# CHAPTER III

RESEARCH METHOD

This chapter discusses the research method used in this study. It covers the presentation of the research design, research instrument, data collection method, and data analysis.

A. Research Design

The researcher uses quantitative approach to answer the research problem. The type of this study is descriptive or non-experimental research. The research method used is correlational study. Correlation study is aimed at resulting hypothesis which is carried out by measuring two or more variables and coefficient of correlation between variables (Sudjana and Ibrahim, 2007: 77). The researcher uses this type of study because the researcher wants to know the strength of the relation between learning motivation and vocabulary mastery toward reading comprehension of the eighth grade student of SMPN 3 Wonomulyo based on the correlation coefficient. This study has two variable, they are predictor variable and criterion variable. The X-variable is called predictor variable and Y-variable is called criterion variable (Mertens, D.M. 2010: 163). The predictor variables here consist of learning motivation and vocabulary mastery. While the criterion variable here is reading comprehension. The schema of the correlation between the three variables can be seen in the figure 3.1

Figure 3.1. Schema of correlation between learning motivation and vocabulary mastery toward reading comprehension
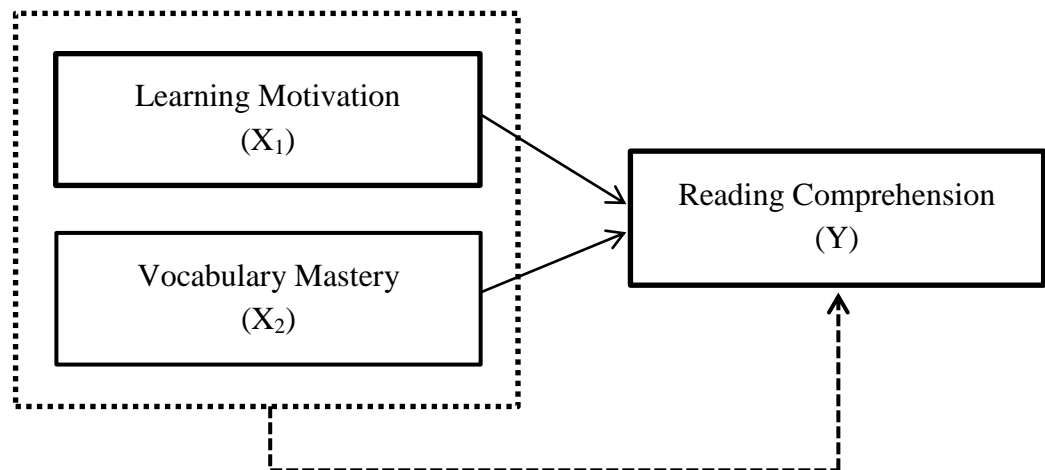
Furthermore, Johnson and Christensen (2000: 27) stated that there are three possible result of correlation study, as follows: a positive correlation, a negative correlation and no correlation.

1. Positive correlation

    It is assumed that there is a positive correlation when all of the variables move in the same directions, the scores improve or decrease at the same time.

2. Negative correlation

    When two variables move to different direction, it means that there is a negative correlation. Move different directions mean score of one variable improves while the other decreases.

3. No correlation

It means there is no correlation among variables. If the number of correlation coefficient is equal to zero it indicates no correlation and they are not influencing one to another.

In this study, the researcher wants to know whether the strength of the relation between learning motivation, vocabulary mastery, and reading comprehension existed or not. Therefore, the suitable research design to investigate this problem is correlational research design.

B. Population and Sample

A. Population

Population is all cases, situations or individuals who share one or more characteristic (Nunan, 1992:231). According to Hallonen and Santrock (1999:18), population is the complete group of organisms that represents by the research participants. The population of this study is the eighth grade students of SMPN 3 Wonomulyo. The total of population are about 160 students divided into 6 classes. There are VIII-A, VIII-B, VIII-C, VIII-D, VIII-E, and VIII-F. Therefore, the table below explains the detailed numbers of students in each class.

