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## CHAPTER III

### RESEARCH METHOD

#### 3.1. Research Design

The type of this research is an experimental research that is testing an idea (or practice or procedure) to determine whether it influences an outcome or dependent variable (Cresswell: 2008: 299). In addition, Gay and Peter (2000: 15) an experiment is the quantitative approach that provides the greatest degree of control over the research procedures. This research uses a quasi-experimental research that focuses on non-equivalent control group design. John Creswell states that quasi-experiment is experimental situation in which the researcher assigns participants to groups, but not randomly. This research uses intact groups, the first class is as an experimental group taught by using LRD strategy and a second group is as a control group taught by using QAR strategy. Furthermore, Gay and Peter Airasian states that quasi-experimental design is used when the researcher keeps the students in existing classroom intact and the entire classrooms are assigned to treatments.

To investigate teaching strategies and prior knowledge. This research use 2x2 factorial design. According to Gay and Airasian (2010 ; 261), independent variable is known as factor, and each of the factors has two levels. The teaching strategies consist of listen-read-discuss teaching and conventional teaching. However, prior knowledge were divided into two levels; high and low prior knowledge.

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In conducting this research, the researcher took two classes; one class is an experimental class taught by listen-read-discuss (LRD) strategy and the other is as a control class taught without listen-read-discuss (LRD) strategy. Both of classes got the same material, length of time, and the same teacher. Related to this idea, this thesis compared two strategies in teaching reading, they were LRD (listen-read-discuss) strategy and QAR (question and answer relationship) strategy. The result of those strategy was observed at the end of the research activity.

This research used post-test only toward experimental and control group. There was no pre-test given to either group (experimental and control group) in order to control for simple testing effect. Gay (2000 : 393) explains that post test scores of the experimental and control group are then compared to determine the effectiveness of LRD after giving treatment. The design of this research as follow:

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**Table III.1**  
**Design of the study**  
**Post-Test Only Control Group Design**

<b>Treatment</b>	<b>Experimental group (LRD strategy)</b>	<b>Control group (QAR strategy)</b>
<b>Students' Prior knowledge</b>	<b>(A1)</b>	<b>(A2)</b>
High students' prior knowledge (B1)	B1A1	B1A2
Low students' prior knowledge (B2)	B2A1	B2A2

B1A1 : Students with high prior knowledge in experimental group by using LRD strategy

B1A2 : Students with high prior knowledge in control group by using QAR strategy

B2A1 : Students with low prior knowledge in experimental group by using LRD strategy

B2A2 : Students with low prior knowledge in control group by using QAR strategy

In this research, the researcher divided the students' prior knowledge into two categories. There was high and low prior knowledge. Sudijono (2011) states that the number of participants were taken 27 % from each score of prior knowledge. In this research, 27% from 40 students were 10 students for each group, 10 students with high prior knowledge and 10 students

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withlow prior knowledge. The data of students’ reading comprehension score in experimental class can be described as follows:

**Table III.2**  
**The Determination of Treatment for Each Group**

Strategy	LRD (Listen – read - discuss) strategy	QAR (Question and answer relationship) strategy
Prior Knowledge		
Higher Prior Knowledge	10	10
Lower Prior Knowledge	10	10

In the process of teaching the differences between experimental class and control class were only about the strategy used. The material and time allocated of the two class were same. This research was used treatment factorial design by block (2x2) design which showed the effect of the variables.

This research consisted of three variables, first is LRD (listen-read-discuss) strategy was independent variable, students’ prior knowledge was moderating variable, while, dependent variable was reading comprehension.

Gay (2000 : 466) explains that “ an experimental is valid if result obtained are due only to manipulated variable and if they are generalizable to individuals context beyond the experimental setting”. These criteria are referred to the internal and external validity.

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## 1. Internal validity

Gay (2000) explains “ internal validity is concerned with threat or factors other than the independent variable that affect the dependent variable” it means that it focuses on the threats that influence the outcomes of an experimental study but are not part of the independent variable. Therefore in this research, the researcher controlled some aspect that might threaten to the internal validity.

First is mortality Gay (2000) states “ mortality refers to the case in which the participants drop out of a study”. In this case, the researcher have to make sure if no participants are absent during the treatment by controlling their attendance list. Second, the preliminary study would be conducted by analyzing students’ scores of final test for the entire class in the population. Third, the participant in the experimental and control group must have the same characteristics and equivalent. Therefore testing the normality and homogeneity would be done to reaffirm that both of the groups are similar. Fourth, the longer of the study, the more threatened to a validity of the experiment would be. This case refers to the changing of maturation, intelligence, motivation, and behaviour of the participants. Thus, the researcher conducted this research for six meeting only.

