CHAPTER III

RESEARCH METHODOLOGY

A. The Research Design

This research was an experimental research. Based on L.R Gay and Peter Airasian (2000, p. 321), experimental research is the only type of research that can test hypotheses to establish cause and effect relationship. Then, the design of this research was a quasi-experimental design by using pre-test, post-test non-equivalent control group design (cohen, Manion & Marison, 2005, p. 214). It means that this research involves two groups; they are an experimental and a control group. This research tried to find out the effect that is given by the variable x on y.

In addition, there were two variables in this research, the first was using Round Robin Technique as the variable X and the second was students' reading comprehension as the variable Y.

The type of this research can be designed as follows (Creswell, 2008, p. 314):

TABLE III.1
The Research Design

Group	Pre-test	Treatment	Post test
E	T1	X	T2
C	T1	θ	T2

Where:

E	= Experimental Group
C	= Control Group
T1	= Pre-test to Experimental Group and Control Group
X	= Receive the treatment using Round Robin Technique
T2	= Post-test to Experimental and Control Group
Θ	= No Treatment

According to the description above, the treatment was only given to the experimental group. The experimental group was treated by using Round Robin technique, meanwhile the control group was not taught by any treatments.

B. The Location and Time of the Research

The research was conducted at Islamic Senior High School Daarun Nahdha Thawalib Bangkinang. It is located on Jl. Letkol Syarifuddin Syarif, Bangkinang. This research was conducted from February to March 2017.

C. The Subject and Object of the Research

The subject of this research was the tenth grade students of Islamic Senior High School Daarun Nahdha Thawalib Bangkinang in 2016/2017 academic year. Besides, the object of this research was the effect of using Round Robin Technique on students' reading comprehension.

D. The Population and Sample of the Research

Population refers to the members of any well-defined class of people, events or objects (Ary, 2010, p. 148). In other words, population is the larger group from which a sample is selected for the research. The target of the population of this research was the tenth grade of senior High School Daarun Nahdha Thawalib Bangkinang. The number of the tenth grade students of Senior High School Daarun Nahdha Thawalib Bangkinang was 182 students with 6 classes. Considering that population of this research was bigger, thus the researcher took the sample of the population of the research by using cluster sampling technique. The researcher used this technique because the students were homogenous and this technique was selected the sample is not individual but group.

Gay and Airasian (2000, p. 129) stated that cluster sampling is randomly selects groups, not individuals. In the same way, the unit chosen is not individually, but a group of individuals who are naturally together in one group or cluster. So, the researcher took two classes for the sample by using cluster random sampling. In this research, the researcher took the groups by using lottery. The researcher made the paper rolls, and then selected it randomly. The class was X A for experimental class and X C for control class. Therefore, the sample was 60 students.

E. The Technique of Collecting the Data

In order to get the data of this research, the researcher used test as the technique of collecting data. Test means that a method of measuring of a person's ability, knowledge or performance in given domain. To obtain the students' reading comprehension by using Round Robin technique, the researcher had given tests to the students. The tests were given to each group after and before giving the treatment.

The first was pre-test that had been given before treatment, and the second was post-test that had been given after treatment. Experimental group got pre-test and post-test. Meanwhile, the control group did too. The post-test was administered twice for experimental group and control group with similar post-test instrument. This was applied to ensure the true score of experimental group. In addition, for analyzing the data, the researcher used average score between two post-test scores of experimental and control group.

Brown (2004, p. 195) stated that several kinds of tests that are appropriate for assessing students. The kinds of tests are multiple-choice, matching tasks, short answer task, cloze test, open ended question, editing task, picture-cued tasks, and gap-filling task. Thus, in this research the researcher used multiple choices to measure students' reading comprehension of narrative text. Paris (2005, p. 16) stated that multiple choices are standardized test that will be the inevitable result. The following table presents the blue print of multiple choice items that were used in collecting the data, the data would be described for each indicator:

Table III.2
The Blue Print of the Reading Test

NO	INDICATORS	TOTAL ITEM	NUMBER OF ITEM
1.	Identifying the topic of narrative text.	4 items	1, 6, 11, 16
2.	Identifying the word references of narrative text.	4 items	2, 7, 12, 17
3.	Identifying the social function of narrative text.	4 items	3, 8, 13, 18
4.	Identifying the generic structure of narrative text.	4 items	4, 9, 14, 19
5.	Identifying to identify the inference of narrative text.	4 items	5, 10, 15, 20

In this research, the test was divided into two ways; pretest which was given before the treatment and posttest which was given after doing treatment.