Table 3.1. Population of the eighth grade students of SMPN 3 Wonomulyo

Class	Numbers of Students
VIII-A	28
VIII-B	28
VIII-C	28
VIII-D	24

VIII-E	24
VIII-F	28
Total	160

B. Sample

Arikunto (2006:131) said that sample is representative of population in research. Sample is a subset of individuals from a given population (Nunan, 1992:27). Moreover, sample is taken from the population must be truly representative. According to Arikunto (2012) stratified random sampling will take 25% of the total population. Therefore, the total population in this study is 160 students, then 25% of 160 students is 40 students. The sampling technique in this study is n = (total population in each class of 8th / total population) x total number of samples.

Table 3.2. Sampling Technique

Class	Formula	Sample
VIII-A	$\frac{28}{160} \times 40 = 7$	7
VIII-B	$\frac{28}{160} \times 40 = 7$	7
VIII-C	$\frac{28}{160} \times 40 = 7$	7
VIII-D	$\frac{24}{160} \times 40 = 6$	6
VIII-E	$\frac{24}{160} \times 40 = 6$	6
VIII-F	$\frac{28}{160} \times 40 = 7$	7
Total		40

C. Data Collecting Method

The researcher uses test and questionnaire as the technique to collect the data of this study. Test is used to measure students' vocabulary mastery and reading comprehension. While questionnaire is used to collect the data about students' learning motivation.

D. Instrument of Collecting Data

1. Scale for motivation

Arikunto (2006: 151) defined that questionnaire is a number of the researcher question which was used to get information from respondent about their personality or something that they know. In this study, the questionnaire was used to know whether students have learning motivation or not. The type of the questionnaire is closed-type questionnaire. The researcher uses Likert scale rating. This scale has five options. They are strongly agree *(sangat setuju)*, agree *(setuju)*, undecided *(ragu-ragu)*, disagree *(tidak setuju),* and strongly disagree *(sangat tidak setuju).* As bellow:

Table 3.3. Scale of Learning Motivation

No.	Scales	Score
1	Strongly Agree	5
2	Agree	4
3	Undecided	3
4	Disagree	2
5	Strongly Disagree	1

The researcher adapted the questionnaire from Sari (2017) to know the students' motivation in learning. The questionnaires consist two indicators namely: intrinsic motivation and extrinsic motivation. The researcher gave the form of questionnaire include questions followed by answers. Then, the students answer the question given by give checklist in answer column and choose one of them based on what the students actually experienced.

Furthermore, the questionnaires were administered by using *Bahasa Indonesia* in order to make the respondents fully comprehend about the whole questions and to avoid misunderstanding. Before being used to collect the data, the researcher conducted try-out of the questionnaire to test the validity and reliability of the items. The framework of learning motivation for tryout can be seen on table 3.4.

Table 3.4. The Framework of Learning Motivation

The Concept	Indicator	Item Number	Total
Motivation is a theoretical construct used to explain the initiation, direction, intensity, persistence, and quality goal directed behavior which is connected by two dimensions in	Intrinsic motivation	1, 2, 3*, 4, 5, 6, 7, 11, 12, 17*, 20, 24, 25*	13
	Extrinsic motivation	8, 9, 10, 13, 14, 15, 16, 18, 19, 21*, 22, 23	12

general, they are intrinsically and extrinsically motivation.			
Total Items			25

*Note: **the numbers with (*) are unvalid item of questionnaire's question***

Based on the table above, we know that the indicator are intrinsic motivation and extrinsic motivation consist of 25 items of questions. After conduct the tryout and analyzed the items by using SPSS 24 for windows, the reseacher found that 4 items are not valid and 21 items are valid.

