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## CHAPTER III

### METHOD OF THE RESEARCH

#### A. The Research Design

The research was an experimental design. Experimental design is traditional research approach of quantitative research.( John W.Creswell, 2008). Experimental designs are procedures in quantitative research in which the investigator determines whether an activity or material makes a difference in result for participants.

In this research, the researcher used a quasi experimental research. According to Creswell (2008, p.313), quasi experiment includes assignment, but not random assignment of participants to groups. This is because the experimenter cannot artificially create groups for the experiment. According to Gay and Peter Airasian (2000, p. 388), the design of this research is quasi experiment which uses pre-test and post-test non equivalent control group design.

In this research, the researcher used pre-test and post-test design. The researcher took two classes in conducting this research; one class was an experimental class taught by using group investigation technique and one was a control class taught without using group investigation technique. The researcher administered a pre-test to both groups, gave treatment to experimental group only, and then administered a post-test to assess the students' speaking ability.

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The design of this research can be illustrated as follows:

**Table III.1**  
**The Research Design Pre-test and Post-test Non Equivalent Control Group Design**

GROUP	PRE-TEST	TREATMENT	POST-TEST
Control class	T1	-	T2
Experimental class	T1	√	T2

Where:

- T1 : Pre-test for experimental and control group
- T2 : Post-test for experimental and control group.
- √ : Receiving particular treatment
- : Without particular treatment
- 

**B. Location and Time of the Research**

This research was conducted at the Junior High School 3 Teluk Kuantan It is located on Teluk Kuantan, Kuantan Singingi, Riau. It was conducted from June-July 2017.

**C. The Subject and the Object of the Research**

The subject of this research was the Eighth grade students at junior high school 3 Teluk Kuantan. The object of this research was the effect of group investigation technique on students' speaking ability.

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## D. The Population and Sample of the Research

### 1. Population

The population of this research was the Eighth grade students of Junior High School 3 Teluk Kuantan that consisted of 6 classes. The total number of the Eighth grade students of Junior High School 3 Teluk Kuantan was 140 students. The following table describes the total population of the research.

**Table III.2**  
**The Total Population of the Eighth Grade Students at Junior High School 3 Teluk Kuantan**

No	Class	Total
1	VIII 1	25
2	VIII 2	22
3	VIII 3	22
4	VIII 4	22
5	VIII5	25
6	VIII 6	24
<b>Total</b>		<b>140</b>

### 2. Sample

The writer used cluster random sampling as the technique sampling of the research. The writer took two classes as sample using cluster random sampling through lottery ,the researcher passed out small rolled paper marked by sequence name class. Then, after passing out the paper, the sample was taken by the researcher that was VIII 3 as experimental class and VIII 2 as control class. The total number of the sample of the research was 44.

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**Table III.3**  
**The Sample of the Research**

No	Class		
1	Experimental class	VIII 2	22
2	Control class	VIII 3	22
<b>Total</b>			<b>44</b>

**E. The Technique of Collecting Data**

In this research , the researcher used oral test as an instrument to collect the data. The test was used to find the students' ability in speaking. The data of this research were the scores of the students' speaking ability obtained by using test. The test had been done 3 times, the first was pre-test given before treatment, the second and third were post-test given after treatment intended to obtain students' speaking performance at the Eighth grade of Junior High School 3 Teluk Kuantan. The test was expressing one's opinion about a particular topic.

The students' voice was recorded ,analyzed, and scored. The scoring was processed by two raters. The data of the research were obtained from pre test and post test.

The data were collected through the following procedures :

1. The students got pre test by giving a topic, then the students were asked to give opinion about the topic.
2. After that, the researcher gave a treatment to experimental class to know the significant difference of students' speaking ability.

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3. The students got post test by expressing opinion about a particular topic that has been done in the group investigation.
4. The students' voice was recorded and taken video by handphone.
5. The researcher used two raters to evaluate and scored the students' speaking ability.

**Table III.4**  
**Assessment Aspects of Speaking**

No	Aspect Assessed	Score				
		1	2	3	4	5
1	Accent					
2	Grammar					
3	Vocabulary					
4	Fluency					
5	Comprehension					
<b>Total</b>						
<b>Maximum Score</b>		<b>25</b>				

Explanation of Score: 1 = Worst

2 = Poor

3 = Good

4 = Very good

5 = Excellent

$$\text{Final Score} = \frac{\text{Total Score}}{\text{Maximum Soore}} \times 100$$

In this research, the speaking ability was evaluated by concerning five components that should be considered in giving students' speaking ability score (Hughes, 2003). He described the rating as the table III.5 :

Table III.5

## The Criteria of Assessment Aspect of Speaking Ability

## a. Accent

Score	Requirement
1	Pronunciation frequently unintelligible
2	Frequent gross error and a very heavy accent make understanding difficult, require frequently repetition
3	“foreign accent” requires concentrated listening, and mispronunciation lead to occasional misunderstanding and apparent errors in grammar of vocabulary
4	Marked “foreign accent” and occasional mispronunciations which do not interfere with understanding
5	No conspicuous, miss pronunciation, but would not be taken for a native speaker
6	Native pronunciation, with no trace of “foreign accents”

