CHAPTER III

METHOD AND PROCEDURE

This chapter consisted of method of the research, operational definition, variables, population and sample, validity and reliability of the test, technique for collecting data, and technique for analyzing data.

A.   Research Methodology

In this research the researcher used pre-experimental design to conduct this research. That is the pre-test, post-test one group design. According to Cohen, et al (2015, p. 212) states the pre experimental design is one group pre-test and post-test. So on the pre-experimental design has two kinds of test, they are pre-test and post-test.. The pre- experimental method is the procedure for testing a hypothesis by setting up a situation which consists of pre and post treatment tests, but lack of a control group. On the pre -experimental design there are two kinds of test. They are pre-test and post-test. In this research, this design support to find out the effectiveness of Discovery Learning Method in improving students' reading ability of the second grade students at SMK Negeri Batumarta Kecamatan Madang Suku III Kabupaten OKU Timur.

Because the researcher would administer two kinds of test; they were pre-test and post-test to the same sample students. The result of the two tests would be compared to know the students' ability. First, Pre-test was the test which was given to the students before they get the treatment in learning reading skill through Discovery Learning Method. Post-test was the test which was given to the students after they get the treatment.

The group pre-test-post test design was diagrammed bellow:

O1	X	O2
Pre-Test	Treatment	Post-Test

The experiment steps were:

1. Pre-test was administered

2. The treatment

3. Post-test was administered

B. Operational Definition

The title of this research was "The effect of discovery learning method application on increasing students' reading skills at the second grade students of SMK Negeri Batumarta Kecamatan Madang Suku III Kabupaten OKU Timur. To avoid misinterpretation, some words used in this title to be define optionally: Effect, Reading Skill, and Discovery Learning Method.

a. Effect

Effect is defined as a change which is a result or consequence of an act to give instruction or to give lesson.

b. Discovery Learning Method

Discovery Learning Method is an instructional model and strategies that focus on active, hands-on learning opportunities for students.

c. Increasing

Increasing in this study means students were becoming better in reading skill.

d. Reading skill

Reading skills is the cognitive processes that a reader uses in making sense of a text. In this skill the students are expected to comprehend ideational, interpersonal and contextual meaning within the text to identify the main ideas and supporting details, factual information, and meaning of the

words. It means that the students were expected to be able to understand what passage is about and the information that was given by the teacher can be understood by the students.

C. Research Variable

To give the precise concepts of the terms used, the researcher needed to present the research variables. The title of this research was "The effect of discovery learning method application on increasing students' reading skills at the second grade students of SMK Negeri Batumarta Kecamatan Madang Suku III Kabupaten OKU Timur". According to Frankel & Wallen (2015, p. 31), define a variable as any characteristic that is not always the same that is any characteristic varies. It means that variables were the condition or characteristics that the experimenter manipulates controls, or observers. There were two kinds of variable, independent and dependent variable that the independent variable influences the dependent variable.

In this research, the independent variable was discovery learning method, and the dependent variable is reading skills.

D. Population and Sample

1. Population

Population is group that is used by researchers in their study. According to Arikunto (2016, p. 173) "population is all things, people or events that be subject of investigation." It was meant that population had an important role in a study which would support in finding the result of study.

The population of this research was taken from students of SMK Negeri Batumarta Kecamatan Madang Suku III Kabupaten OKU Timur at the Second Grade. The total of population was 121 students. The population can be futher described in the table 1.

Table 1

The Population of The research

No	Class	Total
1	XI Multimedia I	32
2	XI Multimedia 2	31
3	XI Teknik dan Bisnis Sepeda Motor 1	28
4	XI Teknik dan Bisnis Sepeda Motor 2	30
Total		121

Sources: SMK Negeri Batumarta Kecamatan Madang Suku III Kabupaten OKU Timur,

Academic Year 2022/2023

2. **Sample**

Selecting sample is the most important step in study process. It would determine individuals who would participate in The research. Cohen, et.al (2015, p. 92) stated that a sample is one of a number of people or thing or part of whole used for showing what the test is like. It was selected in such a way that it represents, the large group (population) from which it was obtaioned.