2. Test of vocabulary mastery

Arikunto (2006: 150) explains test as an organized questions or exercise and also other instrument which is used to measure the skill, intelligence knowledge, ability or talent had by individual or group of people. In this study, the test of vocabulary mastery is objective test in the form of multiple-choice type. The scoring system for the test is that if the students answer the item correctly, they will be scored 1 whereas if the students answer incorrectly, they will be scored 0. So the high score is 100 if the students answer all of the question correctly. To get the validity and reliability of the items, the researcher conducted try out and analyzed the items used SPSS 24 for windows. The framework of vocabulary mastery test for try out can be seen on table 3.5.

Table 3.5. The framework of vocabulary mastery test

The Concept	Indicator	Item Number	Total

Vocabulary mastery is the students' knowledge concerning with words. It also deals with the meaning which should be seen as individual words and the rules in gaining those words into a language. The elements of vocabulary mastery used are adjective, verb, noun, adverb, synonim, and antonym.	1. Word classes
	  a. Noun
	  b. Verb
	  c. Adjective
	  d. Adverb
		1*, 2, 3, 4, 5
		6, 7, 8, 9*,10,
		11, 12, 13, 14
		15, 16, 17*, 18
			18

	2. Word meaning
	  a. Synonym
	  b. Antonym
	  c. Hyponym
		23, 24, 25, 26*
		27*, 28, 29, 30
		19, 20, 21, 22
			12

Total Items			30

*Note: **the numbers with (*) are unvalid item of vocabulary mastery test***

      Based on table above, we know that the vocabulary mastery tests consist 7 indicators, they are word classes consists of noun, verb, adjective and adverb. Word meaning consists of synonym, antonym, and hiponym. After conduct the try out and analyzed the items by using SPSS 24 for windows, the reseacher found that 5 items are not valid and 25 items are valid.

3. Test of reading comprehension

The test is objective test in the form of multiple-choice type. The scoring system for the test is that if the students answer the item correctly, they will be scored 1 whereas if the students answer them incorrectly, they will be scored 0. So the high score is 100 if the students answer all of the question correctly. The researcher conducted try out first to get the validity and reliability before all of the instruments to be tested for the sample. The framework of reading comprehension test for try out can be seen on table 3.6.

Table 3.6. The Framework of Reading Comprehension Test

The Concept	Indicator	Item Number	Total
Reading comprehension is a complex process regulated by cognitive, emotional, and social experience.	Find topic	6, 16, 27	3
	Find main idea	7, 18, 22	3
	Find detailed information in the text	1, 2, 4, 8, 9*, 12*, 13*, 15, 17, 21, 28	11
	Identify reference of pronoun	3, 25, 29	3
	Draw inferences	11, 14, 23, 26	4
	Guess word meaning (antonym and synonym) based on context	5, 10, 19, 20, 24, 30*	6
Total Items			30

*Note: **the numbers with (*) are unvalid item of vocabulary mastery test***

Based on table above, we know that the reading comprehension tests consist 6 indicators. They are finding topic, finding main idea, finding detailed information in the text, identifying reference of pronoun, drawing inferences, and guessing word meaning based context. After conduct the try out and analyzed the items by using SPSS 24 for windows, the reseacher found that 4 items are not valid and 26 items are valid.

E. Validity and Reliability

1. Validity of the instruments

Validity is the extent to which one can generalize one's finding from the subjet and situations to other subject situation (Nunan,1992: 22). Validity refers to the extent to which an instrument measures what one thinks it is measuring. Arikunto (2006: 168) states that an instrument is valid if it is table to measure what the researchers are going to measure.

To analyzed the validity of questionnaire and tests, the researcher used construct validity and uses *SPSS 24.0 for windows* on obtaining the Pearson Product Moment to check validity of all the instrumets. The criteria validity of test called valid, if r-count is higher than r-table and it is not valid if r-count is lower than r-table.

There are 25 items of learning motivation questionnaire used to try out. After conduct try out test, the researcher gets 21 valid items by analyzed the validities used *SPSS 24.0 for windows* on obtaining the Pearson Product Moment to measure students' learning motivation which

consists of two indicators. They are intrinsic motivation and extrinsic motivation. The validity value of learning motivation questionnaire can be seen on table 3.7.