## b. Grammar

Score	Requirement
1	Grammar almost entirely inaccurate except in stock phrase
2	Constant errors showing control of view major patterns and frequently preventing communication
3	Frequent errors showing some major pattern uncontrolled and causing occasional irritation and misunderstanding
4	Occasional errors showing imperfect control of patterns but no weakness that causes misunderstanding
5	Few errors, with no patterns of failure
6	No more than two errors during the interview

## c. Vocabulary

Score	Requirement
1	Vocabulary inadequate for even the simple conversation
2	Vocabulary limited to basic personal and survival areas (time, food, transportation, family, etc.)
3	Choice of words sometimes inaccurate, limitations of vocabulary prevent discussion of some common professional and social topics
4	Professional vocabulary adequate to discuss special interest; general vocabulary permits discussion of any non-technical subject with some circumlocution
5	Professional vocabulary broad and precise; general vocabulary adequate to cope with complex practical problems and varied social situations
6	Vocabulary apparently as accurate and extensive as that of an educated native speaker

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d. Fluency

Score	Requirement
1	Speech is so halting and fragmentary that conversation is virtually impossible
2	Speech is very slow and uneven except for short or routine sentences
3	Speech is frequently hesitant and jerky; sentences may be left uncompleted
4	Speech is occasionally hesitant, with some unevenness caused by rephrasing and groping for words
5	Speech is effortless and smooth, but perceptively non-native in speed and evenness
6	Speech on all professional and general topics as effortless and smooth as a native speaker

e. Comprehension

Score	Requirement
1	Understand too little for the simplest type of conversation
2	Understand only slow, very simple speech on common social and touristic topics; requires constant repetition and rephrasing
3	Understand careful, somewhat simplifies speech when engaged in a dialogue, but may require considerable repetition and rephrasing
4	Understand quite well normal educated speech when engaged in a dialogue, but requires occasional repetition and rephrasing
5	Understanding everything in normal educated conversation except for very colloquial or low frequency items, or exceptionally rapid or slurred speech
6	Understand everything in both formal and colloquial speech to be expected of an educated native speaker

Each component has score or level. For non-native speaker score or level five is the highest score or level. The specification of the test is as follows:

**Table III.6**  
**Classification of Students' Score**

No	The score	Category
1	80-100	Excellent
2	66-79	Good
3	56-65	Average
4	40-55	Poor
5	30-39	Fail

(Arikunto, 2008:245)

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## 1. Validity of the Test

According to Fraenkel and Norman (2006), the term of validity in the research refers to appropriateness, correctness, meaningfulness, and usefulness of the specific inferences researchers make based on the data they collect (p. 150-152). Validity depends on the amount and type of evidence to support the interpretation researchers wish to make concerning data they have collected. There are three types of validity. They are content validity, criterion-related validity, and construct validity. In order to know the validity of speaking ability test, the researcher used content validity. Content validity is partly a matter of determining if the content that the instrument contains is an adequate sample of domain of content, it is supposed to represent. Content validity refers to the content and format of the instrument. How appropriate the content or format is. Thus, the researcher gave the test based on the material that was studied by the students. The material of the test was taken from the syllabus that was used by Junior High School 3 Teluk Kuantan.

## 2. Reliability of the Test

According to Gay and Airisian (2000), reliability is the degree to which a test consistently measures whatever it is measuring (p. 169). The testing of students' speaking ability must have reliability in order to get the same scores obtained when the test is done more than once. In reference to Brown's statement (2003), a reliable test is consistent and

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dependable (p. 20). So, reliability here was used to measure the quality of the test score and consistency of the test.

In this research, the researcher used the rater agreement type of reliability concerned with inter rater reliability as the scores were given by two raters. Then, inter-correlation of the raters was used to find the reliability of the test. The researcher used *Pearson Product Moment* to obtain the correlation between scores from rater 1 and rater 2. Based on Henning's idea (1987), to know the level of correlation, *Spearman-Brown Prophecy Formula* was used as follows:

$$r_{tt} = \frac{nr_{A,B}}{1+(n-1)r_{A,B}}$$

where:

$r_{tt}$  = inter-rater reliability

$n$  = the number of raters whose combined estimates the final mark for the examinees

$r_{AB}$  = the correlation between raters, or the average correlation among all raters if there are more than two (p. 85).

According to Arikunto (2009, p. 75), the following table is category of reliability test used in determining the level of reliability of the test.

**Table III.7**

**The Level of Reliability**

No.	Reliability	Level of Reliability
1.	0.0 – 0.200	Very Low
2.	0.21 – 0.400	Low
3.	0.41 – 0.600	Sufficient
4.	0.61 – 0.80	High
5.	0.81 – 1.00	Very High

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The following table describes the correlation between the scores given by rater 1 and rater 2 by using *Pearson Product Moment* formula through SPSS 20 version.