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## 2. External validity

According to Gay (2000) states ‘ external validity is concerned with the extend to which the study result can be generalized to groups and setting beyond those of the experiment’. In other words, it focuses on the threats that forbid the researcher to generalize the result of the study to other group.

### 3.2. The Population and the Sample of the Research

The population of this study was the second year students of MA. Daarun Nahdhah Thawalib Bangkinang in 2014-2015 academic years. There are 5 classes which consist for 1 class for science department and 4 classes for social department. The total number of the second year students of MA. Daarun Nahdhah Thawalib Bangkinang is 198 students.

The population above is large enough to be all taken as sampel of the research. Based on the limitation of the research, the researcher took only two class of after conducting clustering sample randomly. According to Gay Airasian (2000) he states that Cluster sampling involves randomly selecting groups, not individuals which make up a target population.

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**Table III.3**  
**THE TOTAL POPULATION OF THE SECOND YEAR STUDENTS**  
**OF MA. DAARUN NAHDHAH THAWALIB BANGKINANG**

No	Class	Population	Sample	Status
1	IPA	38		
2	IPS 1	40	40	Experimental group
3	IPS 2	40	40	Control group
4	IPS 3	40		
5	IPS 4	40		
	Total	198	80	

### 3.2.1 Sampling

According to L.R Gay (2000:121) Sampling is a process of selecting a number of individuals for a study in such a way that they represent the larger group from which they are selected. Cluster sampling is used in this study. Gay claims that cluster sampling involves randomly selecting groups, not individuals which make up a target population. So, this research take the sample based on the group.

The sample of the research is the first class of IPS 1 as a control class and the second class is IPS 2 as an experimental class. Those are as the sample of the research by numbers 80 students ; 40 students for the control class and vice versa. After that the students in each class will be divided into two level after conducting the prior knowledge test.

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**Table III.4**  
**Sample of Research**

No	Sample	Male	Female	Total
1	IPS 1 (Control Class)	21	19	40
2	IPS 2 ( Experimental Class)	20	20	40
	Total of the Sample	41	39	80

### 3.3 Instrumentation

Two research instruments are used in this study. The first instrument is observation. It is administered to observe the teacher applying LRD strategy in teaching and learning process. The observation were six meeting with 4 indicators.

The second instrument is test. The test consists of prior knowledge test and posttest of reading comprehension. Post-test is administered after the treatment. The test have been used to assess the students' reading comprehension and students prior knowledge. Before administering the test, it has been done a try out to find out item difficulty of the test. The try out conduct at second year of students at MA. Darel Hikmah Pekanbaru. Then, the selected topic is designed as test for an experimental and control groups.

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### 3.4 Data Collection Technique

The data of this study are administered by using post-test to the students. If the students are able to achieve the goal, it means that assessment of students' ability needs to be correlated with purposes of achievement. The following procedures are use in gathering the data. The first, the students in each class are given a test of prior knowledge. It is administrated to know how far their prior knowledge before the teacher gives the material. The result of the students' prior knowledge of each group will be categorized into high and low prior knowledge.

After giving treatment (experimental class) and conventional strategy (control class) the students will be given a post test of reading comprehension, It is given to know the students' reading comprehension after given treatment or learning activity.

#### 3.4.1 The Item Difficulties

Before getting the data, the researcher used all of items in try out. Try out was intended to know the value of the test. The value itself was used to find out the level of difficulties of each item. The standard of value used was 0.30 and 0.70(Suharsimi Arikunto : 2009).

The items that could not fulfil the standard value were replaced. The facility value under 0.30 is considered difficult and above 0.70 is considered easy.