Table 3.7. Validity Value of Learning Motivation (X_1)

No.	R_{count}	R_{table} (N=20) at Sig 5%	Decesion
1	0,446	0,444	Valid
2	0,555	0,444	Valid
3	0,015	0,444	Not valid
4	0,553	0,444	Valid
5	0,619	0,444	Valid
6	0,649	0,444	Valid
7	0,555	0,444	Valid
8	0,649	0,444	Valid
9	0,592	0,444	Valid
10	0,824	0,444	Valid
11	0,552	0,444	Valid
12	0,582	0,444	Valid
13	0,589	0,444	Valid
14	0,498	0,444	Valid
15	0,493	0,444	Valid
16	0,757	0,444	Valid
17	0,112	0,444	Not valid
18	0,649	0,444	Valid
19	0,513	0,444	Valid
20	0,553	0,444	Valid
21	0,236	0,444	Not valid
22	0,498	0,444	Valid
23	0,502	0,444	Valid
24	0,619	0,444	Valid
25	0,129	0,444	Not valid

Based on table 3.7., we can see the value validity of learning motivation; 4 items are declared not valid and 21 items are declared valid. The researcher take 20 items of valid questions to measure students' learning motivation.

There are 30 items of vocabulary mastery test used to try out. After conduct try-out test, the researcher gets 25 valid items by analyzed the validities used *SPSS 24.0 for windows* on obtaining the Pearson Product Moment to measure students' vocabulary mastery which is consist of 7 indicators. Word classes consists of noun, verb, adjective and adverb. Word meaning consists of synonym, antonym, and hiponym. The validity value of vocabulary mastery test can be seen on table 3.8

Table 3.8. The Validity Value of Vocabulary Mastery (X_2)

No.	R_{count}	R_{table} (N=20) at Sig 5%	Decision
1	0,374	0,444	Not Valid
2	0,606	0,444	Valid
3	0,634	0,444	Valid
4	0,631	0,444	Valid
5	0,522	0,444	Valid
6	0,711	0,444	Valid
7	0,529	0,444	Valid
8	0,606	0,444	Valid
9	0,242	0,444	Not Valid
10	0,364	0,444	Valid
11	0,631	0,444	Valid
12	0,606	0,444	Valid
13	0,711	0,444	Valid
14	0,612	0,444	Valid
15	0,648	0,444	Valid
16	0,631	0,444	Valid
17	0,162	0,444	Not Valid
18	0,606	0,444	Valid
19	0,508	0,444	Valid
20	0,620	0,444	Valid
21	0,597	0,444	Valid
22	0,631	0,444	Valid
23	0,670	0,444	Valid
24	0,508	0,444	Valid
25	0,510	0,444	Valid
26	0,276	0,444	Not Valid
27	0,023	0,444	Not Valid
28	0,648	0,444	Valid

| 29 | 0,669 | 0,444 | Valid |
| 30 | 0,571 | 0,444 | Valid |

Based on table 3.8., we can see the value validity of vocabulary mastery test; 5 items are declarated not valid and 25 items are declarated valid. The researcher take 25 items of valid questions to measure students' vocabulary mastery.

Moreover, there are 30 items of reading comprehension test used to try-out. After try-out test, the researcher analyzed the validities used *SPSS 24.0 for windows* on obtaining the Pearson Product Moment to find out the significance of the variable. Then, the researcher gets 26 valid items to measure students' reading comprehension which consists of 6 indicators. They are finding topic, finding main idea, finding detailed information in the text, identifying reference of pronoun, drawing inferences, and guessing word meaning based context. The validity value of reading comprehension test can be seen on table 3.9.

