CHAPTER III

THE RESEARCH METHODOLOGY

A. Research Design

The type of this research was an experimental research. In a simple definition, experimental research is the only type of research that can test hypotheses to establish cause and effect relationship (Gay & Airasian, 200, p. 321). According to Creswell (2008), quasi experimental research includes assignment, but not random assignment of participant to groups. This research involved two groups; an experimental group and a control group. Experimental research is divided into three group designs; they are pre experimental, true experimental, and quasi experimental design (Gay & Airasian, 2000). Then, the kind of this research was a quasi-experimental by using pre-test and post-test nonequivalent control group. This research tried to find the difference between the variable X and Y.

Therefore, there are two variables in this research, first is Index Card Match (ICM) Technique as the variable X and second is students' reading comprehension as the variable Y. The type of this research can be designed as follows (Creswell, 2012):

Table III.I
Table of research design

Group	Pre-Test	Treatment	Post-Test
E	O_1	X	O_2
C	O_2	-	O_4

Where:

E = Experimental Group

C = Control Group

O_1 = Pre-test to Experimental Group

O_2 = Post-test to Experimental Group

X = Receive the treatment using Index Card Match (ICM) Technique

O_3 = Pre-test to Control Group

O_4 = Post-test to Control Group

B. Location and Time of the Research

This research was conducted at State Junior High School 4 Pekanbaru started from March to April.

C. Subject and Object of the Research

The subject of this research was The Eighth Grade of State Junior High School 4 Pekanbaru and the object of this research was using Index Card Match (ICM) Technique on students' reading comprehension.

D. The Population and Sample of the Research

1. Population of The Research

The population of this research was the eighth grade students. There were ten classes of the eighth grade students. The total of population was 372 students. It can be seen from the following table:

TABLE III.2
The Total Population of the Eighth Grade Students of
State Junior High School 4 Pekanbaru

No	Class	Population
1	VIII 1	37 Students
2	VIII 2	37 Students
3	VIII 3	36 Students
4	VIII 4	37 Students
5	VIII 5	37 Students
6	VIII 6	37 Students
7	VIII 7	36 Students
8	VIII 8	36 Students
9	VIII 9	36 Students
10	VIII 10	34 Students
Total		**372 Students**

2. Sample of The Research

In research, sample is the amount of participants that is selected by the researcher to collect the data of research. The researcher used two classes to be the sample. They were an experimental class and a control class. In selecting the participants, the researcher used clustering random sampling. Similarly, Gay and Airasian (2000) stated cluster sampling is sampling in which groups, not individuals, are randomly selected. The researcher

considered that the population was too large, so researcher chose class VIII 4 as experimental class and VIII 5 as control class by using lottery.

TABLE III.3
Sample of the Research

No	Group	Class	Number of Student
1	Experimental Class	VIII 4	37
2	Control Class	VIII 5	37
Total			**74**

E. Technique of Collecting Data

In collecting the data for this research, the researcher gave a test as a technique to collect the data. The kind of test was multiple choices. This technique was used to find out the students' score in reading comprehension of narrative text. The test was given in the pre-test and post-test. Pretest was used to determine students' reading comprehension before getting treatment. Post-test was used to determine students' reading comprehension after getting treatment. The number of each pre and post-test consisted of 25 items. After the students did the test, then the researcher took the total score from the result of reading comprehension test. The classification of the students' score can be seen as follows: (Arikunto, 2009, p. 281):

Table III.4
The Classification of Students' Score

Score	Categories
80-100	Very Good
66-79	Good
56-65	Enough
40-55	Less
30-39	Fail

Furthermore, below is the description of the Blue-print of the test. It was developed into the questions of test. The instrument of reading comprehension of narrative text in this research included some aspects. They were about identifying the main idea of the text, identifying generic structure of the text, identifying the meaning of word of the text, identifying communicative purpose of the text, and identifying the moral value of the text. So, the students had to choose the best answer.

TABLE III.5
Blue Print of Reading Comprehension

No	Indicator of Variable Y	Number of Items
1	The students are able to identify main idea of narrative text	1, 6, 11, 16, 21
2	The students are able to identify the generic structure of narrative text	2, 7, 12, 17, 22
3	The students are able to identify the meaning of word of narrative text	3, 8, 13, 18, 23
4	The students are able to identify communicative purpose of narrative text	4, 9, 14, 19, 24
5	The students are able to identify the moral value of narrative text	5, 10, 15, 20, 25
	Total	25

Furthermore, below is the description of validity, reliability, homogeneity, and normality of data of this research.

1. Validity

Validity is a requirement in the test. The validity of test is very important to prove that the test can be used. According to Cohen, et. al (2007), validity is an important key to effective research. It means that the research is called as effective if the test is valid. And also, Ary, et. al (2010) stated that validity is the most important consideration in developing and evaluating measuring instruments. Moreover, Creswell (2008) stated that validity is the individual's scores from an instrument that makes sense, meaningful, enable you, as the researcher, to draw good conclusions from the sample you are studying to the population. It means that validity is the extent to which inferences made from assessment results are appropriate, meaningful, and useful in terms of the purpose of the assessment.

