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CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

The type of this research was quasi experiment research. According to Cresswel (2008, p.299), experiment is test an idea (or practice or procedure) to determine whether it influences an outcome or dependent variable. The design of this research was quasi experimental research. Gay and Airaisian (2000, p.367) stated that experimental research is the only type of the research that can test hypotheses to establish cause-and-effect relationship. It uses quasi-experimental design which uses the observation. It involves two classes, an experimental group and a control group. The experimental group means the students who are given the treatment by using 5E Instructional Model, while the control group is a group of students who are not given the strategy.

This research was aimed to find whether there was a significant effect of using 5E Instructional Model in teaching reading. The experimental group was teaching by using particular treatment of 5E Instructional Model to enhance their reading comprehension. In addition, control group was only given a pre-test and post-test without particular treatment as given for experimental group. So, the design of this research can be illustrated as follows (Creswell, 2008, p.314) this research design can be seen in the table below (Quasi Experimental Design):

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Table III. 1
Research Design

Group	Pre-Test	Treatment	Post-Test
Experimental	X1	T	Y1
Control	X2	-	Y2

Where:

- X1 = Pre-test in experimental group
 X2 = Pre-test in control group
 Y1 = Post-test in experimental group
 Y2 = Post-test in control group
 T = Treatment

B. Location and Time of the Research

The location of this research was conducted in MTsN Andalan Pekanbaru, which is located on Amal Hamzah Street No. 1 Kecamatan Sail Kota Pekanbaru. The time of the research was conducted on April 2017.

C. Subject an Object of the Research

The subject of this research was the third year students of MTsN Andalan Pekanbaru and the object of this research is the effect of using 5E Instructional Model on students' reading comprehension of report text.

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D. Population and Sample of the Research

1. Population

The population of this research was the third year students at MTsN Andalan Pekanbaru in 2016/2017 academic year. It consisted of 10 classes. The total number of population was 369 students. The specification of population can be seen on the table below:

Table III. 2
The Population of The Third Year Students
of MTsN Andalan Pekanbaru

No	Class	Population
1.	IX.1	35
2.	IX.2	36
3.	IX.3	38
4.	IX.4	38
5.	IX.5	37
6.	IX.6	38
7.	IX.7	36
8.	IX.8	37
9.	IX.9	38
10.	IX.10	36
	TOTAL	369

2. Sample

Considering the population of the research was very large, thus the researcher had to take some samples of the population of the research. In this research, the researcher used cluster random sampling technique. According to Gay and Airasian (2010, p.123) cluster random sampling technique is the process of selecting a sample in such a way that all individuals in the defined population have an equal and independent chance of being selected for the sample. Cluster random sampling technique is most useful when the

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populations are very large or spread out over a wide geographic area. So, the researcher used cluster random sampling in choosing the sample. Cluster random sampling selects groups, not individuals.

Based on the explanation above, to find out the sample, the researcher used cluster random sampling technique by passing out small rolled paper marked by sequence name of the class, they were IX.1, IX.2, IX.3, IX.4, IX.5, IX.6, IX.7, IX.8, IX.9, IX..10. Then after passing out the paper, the samples of this research were IX.4 as experiment class and IX.3 as control class. The total sample of this research is 76 students. The first class is IX.4 as experimental class, it consists of 38 students, and the second class is IX.3 as control class that consist of 38 students. The specification of the sample can be seen on the table below:

Table III. 3
The Sample of The Third Year Students
of MTsN Andalan Pekanbaru

No	Group	Class	Sample
1.	Experimental Class	IX.4	38
2.	Control Class	IX.3	38
	Total		76

E. Technique of Collecting Data

In collecting the data, the researcher used test. In this test, students were required to answer question based on the text were given. According to Brown (2007, p.3) test means that a method of measuring of a person's ability, knowledge or performance in given domain. The researcher used multiple choice questions form. Multiple choice questions require the

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students to select the best answer out of a number option. The test consisted of 20 items. The test was given twice. The researcher constructed or adopted the test from the book and sources related. In this research, the test was divided into two ways:

a. Pre-test

Pre-test was used to collect the data about students' reading comprehension in report text before they were taught by using 5E Instructional Model. It was given to both experimental and control class. In this test, the researcher used multiple choice type and the questions were based on the indicators of reading comprehension.

b. Post-test

Post-test was used to collect the data about students' reading comprehension in report text after they were taught by using 5E Instructional Model. It was given to both experimental and control class. In this test, the researcher used multiple choice type and the questions were based on the indicators of reading comprehension.