**Table III.8**  
**Correlations**

	rater1	rater2
rater1	Pearson Correlation	1
	Sig. (2-tailed)	.785**
	N	12
rater2	Pearson Correlation	.785**
	Sig. (2-tailed)	.002
	N	12

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From the table above, it could be seen that the total number of respondents was 12. The researcher obtained the degree of freedom to find the realibility of speaking test :

df : N-nr

df : degree freedom

N: number of cases

nr: Number of correlated variable

df : 12-2 = 10

After obtainining the degree of freedom(df) = 10, the coefficient product moment  $r_{obtained}$  was compared to  $r_{table}$  either at level of 5% or 1% . At level of 5 %  $r_{table}$  was 0.577; while at level of 1% was 0.708. Based on  $r_{table}$ , it could be analysed that ( $r_0$ ) was higher than ( $r_t$ ), either at level of 5% and 1% . It was clear that  $0.577 < 0.785 > 0.708$  . So that, the researcher

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conclude that  $H_0$  is rejected and  $H_a$  is accepted. It means that there is a significant correlation between the scores given by rater 1 and rater 2. In other words, the speaking test is reliable . Then,  $r_{obtained}$  is adjusted by the Spearman Brown Prophecy formula below :

$$r_{tt} = \frac{nr_{A,B}}{1 + (n - 1)r_{A,B}}$$

$$r_{tt} = \frac{(2)(0.785)}{1 + (2 - 1)(0.785)}$$

$$r_{tt} = \frac{1.57}{1 + 0.785}$$

$$= 0.88$$

Based on the calculation above, the researcher obtained that inter-rater reliability was 0.88. So, it could be concluded that reliability of speaking test included was very high level.

### 3. Normality of the Data

The technique of collecting data was using test. The data were analyzed by using statistical analysis. In analyzing the data, the researcher used scores of post-test of experimental and control classes. This score was analyzed statistically. In order to find the answer, the researcher analyzed the data by using SPSS 20 as follows:

**Table III .9**  
**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Postexperiment	.155	22	.180	.966	22	.612
Postcontrol	.126	22	.200 <sup>*</sup>	.961	22	.511

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

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**Hypothesis :**

Ho (Null Hypothesis) : Data are normally distributed

Ha (Alternative Hypothesis) : Data are abnormally distributed

**Testing criteria:**

If probably(sig) >0.05, Ha is accepted

If probably (sig)<0.05, Ho is rejected

According to Priyatno (2012: 36), If the "Sig" column of either test is higher than 0.05, the data are normally distributed. From the table III.9 above, the significant value of post-test experimental and control classes were 0.612 and 0.511. Because of  $sig > 0.05$  ( $0.612 > 0.05$ ) and ( $0.511 > 0.05$ ), the initial data of experimental and control classes were normally distributed. Therefore, the researcher used independent sample T-test.

**4. Homogeneity of the Data**

According to Siregar (2013), the purpose of homogeneity test is to know whether the object of the research has the same variance or not (p. 167). The method used in this test was comparing the biggest variance with the smallest one. In this research, the researcher assessed the homogeneity of the data by using SPSS 20 version. The result of the test is as follows:

**Table III.10**  
**Test of Homogeneity of Variances**

Levene Statistic	df1	df2	Sig.
1.710	1	42	.198



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Based on the table above, the probability(sig) based on trimmed mean was 0.198. It was higher than 0.05( 0.198>0.05) . It can be concluded that the data were homogenous.

## F. The Data Analysis

### 1. Independent Sample T-test

The researcher used independent sample T-test from SPSS to analyze the effect of using group investigation technique. In this research, the researcher used two raters to get the score of the students. There were pre- test, and post- test given to both classes.

According to Gay and Airasian, t- test is one of the statistic test used to determine whether two means are significantly different at a selected probably level(Gay & Airasian,2000, p. 383).

So, in this research, the researcher analyzed the data using SPSS 20. The significant value was employed to see whether there is or not a significant difference among the mean scores both of experimental and control classes. Statistical hypothesis is as follows:

$$H_0 = \text{sig. (2 tailed)} > 0.05 \text{ or } t_0 (t_{\text{obtain}}) < t_{\text{table}}$$

$$H_a = \text{sig. (2 tailed)} < 0.05 \text{ or } t_0 (t_{\text{obtain}}) > t_{\text{table}}$$

### 2. Effect Size

According to Pallant (2005), effect size is the strength of the difference between groups or the influence of independent variable. There is a number of different effect size statistic, the most common of which are eta squared (p. 173, 175). Eta squared can range from 0 to 1 and represents

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the proportion of variance in the dependent variable that is explained by the independent (group) variable.

The formula of eta squared is as follows:

$$\eta^2 = \frac{t^2}{t^2 + (N1 + N2 - 2)}$$

Where:

- $\eta$  = eta squared  
 $t^2$  =  $t_o$   
 N = number of students

The guidelines proposed by Cohen (1988, p. 284-287) quoted in Pallant for interpreting these values are:

- .01 = small effect  
 .06 = moderate effect  
 .14 = large effect