Based on the statement above, validity is a way to know that the instrument can be used in research. On the other hand, Gay & Airasian (2000) stated that validity is concerned with the appropriateness of the interpretations made from tests score. The way to obtain the validity of instrument of this research was through the try out. It consisted of 5 components, they are:

a. The students are able to identify the main idea of narrative text.

b. The students are able to identify the generic structure of narrative text.

c. The students are able to identify the meaning of word of narrative text.

d. The students are able to identify communicative purpose of narrative text.

e. The students are able to identify the moral value of narrative text.

Arikunto (2012) stated that the formula of each item difficulty is as follows :

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

Note:

P = Index of difficulty or facility

B = The number of correct answers

JS = The number of examinees or students

So, it can be seen from the standard level of difficulty that is 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".

Table III.6
Students' Reading Comprehension of Identifying the Main

Variable	Identifying Main Idea					N
Item no.	1	6	11	16	21	
Correct	25	23	25	26	25	37
P	0.68	0.62	0.68	0.70	0.68	
Q	0.32	0.38	0.32	0.30	0.32	

Based on the Table III.6, item number 1 obtained the proportion of correct 0.68, item number 6 obtained the proportion of correct 0.62, item number 11 shows the proportion of correct 0.68, item number 16 obtained the proportion of correct 0.70 and item number 21 obtained the proportion of correct 0.68. Based on the standard level of difficulty "P" >0.30 and <0.70, it is pointed out that item difficulties in average of each items number for identifying the main idea of text were accepted.

Table III.7
Students' Reading Comprehension in Identifying the Generic Structure

Variable	Identifying Generic Structure					N
Item no.	2	7	12	17	22	
Correct	23	22	22	23	25	37
P	0.62	0.60	0.60	0.62	0.68	
Q	0.38	0.40	0.40	0.38	0.32	

Based on the Table III.7, item number 2 got the proportion of correct 0.62, number 7 got the proportion of correct 0.60, number 12 got the proportion of correct 0.60, number 17 got the proportion of correct 0.62 and number 22 got the proportion of correct 0.68. Based on the standard level of difficulty "P" >0.30 and <0.70, it is pointed out that item difficulties in

average of each items number for identifying the generic structure of text were accepted.

Table III.8
Students' Reading Comprehension in Identifying the Meaning of Word Text

Variable	Identifying Meaning of Word					N
Item no.	3	8	13	18	23	
Correct	21	18	23	22	25	37
P	0.57	0.49	0.62	0.60	0.68	
Q	0.43	0.51	0.38	0.40	0.32	

Based on the Table III.8, number 3 shows the proportion 0.57, item number 8 shows the proportion 0.49, item number 13 shows the proportion 0.62, item number 18 shows the proportion 0.60 and item number 23 shows the proportion 0.68. Based on the standard level of difficulty "P" >0.30 and <0.70, it is pointed out that item difficulties in average of each items number for identifying the meaning of word of text were accepted.

Table III.9
Students' Reading Comprehension in Identifying Communicative Purpose

Variable	Identifying Communicative Purpose					N
Item no.	4	9	14	19	24	
Correct	23	23	21	26	24	37
P	0.62	0.62	0.57	0.70	0.64	
Q	0.38	0.38	0.43	0.30	0.36	

Based on the Table III.9, item number 4 shows the proportion 0.62, item number 9 shows the proportion 0.62, item number 14 shows the proportion 0.57, item number 19 shows the proportion 0.70 and item number 24 shows the proportion 0.64. Based on the standard level of difficulty "P" >0.30 and

<0.70, it is pointed out that item difficulties in average of each items number for identifying communicative purpose were accepted.

Table III. 10
Students' Reading Comprehension in Identifying Moral Value of

Variable	Identifying Moral Value					N
Item no.	5	10	15	20	25	
Correct	20	25	22	24	25	37
P	0.54	0.68	0.60	0.68	0.40	
Q	0.46	0.32	0.40	0.31	0.60	

Based on the Table III.10, item number 5 shows the proportion 0.54, item number 10 shows the proportion 0.68, item number 15 shows the proportion 0.60, item number 20 shows the proportion 0.64 and item number 25 shows the proportion 0.40. Based on the standard level of difficulty "P" >0.30 and <0.70, it is pointed out that item difficulties in average of each items number for identifying moral value of text were accepted.