1. Procedures of Collecting Data for Experimental Class

a. Pre-test

The pre-test was carried out to determine the students' reading ability with their score

b. Treatment

The treatment was conducted for the experimental class. This used Round Robin Technique and it was applied for about six meetings.

c. Post-test

Post-test was done twice. After giving the treatment, the post-test was administered and analyzed as final data for this research.

2. Procedures of Collecting Data for Control Class

a. Pre-test

The control class was given pre-test to know their reading ability. The test was the same as experimental class.

b. No treatment

c. Post-test

Post-test in control group was also done twice, and the result was analyzed and used as final data for this research.

After the students did the test, then the researcher took the total score from the result of the reading comprehension test. According to Arikunto (2013, p. 281), the classification of the students' score can be seen below:

Table III.3
The Classification of Students' Score

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

F. The Validity, Reliability and Item Difficulty of the Test

1. Validity of the Test

Research is always related to a measurement. According to Brown (2004, p. 3), a test is a method to measure a person's ability, knowledge, or performance in a given domain. Validity is one of the important key to effective research. Anderson, Murphy and Associates in Arikunto (2010, p. 65), they stated that a test is valid if it measures what it purpose to measure. While Gay&Airasian (2000, p. 161) stated that validity concerned with the appropriateness of the interpretations made from tests score. It means that validity is the most important consideration in evaluating measuring instruments. Pertaining to the definition of validity, Siregar classifies validity into four kinds (2013, p. 75). They are face validity, content validity, criterion validity, and construct validity. Each has different usage and function.

In this research, the researcher used content validity to prove the validity of the test. Content validity refers to the extent to which a measuring instrument provides adequate coverage of the topic under study (Kothari, 2004, p. 74). Thus, the test was given based on the material studied by the students. The material of the test was taken from the textbook used by the tenth grade students at Islamic Senior High School Daarun Nahdha Thawalib Bangkinang.

The way to obtain the validity of the items of questions, the researcher used *Split-Half* formula by using SPSS 17 version by looking at corrected item-total correlation (correlation between score item and score total item = $r_{observed}$) in table Item-Total Statistics.

To investigate whether the test is valid or not, the value of $r_{observed}$ must be compared with r_{table}. The number of students is 30. Degree of freedom is 30-2=28. r_{table} on df=28 are 0.374 (5%) and 0.478 (1%).

If the value of $r_{observed} > r_{table}$ = valid;

If the value of $r_{observed} < r_{table}$ = invalid.

The result of calculation of validity can be seen in the table below:

Table III.4
Validity of Test Instrumentation

Item	$r_{observed}$	r_{table} (df=28; 5%)	result
Item_1	.643	0.374	Valid
Item_2	.643	0.374	Valid
Item_3	.643	0.374	Valid
Item_4	.770	0.374	Valid
Item_5	.680	0.374	Valid
Item_6	.703	0.374	Valid
Item_7	.704	0.374	Valid
Item_8	.770	0.374	Valid
Item_9	.770	0.374	Valid
Item_10	.680	0.374	Valid
Item_11	.680	0.374	Valid
Item_12	.770	0.374	Valid
Item_13	.703	0.374	Valid
Item_14	.573	0.374	Valid
Item_15	.619	0.374	Valid
Item_16	.619	0.374	Valid
Item_17	.562	0.374	Valid
Item_18	.490	0.374	Valid
Item_19	.562	0.374	Valid
Item_20	.770	0.374	Valid

From the result of calculation by using SPSS, it can be concluded that there are 20 items that are valid.

2. Reliability of the Test

A test should be reliable. Reliability in quantitative research is essentially a synonym for dependability, consistency and replicability over time, over instruments and over groups of respondent (Cohen, 2007, p. 146). Regarding this, Gay and Airasian (2000, p. 169) stated that reliability is the degree to which a test consistently measures whatever it is measuring. In other words, the test is reliable when an examiner's results are consistent on repeated measurement. So the key of qualification criterion of test instrument is consistent.

In obtaining the reliability of the test, there are several formula can be used, such as Split-Half formula, Flanagan formula, Spearman-Brown formula, Hoyt formula, Rulon formula, Kuder-Richardson 20 (K-R 20) formula and Kuder-Richardson 21 (K-R 21) formula (Suharsimi, 2006, p. 180). So, to obtain the reliability of the test given, Split-Half formula was used by using SPSS 17 version.

To determine whether the test is reliable or not, the value of $r_{observed}$ must be compared with r_{table}. The number of students is 30. Degree of freedom is 30-2=28. r_{table} on df=28 are 0.374 (5%) and 0.478 (1%).

If the value of $r_{observed} > r_{table}$ = reliable;

If the value of $r_{observed} < r_{table}$= not reliable.

