

[9]Sambas Ali Muhidin and Maman Abdurrahman, *Analisis Korelasi, Regresi dan Jalur dalam Penelititan,* (Bandung: Pustaka Setia, 2007), p.14.

E. Data Collection Technique

The technique of data collection in this research includes documentation and tests are employed in this research.

1. Documentation

It means that the researcher collects data from English teacher, such as students' name list and profile of school. "Documentation research may refer to the technique of collecting data by gathering and analyzing documents. While document is any communicative material (such as text, video, audio, etc.) used to explain some attribute of an object, system or procedure."[10]

Documentation may be examined to investigate patterns and trends of the past as is commonly done by historians. Documentations are also examined by researchers who are investigating subjects who are available.

2. Test

The test is a number of questions that used to measure students' achievement. Based on the test instrument enclosed the researcher uses scoring technique to calculate the score. The test is divided into two parts; the first is vocabulary, which consists of 20 items. The second is reading comprehension, which also consists of 20 items**.** Then, scoring is concerned with how much or how good language testing.[11]

F. Data Analysis Technique

To find out the influence of students' achievement in vocabulary to their ability in vocabulary, the writer uses some steps for analyzing the data.

1. Prerequisite test analysis

Before the test instrument used, the researcher conducted testing instrument first. The goal is to obtain a good instrument, one that meets the criteria of valid, reliable, have discriminating power and the moderate level of difficulty.

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[10]Diana Hacker and Barbara Fister, *Researching in the Social Sciences.* Retrieved from http://www.bcs.bedfordstnmartins.com/resdoc5e/RES5e_ch06_o.html , Monday, July 23, 2012.

[11]Glenn Fulcher and Freed Davidson, *Language Testing and Assessment*, (New York: Routledge, 2007) p.91.

a. Validity Analysis

To test the validity of a question about, the *Pearson* correlation formula is used, that is:

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

Where:

r_{xy} = correlation coefficient

N = the number of students

X = score point of question (item)

Y = total score points of question

The question is valid if $r_{xy} > r_{table}$.[12]

b. Reliability Analysis

To test the reliability of the question, the alpha formula is used as follow:

$$r_{11} = \left(\frac{n}{n-1}\right)\left(\frac{S^2 - \sum pq}{S^2}\right)$$

Where,

r_{11} = reliability

S = standard deviation

n = number of students

P = total of right answer

Q = total of wrong answer[13]

Explanation:

$r_{11} \geq 0.70$ means reliable, and $r_{11} < 0.70$ means un-reliable.[14]

c. Analysis of The Discriminating Power

The formula for determining the discrimination index is:

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[12] Anas Sudijono, *Pengantar Evaluasi Pendidikan* ,(Jakarta: PT Raja Grafindo Persada, 2004), p.181.

[13] Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan,* (Jakarta: Bumi Aksara, 2002), p. 100.

[14] Anas Sudijono, *Pengantar Evaluasi Pendidikan,* p.209.

$$D = \frac{\sum A - \sum B}{n}$$

Where,

D   = Discrimination index

$\sum A$ = number of students of the right answer on the high class

$\sum B$ = number of students of the right answer on the low class

n   = number of students of the high class or low class (27% x N)

Discriminating Power criteria (D) is as follows:

If $D > 0.3$ is "accepted", $0.10 < D < 0.29$ is "revised", $D < 0.10$ is "rejected"[15]

d. Difficulty level analysis

Difficulty level of a question is determined by the formula:

$$P = \frac{\sum x}{S_m N}$$

Where,

P   : Difficulty level

$\sum x$: The number of students who answer correctly

S_m : Maximum score

N   : The number of participants

Criteria

$P \leq 0.30$ is difficult, $0.30 < P \leq 0.70$ is medium $0.70 < P \leq 1.00$ is easy.[16]

Normality test is used to determine what kind of statistic that will be used to process the data. Normality test steps are as follows:

a. Determine the hypothesis of probability value

H$_o$ = The data has a normal distribution

H$_1$ = The data has not a normal distribution

b. Determine the criteria of hypothesis

Hypothesis is accepted if H$_o$, the probability value > 0.05

c. Describe the frequency of students' score in the table

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[15]Sumarna Surapranata, *Analisis Validitas, Reliabilitas dan Interpretasi Hasil Tes.* (Bandung: Remaja Rosdakarya, 2005) p.31-47.

[16]Sumarna Surapranata, *Analisis Validitas,* p.12.

d. Calculate the standard deviation, mean, minimum score and maximum score through descriptive statistics analysis

e. Analyze the probability value with One Sample K-S (Kolmogorov Smirnov) Test from SPSS program

f. Compare the prices of prability value with a significance level of 5%.[17]

Draw conclusions if the probability value > 0.05, then the data were normally distributed

2. Hypothesis analysis

After the date about the X variable and the Y variable are collected. The researcher examine research hypothesis by calculating and correlate the data of X and Y variables.

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

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\}\{N \sum X^2 - (\sum X)^2\}}} \quad [18]$$

Where,

r_{xy} : the coefficient of correlation between students' reading score and their achievement in vocabulary.

$\sum xy$: sum of score X and Y

$\sum X$: sum of vocabulary score

$\sum Y$: sum of reading comprehension score

b. Examining whether there is a significant correlation or not by consulting the result of r_{xy} on r table.

0.00 – 0.19 Means very low correlation

0.20 – 0.39 means low correlation

0.40 – 0.69 means moderate correlation

0.70 – 0.89 means high correlation

[17]Idmat, *Uji Normalitas dengan SPSS v.17.* retreived from: http://idmatgokil.wordpress.com/2011/01/23/cara-melakukan-uji-normalitas-dengan-spss// Monday, September 24th, 2012.

[18]Sambas Ali Muhidin & Abdurrahman, *Analisis Korelasi, Regresi dan Jalur dalam Penelitian,* p.123.

0.90– 1.00   means very high correlation.[19]

c. Looking for the regression similarity

Y = aX + K

Where

Y : Criterion

X : Predictor

a   : The numeral of predictor coefficient

K : The numeral of constant

To look for the value of a and K, the writer uses deviation score method. The formula is as follows:

$y = ax$ Where $y = Y - Y$, $x = X - Y$ and $a = \frac{\sum xy}{\sum x^2}$ [20]

d. Variant analysis of regression line

$$F_{reg=\frac{RK_{reg}}{RK_{reg}}} \quad \text{with,} \quad RK_{reg=\frac{JK_{reg}}{db_{reg}}}$$

$$RK_{res=\frac{JK_{res}}{db_{res}}} \quad \text{and,} \quad RK_{res=\frac{(\sum xy)^2}{\sum x^2}}$$

$$JK_{reg=\sum y^2 \frac{(\sum xy)^2}{\sum x^2}} [21]$$

Where:

F_{reg} = price of F numeral for regression line

RK_{reg} = mean of regression line quadrate

RK_{res} = mean of residue quadrate

db_{reg} = degree of residue freedom.

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[19]Sambas Ali Muhidin, & Abdurrahman, *Analisis Korelasi, Regresi dan Jalur dalam Penelitian,* p.128.

[20]SutrisnoHadi, *Analisis Regresi*, (Yogyakarta: Andi Office, 2001), p. 6.

[21]Sutrisno Hadi, *Analisis Regresi*, p. 14