In this research, the researcher used cluster random sampling. According to Sudjana (2016, p. 92), "cluster random sampling is used if the population more than one class or group, because in this sample the unit analysis is not individual but class or group that consists of individuals." The researcher's reason used cluster random sampling because it was not used to choose individual but it was used to choose class or group that consists individuals. And the researcher assumed that

all object in this research are same (homogeneous) so there is no similar or difference characteristics whether smart or low.

The procedure of taking the sample were:

1. The researccher wrote each class in a piece of small paper and roled it

2. The researcher put the roled paper on a glass and shoke the glass

3. The researcher took the first paper which was out of from the glass as the sample.

The sample of this research was presented in the table:

Table 2
The Sample of The research

No	Class	Total
1	XI. Multimedia 2	1
	Total	**31**

Sources: SMK Negeri Batumarta Kecamatan Madang Suku III Kabupaten OKU Timur,

Academic Year 2022/2023

A.   Technique for Collecting the Data

The researcher used test to collect the data. A test is a set of question or other elements use to measure an individual or group's skill, knowledge, intelligence, ability, or aptitude. According to Brown (2018, p. 3) test is a method of measuring a person's ability, knowledge, or performance in a given domain. There were two tests in this research : the pre-test and the post-test. The pre-test would be given before the treatment. The post-test would be given after the treatment in order to know development of students reading skill.

In this research, firstly the researcher administered the pre-test to the sample students then the researcher taught the students through Discovery Learning Method for 4 meetings @ 2 x 35

minutes. Finally, the researcher administered the post-test to know the ability of the students in reading skill.

The test was in the form of multiple choice test. Before it was being given to students, the validity and the reliability of the test items were checked first.

B. Validity, Reability, and Index Difficulty of the Test

1. Validity of the Test

Cohen, et.al. (2015, p. 109) stated that validity of test is an essentially a demonstration that a particuar instrument in fact measures what is purpose to measure. It related to all test items that available in an instrument. The test instruments would be devised in terms of content validity and construct validity. Content validity was the extent to which a test measure a representative sample of the subject matter content, while construct validity was concerned with whether or not the test perfomance could be described psychologically. In this research the researcher used SPSS version 21 to find the validity of the test. The test specification of test system was devised as show in table 3.

Table 3

Specification of Test Items

Standard Competence	Indicator	Material	Item Number	Type of Test
Understanding the meaning of short functional text and written essay in the form of analytical exposition in daily life	The students are able: 1. Find out the type and the generic structure, and the purpose of the text 2. Find out the main idea of the text	Analytical exposition text: - Governments level Australia - The Used of Pestic in Agriculture - Cars Pollution - Mobile phones - Global warming	1,8,11,12,24,28,30 31,32 5, 14,17,18,22,33 2,3,4,6,9,10,15	Multiple choice

context an to access knowledge	3. Find out specific information of the text 4. Find out the meaning of the words of the text. 5. Find out the inference in the text	- The dangerous of formalin - The important of reading - Learning English through music and song	16,19,21,23,25,26 27,34 7 13,20,29,35	
Total			35	

To check whether the instrument has a good validity or not, the researcher checked the difficulty index of the instruments. The researcher used the formula and used the SPSS version 22.00.the researcher used non sample class for trying out the instrument, which was consisted of 32 students of class X.B. To analyzed the validity of the instrument based on SPSS, the researcher determined the Significance level (α) of the test was 0,05 or 5% from the confidence interval 95%, and the value r_{table} of this test was 0,349 with (df= N-2= 30) . Which the researcher concluded two hypothesis first if the critical value ($r_{obtained}$) was positive and more than r_{table}, it meant that the item was valid. The second if the critical value ($r_{obtained}$) was negative and less than r_{table}, it means that the item was invalid.The result of validity in the test for tryout was show in table 4:

Table 4
Validity of the Instrument

No.	Questions Item	Critcal Value (r Obtained)	r Table	Conclusion
1	Item 1	.709	0,349	Valid
2	Item 2	.780	0,349	Valid
3	Item 3	.734	0,349	Valid
4	Item 4	.429	0,349	Valid
5	Item 5	.383	0,349	Valid
6	Item 6	.750	0,349	Valid
7	Item 7	.430	0,349	Valid