2. Reliability

In research, a test must first be reliable as measuring instrument. According to Brown (2003), reliability has to do with accuracy of measurement. This kind of accuracy is reflected in obtaining of similar result when measurement is repeated on different occasion or with different instruments or by different person. The characteristic of reliability is sometimes termed consistency. And also, Cohen (2007, p.146) says that reliability in quantitative research is essentially a synonym for dependability, consistency and replicability over time, over instruments and over groups of

respondent. In obtaining the reliability of the test, the means and standard deviation of the test should be obtained. Generally, reliability refers to appropriateness of a given test of its component part as measure of what it is purposed to measure. It means that the test is valid to the extent that is measured what it is supposed to measure. According to Arikunto (2012), the level of reliability as follows:

a.   0.0-0.20   = reliability is low

b.   0.21-0.40 = reliability is sufficient

c.   0.41-0.70 = reliability is high

d.   0.71-1.0   = reliability is very high

Table III.11
Case Processing Summary

		N	%
Cases	Valid	37	.100
	Excluded[a]	0	.0
	Total	37	.100

Table III.12

Reliability Statistics

Cronbach's Alpha	N of Items
.476	2

Based on the table above, it indicated that the value of Cronbach' Alpha was 0.476. Based on Arikunto level above, it can be said that reliability was

accepted which was 0.71<0.476<1.0 or higher than 0.71 and lower than 1.0. It also can be stated that reliability is very high.

3. Homogeneity

Homogeneity test is a test to identify whether the objects of the research (three or more samples) have the same variance. The method used in homogeneity test is the biggest variant which is compared to smallest variance. Homogeneity of variances is also called as equal variances. In this research, the writer used SPSS 22 to assess the homogeneity of the data. The result of assessing the homogeneity can be seen as follows:

Table III.13
Test of Homogeneity

Levene Statistic	df1	df2	Sig.
.784	7	29	.606

From the table, it was known that the value of significance (sig.) was 0.606. Data is homogenous or variant when the value Sig. is higher than 0.05. Based on the table, it was clear that Sig. was higher than 0.05 which indicated the homogeneity of the data. The comparison can be stated as 0.606 > 0.05.

4. Normality

Assessing normality of data is used to describe a symmetrical, bell shaped curve, which has the greatest frequency of score in the middle, with smaller frequency towards the extremes. In this research, the researcher assessed the normality of data by using kolmogorov smirnov test from SPSS 22 version. The result of the test can be seen as follows:

Table III.14

Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Post-test experiment	.143	37	.053	.931	37	.024
Post-test control	.127	37	.142	.948	37	.081

a. Lilliefors Significance Correction

Based on the table above, it revealed that the significance (Sig.) of Post-test in Experimental group was 0.53. Then, the significance (Sig.) of post-test in Control group was 0.142. The data of this research was normal. It was measured by using Kolmogorov Smirnov table. It explains that the data called normal if > 0.05. So, the data gotten from this research was normal.

F. Technique of Analysis Data

In order to find out whether there is a significant difference and significant effect on students' reading comprehension taught by using Index Card Match (ICM) Technique and students' reading comprehension taught without using Index Card Match (ICM) Technique. Also, to find out whether

there is a significant effect on students' reading comprehension taught by using Index Card Match (ICM) Technique and without using Index Card Match. The data was analyzed by statistically. In this research, the researcher used T-tests formula (independent sample t-test) and it was calculated by using software SPSS 22 Version.

The independent samples t-test is probably the single most widely used test in statistics. Pallant (2001:239) stated that independent samples t-test is used to compare the mean score of two different groups of people or conditions. It means that it is used to determine whether or not there is a significant effect at selected groups. T-test is obtained by considering the degree of freedom (*df*) = (N1+N2) − 2. Therefore, in calculating the effect size for independent sample t-test, the researcher used the following formula:

Eta Square (η^2)

$$\eta^2 = \frac{t^2}{t^2 + (n_1 + n_2 - 2)}$$

Where:

t = the value will be found

N= number of students

In order to interprete the eta squared values, the guideline quoted from Cohen (1988) in Julie Pallant (2001:184) can be read as follows:

Table III.15
Interpretation of Eta Squared for Effect Size

No.	Value	Effect
1.	0.01	Small Effect
2.	0.06	Moderate Effect
3.	0.14	Large Effect

* Adapted from Cohen (1988)

Statistically the hypotheses are:

H_0 $= t_o < t\text{-}_{table}$

H_a $= t_o > t\text{-}_{table}$

H_o is accepted if $t_o < t\text{-}_{table}$ or there is no significant difference between using and without using Index Card Match (ICM) Technique on students' reading comprehension of narrative text at State Junior High School 4 Pekanbaru.

H_a is accepted if $t_o > t\text{-}_{table}$ or there is a significant difference between using and without using Index Card Match (ICM) Technique on students' reading comprehension of narrative text at State Junior High School 4 Pekanbaru.

H_o is accepted if $t_o < t\text{-}_{table}$ or there is no significant effect using Index Card Match (ICM) Technique on students' reading comprehension of narrative text at State Junior High School 4 Pekanbaru.

H_a is accepted if $t_o > t\text{-}_{table}$ or there is a significant effect of using Index Card Match (ICM) Technique on students' reading comprehension of narrative text at State Junior High School 4 Pekanbaru.