Based on Arikunto (2009, p.245), the interpretation of students score is classified follow:

Table III. 4
The Classification of Students' Score

The Score Level	Category
80 – 100	Very Good
66 – 79	Good
56 – 65	Enough
40 – 55	Less
30 – 39	Fail

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For further information about the instruction of texts, the writer showed the blueprint of both tests as follows:

Table III. 5
Blueprint of the Test

No	Indicator of Variable Y	Number of Items	Items Number
1	The students can identify the main idea of the report text.	4	1,6,11,16
2	The students can identify the reference of the report text.	4	2,7,12,17
3	The students can identify inference of the report text.	4	3,8,13,18
4	The students can identify the language features of the report text.	4	4,9,14,19
5	The students can identify the generic structure of the report text.	4	5,10,15,20
Total		20	20

F. Validity and Reliability of the Test

1. Validity

Before the test was given to the sample of this research, the researcher tried out the test item. The test given to the students was considered not too difficult or not too easy. The purpose of the try out was to obtain validity and reliability of the test. According to Hughes (2003, p.26) the test is said to be valid if it measures accurately what is intended to measure. In this research the researcher used content validity. Furthermore, Hughes (1989, p.22) said that a test is said to have content validity if its content constitutes a representative sample of the language skill, structure, etc, with which it is meant to be concerned. It means that the test given to the students was based

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on the material that they had learned. It was determined by finding the difficulty level of each item.

In this research, the researcher wants to measure the students' reading comprehension. Therefore, to measure the validity of the test, the researcher used content validity. Mujis (2004) also added content validity refers to whether or not the content of the manifest variables (e.g. items of a test or questions of a questionnaire) is right to measure the latent concept (self-esteem, achievement, attitudes, etc.) that we are trying to measure.

Finally, the researcher determined the validity by referring to the material that was given to the students based on the students' text book. In other words, the test given to the students was based on the material that they had learned. To find out the validity of test, researcher calculated it by using SPSS 16 version. The standard value of validity is $r_{\text{item}} > r_{\text{table}}$. Based on the try out result, it was determined that all of the items were valid. The result of try out is as follows:

Table III. 6
The Item Validity of Try Out

Item Number	r-item	r-table	Result
1.	0,42	0,36	Valid
2.	0,39	0,36	Valid
3.	0,44	0,36	Valid
4.	0,39	0,36	Valid
5.	0,50	0,36	Valid
6.	0,40	0,36	Valid
7.	0,41	0,36	Valid
8.	0,44	0,36	Valid
9.	0,43	0,36	Valid
10.	0,47	0,36	Valid
11.	0,38	0,36	Valid
12.	0,44	0,36	Valid
13.	0,39	0,36	Valid
14.	0,36	0,36	Valid
15.	0,43	0,36	Valid
16.	0,45	0,36	Valid
17.	0,43	0,36	Valid
18.	0,40	0,36	Valid
19.	0,46	0,36	Valid
20.	0,41	0,36	Valid

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Arikunto (2009:208) stated that the easy or difficulty level of each item can be determined by following formula

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

Where:

P : Index of difficulty

B : The number of correct answer

JS : The number of students taking test

Furthermore, Arikunto (2007, p.210) stated that the standard level of difficulty used is > 0.30 and < 0.70 . It means that the items are accepted if the level of difficulty is between $0.30 - 0.70$, and it is rejected if the level of difficulty is below 0.30 (difficult) and over 0.70 (easy). Then, the proportion is represented by "P", whereas the proportion incorrect is represented by "q". It can be seen from the following tables:

Table III. 7
The Students Identifying Main Idea of the Text

Variable	Identifying Main Idea of the Text				N
Item no.	1	6	11	16	30
Correct	19	15	17	21	
P	0.63	0.50	0.57	0.70	
Q	0.37	0.50	0.43	0.30	

Based on the table of question for identifying the main idea, there were four numbers of question: 1, 6, 11, and 16. It showed that the proportion of correct answer for identifying the main idea of test item numbers 1 was 0.63, the proportion of correct answer for test item number 6 was 0.50, the proportion of correct answer for test item number 11 was 0.57, the proportion of correct answer for test item number 16 was 0.70.

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Based on the level of item difficulty, all items for identifying the main idea were between 0.30 – 0.70, it was pointed out that the items for identifying the main idea were accepted.

Table III. 8
The Students Identifying Reference of the Text

Variable	Identifying Reference of the Text				N
Item no	2	7	12	17	30
Correct	17	15	15	15	
P	0.57	0.50	0.50	0.50	
Q	0.43	0.50	0.50	0.50	

Based on the table, the items number of the question for identifying reference were 2, 7, 12, and 17. It showed that the proportion of correct answer for identifying reference of test number 2 was 0.57, the proportion of correct answer for test item number 7 was 0.50, the proportion of correct answer for test item number 12 was 0.50, the proportion of correct answer for test item number 17 was 0.50. Based on the level of item difficulty, all items for identifying reference were between 0.30 – 0.70, it was pointed out that the items for identifying reference were accepted.

Table III. 9
The Students Identifying Inference of the Text

Variable	Identifying Inference of the Text				N
Item no	3	8	13	18	30
Correct	19	20	17	21	
P	0.63	0.67	0.57	0.70	
Q	0.37	0.33	0.43	0.30	

Based on the table, the items number of the question for identifying inference were 3, 8, 13, and 18. It showed that the proportion of correct

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answer for identifying inference number 3 was 0.63, the proportion of correct answer of test item number 8 was 0.67, the proportion of correct answer of test item number 13 was 0.57, the proportion of correct answer of item number 18 was 0.70. Based on the level of item difficulty, all items for identifying inference were between 0.30 – 0.70, it was pointed out that the items for identifying inference were accepted.