8	Item 8	.656	0,349	Valid
9	Item 9	**-.665**	**0,349**	**In Valid**
10	Item 10	**-.253**	**0,349**	**In Valid**
11	Item 11	.376	0,349	Valid
12	Item 12	.709	0,349	Valid
13	Item 13	.445	0,349	Valid
14	Item 14	**-.456**	**0,349**	**In Valid**
15	Item 15	.383	0,349	Valid
16	Item 16	.750	0,349	Valid
17	Item 17	.709	0,349	Valid
18	Item 18	.750	0,349	Valid
19	Item 19	**.000**	**0,349**	**In Valid**
20	Item 20	**-.083**	**0,349**	**In Valid**
21	Item 21	.408	0,349	Valid
22	Item 22	.709	0,349	Valid
23	Item 23	.750	0,349	Valid
24	Item 24	.414	0,349	Valid
25	Item 25	.709	0,349	Valid
26	Item 26	.780	0,349	Valid
27	Item 27	.734	0,349	Valid
28	Item 28	.429	0,349	Valid
29	Item 29	.467	0,349	Valid
30	Item 30	.445	0,349	Valid
31	Item 31	.376	0,349	Valid
32	Item 32	.709	0,349	Valid
33	Item 33	.568	0,349	Valid
34	Item 34	.537	0,349	Valid
35	Item 35	.430	0,349	Valid

Based on the distribution of the table above, the researcher found there were 5 items were in valid they were item 9, item 10, item 14, item 19, and item 20, and there were 30 items were valid. So, the researcher used 30 items for the research instrument.

2. Reliability of the Test

It is important to investigate the reliability of test instrument. Cohen, et.al (2015, p. 117) stated that "reliability is consistency and replicability over time, over instrument and over group of respondent." On the other words, reliability test was how consistent test score or other evaluation results were from one measurement to another. To estimate the instrument is reliable or not, the researcher found the reliability through Cronbach Alpha Test by using SPSS 20

Program. The researcher compared the Cronbach's Alpha point with the Criteria Point 0,70 (Sekaran, 2003) to determine which number of items was reliable or not. The reliable item was the item which had Cronbach's Alpha point more than Criteria point 0,70. So, the researcher concludes two hypotheses as follow:

(a) If the Cronbach's Alpha Point is more than 0,70; it means that the items of instrument are reliable.

(b) If the Cronbach's Alpha Point is less than 0,70; it means that the items of instrument are not reliable.

The result of tryout was presented in the table 5:

Table 5
Result of Tryout

No	Student's code name	Number of Item	Total Answer		Score
			Correct Answer	In Correct Answer	
1	AS	35	31	4	88,57
2	AR	35	25	10	71,43
3	AB	35	28	7	80,00
4	AST	35	27	8	77,14
5	AM	35	25	10	71,43
6	AP	35	16	19	45,71
7	AA	35	26	9	74,29
8	AZ	35	7	28	20,00
9	CS	35	10	25	28,57
10	CA	35	13	22	37,14
11	DR	35	13	22	37,14
12	DNS	35	9	26	25,71
13	EF	35	10	25	28,57
14	EM	35	7	28	20,00
15	FY	35	16	19	45,71
16	FA	35	25	10	71,43
17	GTS	35	13	22	37,14
18	HD	35	32	3	91,43
19	KAS	35	31	4	88,57

20	NP	35	22	13	62,86
21	MA	35	10	25	28,57
22	MS	35	19	16	54,29
23	NA	35	9	26	25,71
24	NAS	35	10	25	28,57
25	PS	35	34	1	97,14
26	RA	35	33	2	94,29
27	RAL	35	14	21	40,00
28	RAD	35	24	11	68,57
29	SPDP	35	33	2	94,29
30	SN	35	20	15	57,14
31	SJ	35	24	11	68,57
32	SW	35	12	23	34,29
Total		1120	628	492	1794,286
Mean		35	19,625	15,375	56,07143

Based on the table 3, it was found that the students mean score was 56,07. And the result

of reliability of grammar tryout was seen in Table 6:

Table 6

Reliability Statistics

Cronbach's Alpha	N of Items
.924	35

The table 6 showed that the Cronbach's Alpha Point was 0,924, it was more than 0,70. So,

it meant that the items of the instruments were reliable and could be used as the instrument of the

research.