To be clearer, the result of calculation of reliability can be seen in the table as follows:

Table III.5
Reliability of the Test

Reliability Statistics

Cronbach's Alpha	Part 1	Value	.926
		N of Items	10[a]
	Part 2	Value	.896
		N of Items	10[b]
		Total N of Items	20
		Correlation Between Forms	.782
Spearman-Brown Coefficient		Equal Length	.878
		Unequal Length	.878
		Guttman Split-Half Coefficient	.876

Based on the result of calculation by using SPSS, the reliability value of Guttman Split-Half Coefficient ($r_{observed}$) is 0.876, $r_{observed} > r_{table}$ (0.478 <0.876> 0.374).In other words, the instrument was reliable because the value of $r_{observed}$ was higher than r_{table}.

3. Item Difficulty of the Test

Item difficulty is a statement about how difficult or easy a question is for the examinee (Nurgiyantoro, 2012, p. 357). The test given to students was considered not too difficult or too easy, often showing the low reliability. Item difficulty was determined as the proportion of correct responses. This is held pertinent to the index difficulty; it was generally expressed as the percentage of the students who answered the questions correctly. Regarding

with, Arikunto (2013, p. 223) formulates the formula of item difficulty is as follows:

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

Where:

P = Index of difficulty or facility

B = the number of correct answers

JS = the number of examiners or students

The standard level of difficulty used was **<0.30** and **>0.70**. It means that the item test that is accepted if the level of difficulty is between 0.30-0.70 and it is rejected if the level of difficulty is under 0.30, assumed difficult question and over 0.70, assumed as easy question. Then, the proportion correct is represented by "P", whereas the proportion incorrect is represented by "Q", it can be seen in the following table:

Table III.6
Students are Able to Identify the Topic of Narrative Text

Variable	**Identifying the topic**				**N**
Item No	1	6	11	16	30
Correct item	18	19	19	20	
P	0.6	0.63	0.63	0.67	
Q	0.4	0.37	0.37	0.33	

Based on the table III.8, the proportion of correct answer for item number 1 shows the proportion of correct 0.6, item number 6 shows the proportion of correct 0.63, item number 11 shows the proportion of correct 0.63, item number 16 shows the proportion of correct 0.67. Based on the standard level of difficulty "p" $< 0.30$and >0.70, it is pointed out that item

difficulties in average of each item number for identifying the topic of narrative text are accepted.

Table III.7
Students are Able to Identify the Word References of Narrative Text

Variable	Identifying the word references				N
Item No	2	7	12	17	30
Correct item	18	19	20	20	
P	0.6	0.63	0.67	0.67	
Q	0.4	0.37	0.33	0.33	

Based on the table III.9, the proportion of correct answer for item number 2 shows the proportion of correct 0.6, item number 7 shows the proportion of correct 0.63, item number 12 shows the proportion of correct 0.67, item number 17 shows the proportion of correct 0.67. Based on the standard level of difficulty "p"<0.30 and >0.70, it is pointed out that item difficulties in average of each item number for identifying the word references of narrative text are accepted.

Table III.8
Students are Able to identify the Social Function of Narrative Text

Variable	Identifying the Social Function				N
Item No	3	8	13	18	30
Correct item	18	20	19	19	
P	0.6	0.67	0.63	0.63	
Q	0.4	0.33	0.37	0.37	

Based on the table III.10, the proportion of correct answer for item number 3 shows the proportion of correct 0.6, item number 8 shows the proportion of correct 0.67, item number 13 shows the proportion of correct 0.63, item number 18 shows the proportion of correct 0.63. Based on the

standard level of difficulty "p"<0.30 and >0.70, it is pointed out that item difficulties in average of each item number for identifying the social function of narrative text are accepted.

Table III.9
Students are Able to Identify the Generic Structure of Narrative Text

Variable	Identifying the Generic Structure				N
Item No	4	9	14	19	30
Correct item	20	20	20	20	
P	0.67	0.67	0.67	0.67	
Q	0.33	0.33	0.33	0.33	

Based on the table III.11, the proportion of correct answer for item number 4 shows the proportion of correct 0.67, item number 9 shows the proportion of correct 0.67, item number 14 shows the proportion of correct 0.67, item number 19 shows the proportion of correct 0.67. Based on the standard level of difficulty "p"<0.30 and >0.70, it is pointed out that item difficulties in average of each item number for identifying the generic structure of narrative text are accepted.