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The level of difficulty was used to show how easy and difficult an item was. It was calculated by using the formula:

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

Were:

P = Difficulty level

B = The number of correct answer

JS = The number of students

For example, if the number 1 was correct by 8 students of 20 students, the difficulty could be calculated as follows:

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

$$P = \frac{8}{20} = 0.4$$

If the value was changed into percentage, it could be calculated  $0.4 \times 100\% = 40$ . The value was considered standard, and could be used to get the data. In other words, the item did not need to be changed. After doing try out, the researcher found that there were no any items modified because the level of difficulty reached the standard item of difficulty. Then, the proportion correct was represented by “p”, whereas the proportion incorrect was represented by “q”

The data obtained by using posttest and was evaluated in 5 components:

- a. The students are able to identify the meaning of the text
- b. The students are able to identify the main idea of the text
- c. The students are able to identify the meaning of the word

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- d. The students are able to identify refrence of the word
- e. The students are able to conclude the topic

**Table III.4.1.1**  
**The Students Identify the Meaning of the Text**

Variable	Identifying the meaning of the text					N
Item no	4	7	11	19	21	20
Correct	14	14	14	12	8	
P	0.70	0.70	0.70	0.60	0.40	
Q	0.30	0.30	0.30	0.40	0.60	

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

$$Q = 100 - P$$

The table 3.2 above shows the portion of correct answer. For item number 4 shows the proportion of correct 0.70, item number 7 shows the proportion of correct 0.70, item number 11 shows the proportion of correct 0.70, item number 19 shows the proportion of correct 0.60, item number 21 shows the proportion of correct 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 item number for finding meaning of the text are accepted.

**Table III.4.1.2**  
**The Students Identify Main Idea of the Text**

Variable	Identifying main idea of the text					N
Item no	1	6	12	16	22	20
Correct	12	13	14	9	10	
P	0.60	0.65	0.70	0.45	0.50	
Q	0.40	0.35	0.30	0.55	0.50	

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

$$Q = 100 - P$$

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The table 3.3 above shows the portion of correct answer. For item number 1 shows the proportion of correct 0.60, item number 6 shows the proportion of correct 0.65, item number 12 shows the proportion of correct 0.70, item number 16 shows the proportion of correct 0.45, item number 22 shows the proportion of correct 0.50. 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 for finding the main idea are accepted.

**Table III.4.1.3**  
**The Students Identify Meaning of Word**

Variable	Identifying meaning of word					N
Item no	2	8	13	17	23	20
Correct	11	9	18	12	11	
P	0.55	0.45	0.50	0.60	0.55	
Q	0.45	0.55	0.50	0.40	0.45	

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

$$Q = 100 - P$$

The table 3.4 above shows the portion of correct answer. For item number 2 shows the proportion of correct 0.55, item number 8 shows the proportion of correct 0.45, item number 13 shows the proportion of correct 0.50, item number 17 shows the proportion of correct 0.60, item number 23 shows the proportion of correct 0.55. 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 for identifying the meaning of word are accepted.

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**Table III.4.1.4**

**The Students Identify Reference of Word**

Variable	Identifying reference of word					N
Item no	3	10	14	18	24	20
Correct	12	14	9	8	13	
P	0.60	0.70	0.45	0.40	0.65	
Q	0.40	0.30	0.55	0.60	0.35	

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

$$Q = 100 - P$$

The table 3.5 above shows the portion of correct answer. For item number 3 shows the proportion of correct 0.60, item number 10 shows the proportion of correct 0.70, item number 14 shows the proportion of correct 0.45, item number 18 shows the proportion of correct 0.40, item number 24 shows the proportion of correct 0.65. 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 for identifying reference of word are accepted.

**Table III.4.1.5**

**The Students Conclude the Topic**

Variable	Concluding The Topic					N
Item no	5	9	15	20	25	20
Correct	14	8	9	11	14	
P	0.70	0.40	0.45	0.55	0.70	
Q	0.30	0.60	0.55	0.45	0.30	

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

$$Q = 100 - P$$

The table 3.6 above shows the portion of correct answer. For item number 5 shows the proportion of correct 0.70, item number 9 shows the proportion of correct 0.40, item number 15 shows the proportion of correct 0.45, item number 20 shows the proportion of correct 0.55, item

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number 25 shows the proportion of correct 0.70. 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 for concluding the topic are accepted.

### 3.4.2 Item Discrimination

Suharsimi Arikunto said that (2009 : 218) Items discrimination is the ability of the item question to differentiate between upper students ability and lower students ability

Where the formulation is:

$$D = \frac{BA}{JA} - \frac{BB}{JB} = P_A - P_B$$

Where:

$B_A$  = The upper score students

$B_B$  = The lower score students

$J_A$  = The total upper students

$J_B$  =The total lower students

$D$ = Items discrimination

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The range of item discrimination can be seen in the table below:

**Table III.4.1.6**  
**Item Discrimination**

NO	Classification	Score
1	Poor	0,0-0,20
2	Satisfactory	0.20-0.40
3	Good	0.40-0.70
4	Excellent	0.70-1