3. Index Difficulties

Index of difficulty is the percentage of students answering correctly each item in the test.

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

Where :

P   : Proportion / Index of Difficulty

B : Numbers of students who have right answer

JS : Number of students taking the test

Dealing with index of difficulty, Nurgiyantoro (2018, p. 195), present the criteria of difficulty used that "difficult, Middle, Easy". The criteria of index difficulty could be seen in Table 7:

Table 7
Index Difficulty of Question

Index of Difficulty	Interpretation
0,20 - 0,40	Difficult
0,41 - 0,60	Middle
0,61 - 0,80	Easy

Source: Nurgiyantoro (2018, p. 195)

The result of difficulty index of tryout was seen in Table 8:

Table 8
Difficulty Index of Tryout

Items	Number of Student	Correct Answer	Difficulty Index	Criteria
1	35	15	0,47	Middle
2	35	16	0,5	Middle
3	35	19	0,59	Middle
4	35	18	0,56	Middle
5	35	18	0,56	Middle
6	35	14	0,44	Middle
7	35	17	0,53	Middle
8	35	16	0,5	Middle
9	35	8	0,25	**Difficult**
10	35	31	0,97	**Easy**

11	35	18	0,56	Middle
12	35	15	0,47	Middle
13	35	19	0,59	Middle
14	35	27	0,84	**Easy**
15	35	18	0,56	Middle
16	35	14	0,44	Middle
17	35	15	0,47	Middle
18	35	14	0,44	Middle
19	35	32	1	**Easy**
20	35	30	0,94	**Easy**
21	35	17	0,53	Middle
22	35	15	0,47	Middle
23	35	14	0,44	Middle
24	35	19	0,59	Middle
25	35	15	0,47	Middle
26	35	16	0,5	Middle
27	35	19	0,59	Middle
28	35	18	0,56	Middle
29	35	18	0,56	Middle
30	35	19	0,59	Middle
31	35	18	0,56	Middle
32	35	15	0,47	Middle
33	35	17	0,53	Middle
34	35	17	0,53	Middle
35	35	17	0,53	Middle

The Result Index Difficulty of Question was tabulated in the table 9:

Table 9
The Result Index Difficulty of Question

Percentage	Level of difficulties	Number of Question	Total Number of Question
0,20 - 0,40	Difficult	9	1
0,41 - 0,60	Middle	1,2,3,4,5,6,7,8,10,11,12,13,15,15,16,17,18,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35	30
0,61 - 0,80	Easy	10,14,19,20	4
Total			35

Based on table above it could be seen for the instrument of test, the researcher found some questions in some level of difficulties which there was 1 difficult questions, 30 middle questions, and 4 were easy questions. So, it meant that there were 30 questions that have a good validity.

C.   Techniques for Analyzing Data

1.   The Scoring of the test

In calculating the score of the students, the researcher used the formula was formulated as follow:

$$S = \frac{B}{N} \text{ x } 100$$

Where:

S   = The students score.

B   = The number of correct answer of students.

N   = The total items of the test.

(Majid, 2018, p. 268)

2.   To get percentage of the students` score distribution the researcher used the following formula:

$$P = \frac{f}{N} \text{ x } 100\%$$

Where:

P   = The result of percentage

f   = The total of score criteria

N   = The total of the students

To classify individual score that the students obtained in discovering the key ideas was shown in table 10:

Table 10
Score Range and Qualification

No	Score Range	Scale	Score Category
1.	80 – 100	A	Very good
2.	66 – 79	B	Good
3.	56 – 65	C	Fair
4.	41 – 55	D	Poor
5.	00 -40	E	Fail

(source; Arikunto, 2018, p. 281)

3. **Paired Sample T- Test**

After getting score of pre-test and post. In order to find out the significance differences between pre-test and post-test, the researcher used paired sample t-test that was done by using SPSS version 20.00. Then the researcher used independent tests done by using SPSS version 20.00 to see whether significant or not discovery learning method was effective on increasing students' reading skills to the second grade students of SMK Negeri Batumarta Kecamatan Madang Suku III Kabupaten OKU Timur.