Table III.10
Students are Able to Find the Inference of Narrative Text

Variable	Identifying the inference				N
Item No	5	10	15	20	30
Correct item	19	19	20	20	
P	0.63	0.63	0.67	0.67	
Q	0.37	0.37	0.33	0.33	

Based on the table III.12, the proportion of correct answer for item number 5 shows the proportion of correct 0.64, item number 10 shows the proportion of correct 0.63, item number 15 shows the proportion of

correct0.67, item number 20 shows the proportion of correct 0.67. Based on the standard level of difficulty "p"<0.30 and >0.70, it is pointed out that item difficulties in average of each item number for identifying the inference of narrative text are accepted.

G. The Normality and Homogeneity of the Test

1. Normality of the Test

According to Gay (2008, p. 482), before analyzing the data by using t-test formula, the researcher had to find out the normality test of the data. It is used in order to know the data are normal or not. If the data have normal distribution, a parametric test should be used and if the data distribution is not normal, a nonparametric test should be used. In order to know whether the data are normal distribution or not, the researcher used Kolmogorof-Smirnov method as the formula to analyze the data. In this research, the researcher analyzed the data by using SPSS (Statistical Product and Service Solutions) 17 version program.The SPSS result for Kolmogorov-Smirnov test would be interpreted as follows:

p-value (Sig.) > 0.05 = the data are in normal distribution

p-value (Sig.) < 0.05 = the data are not in normal distribution

The result of normality of post test score in experiment and control class was computed by using SPSS 17 version. It is presented in the following table:

Table III.11
Test of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
Score	Experimental Group	.133	30	.183	.935	30	.066
	Control Group	.141	30	.132	.963	30	.376

a. Lilliefors Significance Correction

Based on the table above, it was found that the significance (Sig.) of Post-test in Experimental group was 0.183. Then, the significance (Sig.) of post-test in Control group was 0.132. The data of this research were 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 were normal.

2. Homogeneity of the Test

The homogeneity test used to measure whether the data are correlated from true population or not. 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 is compared to smallest variance. Homogeneity of variances is also called equal variances. It means that the squared values of the standard deviation should be about the same (Brown J. D., 1988, p. 166).

In this research, data homogeneity of variance test was calculated by using SPSS 17 version. The SPSS result for Levene test was interpreted as follows:

p-value (Sig.) > 0.05 = the data are homogeneous

p-value (Sig.) < 0.05 = the data are not homogeneous

The result of homogeneity test of post-test data or Levene test which was computed by using SPSS presented in the following table:

Table III.12

Test of Homogeneity

Levene Statistic	df1	df2	Sig.
.016	1	58	.899

Based on the table above it showed that the value of significance (sig.) was 0.899. According to Pallant (2010, p. 207), data are homogeneous or variant when the value Sig. is higher than 0.05. Based on the table, it was clear that Sig. is higher than 0.05 which indicates the homogeneity of the data. The comparison can be stated by 0.899> 0.05.

H. The Technique of Data Analysis

In order to find out whether there is a significant effect of using Round Robin Technique on students' reading comprehension of the tenth grade at Islamic Senior High School Daarun Nahdha Thawalib Bangkinang, the data were analyzed statistically. In analyzing the data, the researcher used pre-test and post-test scores of the experimental and control classes. Those

scores were analyzed by using statistical analysis. In this research, the researcher used the statistical calculation of independent sample T-test formula. The independent sample T-test was used to find out the significant effect of using Round Robin Technique on students' reading comprehension in narrative text. The data were analyzed by using SPSS 17 version. The test consisted of 20 items and the score of each number was 5. The category of score in reading test could be classified, as follows:

Table III.13
The classification of Students' Score

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

(*Arikunto, 2013, p. 281*)

The t – table was employed to see whether there was a significant effect between the mean score of both experiment and control groups. The t-test was obtained by considering the degree of freedom (df) as follows:

df =(N1 + N2) – 2

Where:

df = the degree of freedom.
N1 = the number of students in experimental class.
N2 = the number of students in control class.

Statistically, the hypotheses were:

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 effect of using Round Robin Technique on students' reading comprehension of narrative text at Islamic Senior High School Daarun Nahdha Thawalib Bangkinang.

H_a is accepted if $t_o > t\text{-}_{table}$ or there is a significant effect of using Round Robin Technique on students' reading comprehension of narrative text at Islamic Senior High School Daarun Nahdha Thawalib Bangkinang.

When the researcher had been known there is a significant effect on students' reading comprehension taught by using Round Robin technique, it is necessary to calculate the effect size by finding out eta square. Pallant (2010, p. 247) mentions the formula of eta square as presented below.

$$Eta\ Squared = \frac{t^2}{t^2 + (N-1)}$$

Pallant (2010, p. 210) adds that the guidelines for interpreting this value are 0.01= small effect, 0.06= medium effect, 0.14= large effect.