**III.4.1.7**

**Items Discrimination Table**

ITEMS	TOTAL	D	RANGE
Items 1	12	0.63	Good
Items 2	11	0.4	Good
Items 3	12	0.63	Good
Items 4	14	0.31	Satisfactory
Items 5	14	0.73	Excellent
Items 6	13	0.36	Satisfactory
Items 7	14	0.73	Excellent
Items 8	9	0.47	Good
Items 9	8	0.42	Good
Items 10	14	0.31	Satisfactory
Items 11	14	0.73	Excellent
Items 12	14	0.31	Satisfactory
Items 13	10	0.51	Good
Items 14	9	0.47	Good
Items 15	9	0.47	Good
Items 16	9	0.47	Good
Items 17	12	0.42	Good
Items 18	12	0.42	Good
Items 19	15	0.63	Good
Items 20	11	0.57	Good
Items 21	8	0.63	Good
Items 22	10	0.52	Good
Items 23	11	0.57	Good
Items 24	13	0.36	Satisfactory
Items 25	14	0.73	Excellent

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### 3. 4. 3 Validity

According to Brown (2004), a test is method of a measuring a person's ability, knowledge, or performance in a given domain. According to Gronlund in Brown, Validity is the extent to which inferences made from assessment result are appropriate, meaningful, and useful in termson the purpose of the assessment. In addition Hughes states that a test is said to be valid if it measures accurately what it is intended to measure. Based on experts' statements above, it can conclude that a test can be said valid if it is really measured person's ability appropriately. Furthermore, Hatch and Farhady ( 1982 ) state that there are three kinds of validity. They are content validity, criterion-related validity, and construct validity.

This study will use content validity. Content validity is the extent to which a test measures a representative sample of the subject matter content. The focus of content validity is on the adequacy of the sample and not simply on the appearance of a test. To determine the validity by referring to the material that will give to the students based on the syllabus and students' text book. In other words, the test gives to the students based on the material that they had learned.

To find validity the test writer used correlation product moment follows the formula;

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$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}}$$

Where:

$r_{xy}$  = correlation product moment x dan y

$\sum xy$  = total x dan y

$\sum x^2$  = X quadrant

$\sum y^2$  = Y quadrant

$$r_{xy} = \frac{4.76}{\sqrt{7.92 \cdot 4.84}}$$

$$r_{xy} = \frac{4.76}{\sqrt{38.3328}} = \frac{4.76}{6.191} = 0.768$$

If the validity test in 0.768 it means that the validity is Good

According to Suharsimi Arikunto (2007 ; 75) state that the range of validity are.

**Tabel III.4.1.8**

NO	Classification	Score
1	Excellent	0.800-1.00
2	Good	0.600-0.800
3	Fair	0.400-0.600
4	Poor	0.200-0.400
5	Very Poor	0.00-0.200

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### 3.4.4 Reliability

A test should be reliable. Gay and Airasian (2000:169) state that reliability is dealing with dependability. In other word, it is degree to which a test consistency measures whatever it is measuring. The reliability of the instrument is analyzed by inter-rater reliability. Brown (2004) states that inter-rater reliability occurs when two or more scorers yield inconsistent scores of the same test, possibly for lack of attention to scoring criteria, inexperience, in attention, or even preconceived biases. Gay (2000) mentions that the reliability of the test is checked by having more than one scorer; at least two scorers.

Arikunto states that it is possible for the test is reliable but it is not valid, whereas the test is valid automatically, it is reliable. To obtain the reliability of the test given, the researcher used HOYT formula as follows;

Step 1 (Quadrant Respondent)

$$Jk(r) = \frac{\sum X_t^2}{K} - \frac{\sum X_t^2}{K \times N}$$

$$Jk(r) = \frac{4140}{25} - \frac{286^2}{25 \times 20}$$

$$Jk(r) = 165.6 - 163.595$$

$$Jk(r) = 2.005$$

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Step 2 ( Quadrant item )

$$Jk (r) = \frac{\sum XB^2}{K} - \frac{\sum Xt}{KXN}$$

$$Jk (r) = \frac{3365}{20} - \frac{286^2}{25 \times 20}$$

$$Jk (r) = 168.25 - 163.595$$

$$Jk (r) = 4.655$$

Step 3 (Total Quadrant)