Table III. 10
The Students Identifying Language Feature of the Text

Variable	Identifying Reference of the Text				N
Item no	4	9	14	19	30
Correct	17	17	15	16	
P	0.57	0.57	0.50	0.53	
Q	0.43	0.43	0.50	0.47	

Based on the table, the items number of the question for identifying language feature were 4, 9, 14, and 19. It showed that the proportion of correct answer for identifying language feature number 4 was 0.57, the proportion of correct answer of test item number 9 was 0.57, the proportion of correct answer of test item number 14 was 0.50, the proportion of correct answer of item number 19 was 0.53. Based on the level of item difficulty, all items for identifying language feature were between 0.30 – 0.70, it was pointed out that the items for identifying language feature were accepted.

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Table III.11
The Students Identifying Generic Structure of the Text

Variable	Identifying Generic Structure of the Text				N
Item no	5	10	15	20	30
Correct	22	21	23	22	
P	0.73	0.70	0.77	0.73	
Q	0.27	0.30	0.23	0.27	

Based on the table, the items number of the question for identifying generic structure were 5, 10, 15, and 20. It showed that the proportion of correct answer for making inference from the text number 5 was 0.73, the proportion of correct answer of test item number 10 was 0.70, the proportion of correct answer of test item number 15 was 0.77, the proportion of correct answer of item number 20 was 0.73. Based on the level of item difficulty, all items for identifying generic structure were between 0.30 – 0.70, it was pointed out that the items for identifying generic structure were accepted.

2. Reliability

A test must be reliable as measuring instrument. Reliability is a necessary characteristic of any good test. Brown (2003, p.20) said that reliable test is consistent and dependable. It means the test should be similar result when the tester gives the same test to the same respondent on two different occasions. According to Cohen et.al,(2007) the guidelines for reliability is as follows:

Table III.12
Category of Reliability

No	Reliability	Category
1	>0.90	Very highly reliable
2	0.80-0.90	Highly reliable
3	0.70-0.79	Reliable
4	0.60-0.69	Minimally reliable
5	<0.60	Unacceptably low reliability

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In this research, the researcher used software SPSS 16 version to calculate the reliability of test. There was a kind of questions used in the test, so there was a calculation of reliability. The result of multiple choice test reliability is as follows:

Cronbach's Alpha	N of Items
.875	20

The reliability of test was 0.875. It is categorized into highly reliable level.

G. Technique of Analysis Data

In analyzing the students' reading comprehension, the researcher used minimum passing grade of English lesson in MTsN Andalan Pekanbaru. It was 75 for the students' reading comprehension in report text.

It means that for those who get score > 75 , they pass the passing grade; while those get score < 75 they do not pass the passing grade.

1. Normality of the Data

Before analyzing the data by using t-test formula, the researcher had to find out the normality test of the data. According to Priyatno (2012, p.33) the normality of the data test can be analyzed by using lilliefors and One Sample Kolmogorov Smirnov. In this research, the researcher used liliefors through SPSS.16 version.

Analysis:

If the probability > 0.05 Ho was accepted

If the probability < 0.05 Ho was rejected

(Priyatno, 2012, p.36)

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2. Homogeneity of the Data

According to Siregar (2013, p.167), the purpose of homogeneity test is to know whether the object of the research has the same variance or not. The method used in this test was comparing the biggest variance with the smallest one.

3. Analysis Data

In analyzing the data, the researcher used students' post-testscore in experimental and control classes. This score was analyzed statistically. In this research the researcher used these formulas:

a. Independent sample t-test

Hartono (2009, p.208) said that to find out whether or not there is a significant difference between two or more variables that can be analyzed by using independent sample t-test. Gay (2000, p.484) added that the t-test for independent sample is used to determine whether or not there is probably a significant difference between the means of two independent samples. Independent sample t-test was used to know whether there is a significant effect on students' comprehension in reading report text taught by using and without using 5E Instructional Model.

In this research, the data were analyzed by using SPSS 16.0 Version. The significant value was employed to see whether or not there is a significant effect among the mean scores of both experimental and control classes. Statistical hypothesis:

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1. $H_0 = \text{sig. (2 tailed)} > 0.05$
2. $H_a = \text{sig. (2 tailed)} < 0.05$

b. Effect Size

According to Pallant (2005, p.199) effect size is the strength of the difference between groups or the influence of independent variable. There are a number of different effect size statistics, the most commonly used being eta squared. Eta squared can range from 0 to 1 and represents the proportion of variance in the dependent variable that is explained by the independent (group) variable. The formula for eta squared is as follows:

$$\eta^2 = \frac{t^2}{t^2 + (N_1 + N_2 - 2)}$$

Where :

- η^2 = eta squared
- t^2 = t_o
- N_1 = Number of students