Table 3.9. The Validity Value of Reading Comprehension (Y)

No.	R count	R_{table} (N=20) at Sig 5%	Decision
1	0,604	0,444	Valid
2	0,600	0,444	Valid
3	0,585	0,444	Valid
4	0,610	0,444	Valid
5	0,571	0,444	Valid
6	0,665	0,444	Valid
7	0,562	0,444	Valid
8	0,613	0,444	Valid
9	0,477	0,444	Not Valid
10	0,498	0,444	Valid
11	0,556	0,444	Valid
12	0,059	0,444	Not valid

13	0,168	0,444	Not valid
14	0,562	0,444	Valid
15	0,702	0,444	Valid
16	0,610	0,444	Valid
17	0,574	0,444	Valid
18	0,613	0,444	Valid
19	0,556	0,444	Valid
20	0,614	0,444	Valid
21	0,571	0,444	Valid
22	0,619	0,444	Valid
23	0,613	0,444	Valid
24	0,614	0,444	Valid
25	0,665	0,444	Valid
26	0,702	0,444	Valid
27	0,708	0,444	Valid
28	0,574	0,444	Valid
29	0,600	0,444	Valid
30	0,009	0,444	Not Valid

Based on table 3.9., we can see the value validity of reading comprehension test; 4 items are declared not valid and 26 items are declared valid. The researcher take 25 items of valid questions to measure students'reading comprehension.

2. Reliability of the instruments

Fraenkel and Wallen (2000: 169) stated that reliability refers to the consistency of scores or answers from one administration of an instrument to another, and from one set of items to another. Reliability is concerned with consistency of scores if the instruments used repeatly for different subjects or different times. In this study, the researcher uses Alpha Cronbach to measure the reliability of all the instruments.

According to Siregar (2013), reliability test can be done by having external and internal ways. In this study, the researcher used internal consistency in which the researcher tried out the questionnaire and the

tests once, then analyzed each item by using cronbach alpha technique. The researcher uses *SPSS 24.0 for windows* in obtaining Alpha Cronbach.

The following table in the level of internal consistency of Cronbach Alpha by Louis Cohen (2007:506), as follow:

Cronbach Alpha	Internal Consistency
>0,90	Very high reliable
0,80 – 0,90	Highly reliable
0,70 – 0,79	Reliable
0,60 – 0,69	Marginally/minimally reliable
<0,60	Unacceptably low reliability

Table 3.10. Reliable of Learning Motivation

Reliability Statistics

Cronbach's Alpha	N of Items
,880	25

Table 3.10. shows the reliable of learning motivation. Based on the table, we can know the value of learning motivation of Cronbach's Alpha was 0,880. It means leaning motivation was reliable.

Table 3.11. Reliable of Vocabulary Mastery

Reliability Statistics

Cronbach's Alpha	N of Items
,911	30

Table 3.11. shows the reliable of vocabulary mastery. Based on the table, we can know the value of vocabulary mastery of Cronbach's Alpha was 0,911. It means vocabulary mastery was reliable.

Table 3.12. Reliable of Reading Comprehension

Reliability Statistics

Cronbach's Alpha	N of Items
,928	30

Table 3.12. shows the reliable of reading comprehension. Based on the table, we can know the value of reading comprehension of Cronbach's Alpha was 0,928. It means reading comprehension was reliable.

F. Data Analysis

After collecting the data, the next step is analyzing data. In this study, the researcher uses some technique of analyzing data, it is as follow:

1. Method of Successive Interval (MSI)

Before going to the next step, the researcher uses method of successive interval to transform the ordinal scale which is learning motivation into interval scale by helping Microsoft Excel. According to Green (2017:122), the method of successive interval was designed by Thurstone to overcome some of the difficulties inherent in the method of equal appearing intervals. Edwards and Thurstone (1952) defined the method of successive interval is a pyschological scaling procedure in which stimuli are classified into succesive interval according to the degree

of some defined attribute which they are judged to process. Based on statements above, the method of successive interval can be defined as a technique to transform scale by calculating the value of the data obtained from the questionnaire.