$$Jk (t) = \frac{\sum B \sum s}{\sum B + \sum s}$$

$$Jk (t) = \frac{215 \ 286}{215 + 286}$$

$$Jk (t) = \frac{61490}{501}$$

$$Jk (t) = 122.73$$

Step 4 (Residue Ruadrant)

$$Jk (s) = Jk (t) - Jk (r) - Jk(i)$$

$$= 122.73 - 2.005 - 4.655$$

$$= 116.07$$

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Step 5

Table III.4.1.9

NO	Varians source	Total quadrat	d.b	Varians
1	Respondent	2.005	19 (20-1)	$\frac{2.005}{19} = 0.105$
2	Item	4.655	24 (25-1)	$\frac{4.655}{24} = 0.195$
3	Residual	116.07	456 (499-19-24)	$\frac{116.07}{456} = 0.254$
4	Total	122.73	499 (25x20-1)	

-d.b total :  $K \times N - 1$  :  $25 \times 20 - 1 = 499$

-d.b Responden :  $N-1$  :  $20-1 = 19$

-d.b item :  $K-1$  :  $25-1 = 24$

-d.b residual : d.b total – d.b responden – d.b item

:  $499 - 19 - 24$

: 456

Step 6

$$\begin{aligned}
 r_{11} &= 1 - \frac{V_s}{V_r} \\
 &= 1 - \frac{0.105}{0.268} = 1 - 0.413 + 0.194 \\
 &= 0.781
 \end{aligned}$$

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### 3.5 Data Analysis Technique

The data were analyzed statistically to identify whether the reading comprehension of experimental class was significant different from the control class. After the data were collected, the normality testing, the homogeneity testing, and hypothesis testing were analyzed.

#### 1. Normality

Normality test are used are used to determine if a data set is a well modeled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normaly distributed. Pallant (2010 : 59) states that normal is used to describe a symmetrical , bell-shaped curve, which has the greates frequency of scores in the middle with smaller frequencies towards the extremes. Normality can be assessed to some extent by obtaining skewness and kutosis values or using other techniques available in SPSS using the explore option of the descriptive statistic menu.

#### 2. Homogeneity

Homogeneity arises in describing the data set or several data sets. The homogeneity test is used to determine wheter population variance is homegeneous or not. It is important to determine if a set of data is homogeneous before any statistical technique aooly to it. Pallant (2010 : 206) states that if a significance value of less than 0.05, it means that variances for the two groups are not equal. But if a significant value of bigget than 0.05, it means that variances of the two group are equal.

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### 3. Independent sample t-test

Analyzing the data of students post test of experimental and control group were analyzed by using SPSS statistical analysis, the result of post-test were analyzed by using independent sample t-test.

Pallant (2010 : 239) stated that independent sample t-test is used for comparing the mean score of two different groups of people or conditions. Independent sample t-test is used to determine students' significant difference of post-test score between experimental and control group. It used to checking the information about the group, checking assumptions, and assessing between the groups.

Independent sample t-test is used to find out the results of the first and second hypotheses. They are as follows:

- a) To find out significant difference of students' reading comprehension who are taught by using LRD strategy (experimental class) and the students' reading comprehension who are taught without using LRD strategy (control class)
- b) To find out significant difference between students' reading comprehension who have higher prior knowledge in experimental group and control group
- c) To find out significant difference between students' reading comprehension who have lower prior knowledge in experimental group and control group.

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Pallant (2010 : 247) says that eta squared is used to determine the strength of the difference between group, or the influence of the independent variable . effect size statistics provide an indication of the magnitude of the differences between the groups. Eta squared can be obtained using the following formula:

Eta squared for independent sample t-test :

Eta squared;

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

The guidelines for interpreting this value are:

0.01 = Small effect

0.06 = Moderate effect

0.14 = Large effect

Pallant (2010 : 242) stated that “ if the value in the sig. (2-tailed) column is equal or less than 0.05, there is a significant difference in the mean scores on dependent variable for each of the two groups. If the value is above 0.05, there is no significant difference between the two groups.

The other way to determine the result of students’ significant difference of post-test mean score between experimental and control group is by using Significant 2-tailed on SPSS.

Ha is accepted if Sig 2-tailed < 0.05 or there is effect after giving the treatment LRD strategy toward students’ reading comprehension. Ho is

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accepted if Sig. 2-tailed > 0.05 or there is no effect after giving the treatment LRD strategy toward students' reading comprehension.

To find out the percentage of the effect size, the value of effect size will be calculated in the formula;

$$Eta\ Square : \quad ^2 \times 100$$