By using the MSI, besides doing transformation from ordinal scale to the interval scale, it is also by transformating data to have normal dispersion. Therefore, the parametric statistical test can be used (Waryanto and Milafati, 2006). The stages in doing transformation with MSI as follow:

1. Determine the frequency on each option of each question items

2. Each frequency is divided by the number of respondents, the result is called proportion

3. The cumulative proportion value is determined bysumming the proportions in sequence per score column

4. Normal Distribution Table is used to calculate the Z value of each cumulative proportio

5. The high density for each value of Z is then determined (using the High-Density table)

6. Scale value (NS) is determined with this formula:

$$NS = \frac{\text{(Density at Lower Limit) – (Density at Upper Limit)}}{\text{(Area Below Upper Limit)} - \text{(Area Below Upper Limit)}}$$

7. Transformation value (Y) is determined by this formula:

$Y = NS + [\ 1 + |NS_{min}|\ ]$

In which NS_{min} is minimum scale value

In many fields of study, some researchers assume that Likert scale data is interval data, yet many others assume that it is ordinal data. Joreskog (1994) states that ordinal data describes multi-level category like Likert scale. Meanwhile, Deny (2007) mentions that Likert scale can be analyzed parametrically. This is due to the fact that Likert scale can be taken as interval data, in which the range between points is the same, and therefore Likert scale should be arranged so that the data can be categorized as interval data. This is supported by Clason & Dormody (2004) stating that 5-point Likert scale can be categorized as interval scale.

In addition, the researcher found that the previous studies treating Likert scale as interval data because they analyzed the ordinal data by using Pearson Product Moment without transformed the data first. However, Sukawati (2007) states that a list of questions answered with a Likert scale approach will yield ordinal data that does not show a comparison of one answer with the other answer to the same question. In the interval data, the comparison between the actual answers will look sharper so it can be processed to obtain the value of the respondent's answer. Furthermore, Riduwan and Kuncoro (2007) mentions transforming ordinal data into interval data is useful to meet some requirements of parametric analysis.

2. Prequisite test

The test cover normality test, linearity test, and significance of regression test. The test is required in correlation study to convince that the data is normal, significant and linear.

a. Normality test

Normality test is one of the perquisite tests before entering linear regression analysis, that is used to know whether the dependent variable are normal distributed or not. The researcher uses Kolmogorov Smirnov (KS-Z) formula to test the normality of data through *SPSS 24.0 for windows*. The normality can be seen from p (significance) on Kolmogorov Smirnov value. If p (significance) value greater than 0,05 (p>0,05), it tells that the distribution of the data is normal.

b. Linearity test

Linearity testing is aimed to know whether two variables which done by statistical analysis correlation show the linear relationship or not. Linearity test used to confirm whether the linear nature between the two variables identified in theory agree or disagree with the results of the existing observation. If there is a relationship between two variables that have not been known whether linear or not, linearity test can not be used to provide adjustment that the relationship is linear or not. Decision criteria:

- If Sig. (Significance)> 0.05, linearly related

- If Sig. (Significance) <0.05 then it is not linearly related.

In this study, the researcher uses *SPSS 24.0 for windows* in obtaining simple linear regression.

3. Hypothesis testing

To test hypothesis whether there is positive correlation or not, the researcher uses Pearson Product Moment through *SPSS 24.0 for windows* to test hypothesis 1 and hypothesis 2. To know the strength of correlation, correlation coefficient was compared with α (level of significance). The level of significance is 5% (0.05). If ρ-value (showed in *Sig. (2-tailed)*) $\leq$ α (level of significance), it means that Ho is rejected and Ha is accepted

Furthermore, the researcher uses Multiple Linear Regression through *SPSS 24.0 for windows* to test hypothesis 3. The coefficient of correlation or R is significant if the value of F observation is greater than the value of F table. F test is used to find out the significance correlation between two indipendent variables simultaneously toward dependent variable. The test of R^2 is used to find out the intensity of correlation between the two independents variables toward dependent variable.