

## CHAPTER III

### RESEARCH METHOD

#### A. Research Design

The writer used the type of experimental research. Experimental research is test an idea (to practice or procedure) to determine whether it influences an outcome or dependent variable.<sup>1</sup>According to Gay and Peter, experimental research is the only type of the research that can test hypotheses to establish cause-and-effect relationship.<sup>2</sup>

The design of this reaserch wasquasi-experimental design, which used pretest- posttest design. According to Nunan: “Quasi-experimental design has both pre- and post-tests and experimental and control groups, but no random assignment of subjects”.<sup>3</sup>Thus, entire classrooms, not individual students, are assigned to treatments. This design referred to as quasi-experimental design. In this research, the writer used pre- and posttest design. In conducting this research, two classes of the eleventh grade students of state Senior High School 1 Siak Kecil Bengkalis Regency were participated. The writer assigned the experimental and control classes, that administed a pretest to both groups, conducting experimental treatment activities with the experimental group only and then

---

<sup>1</sup>Jhon. W. Creswell, *Educational Research Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. (New Jersey: Prentice Hall, 2008), p.299

<sup>2</sup>Gay,L.R, & Peter Airasian. *Educational Research: Competencies for Analysis and Application* (New Jersey: Pearson Education, 2000), p. 367

<sup>3</sup>David Nunan. *Research Methods in Language Learning*, (New York:Cambridge University Press,1992).p. 41.

administered a posttest in order to assess the differences between two groups. According to Creswell, the research design can be illustrated as follows:<sup>4</sup>

**TABLE III.1  
RESEARCH DESIGN**

<b>Pre- and Posttest Design</b>		<b>Time</b> →	
Select control group	Pretest	No treatment	Posttest
Select experimental Group	Pretest	Experimental Treatment	Posttest

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

The research was conducted at Senior High School 1 Siak Kecil, located on Jln. A. Manaf yahya Siak Kecil. It was conducted from February to March 2014.

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

The subject of the research was the eleventh grade students of SMA siak 1 siak kecil of bengkalis regency. The object of the research was students' reading comprehension.

### **D. Population and Sample of the Research**

#### **1. Population**

The population of this research was the eleventh grade students of Senior High School 1 Siak Kecil in 2014/2015 academic year. The school had 5 classes which consisted of 2 classes for science department and 3 classes for social department. The number of the eleventh grade students

---

<sup>4</sup>John. W. Creswell. *Op.Cit.*P,314

of Senior High School 1 Siak Kecil in 2014/2015, was 134 students. The following table describes the population of the research.

## 2. Sample

Based on the total population above, The writer took only two classes for the samples taken by using Cluster sampling technique. Cluster sampling randomly selected groups, not individuals. All the members of selected groups had similar characteristics. According to Gay, cluster sampling is the most useful when the population is very large or spread out over a wide geographic area.<sup>5</sup> So, the writer took two classes as the sample of this research. They were class XI IPA I as experimental class and XI IPA II as control class. Therefore, the sample was 58 students.

## E. Research Procedure

*What do you know?* Game was used in learning process; it helped measure the students' comprehension in reading text. Two procedures in this research were used by writer for collecting the data.

### 1. Procedures of collecting data for Experimental Group

#### a. Pre-test

The pre-test was used to measure the students' ability in reading comprehension before the treatment was given. The question consisted of 25 items of reading comprehension that were suitable with the curriculum used by the school.

---

<sup>5</sup>*Ibid* , p.129

b. Treatment

The treatment was used only for the experimental group. The treatment was *what do you know?* game in teaching reading comprehension part of learning English.

c. Post-test

After six meetings, the pre and post test were done. The result of experimental group score was analyzed and used as final data for the research.

2. The Procedures of Collecting Data for Control Group

a. Pre-test

The aims, items, questions, and procedures of the test for control group were the same as those that were conducted to experimental group.

b. Conventional technique

In this study, the teacher taught reading by using common ways or conventional technique of classical method.

c. Post-test

The post-test was administrated for both of experimental and control group after giving the treatment to the experimental group. The result of the post-test of experimental and control groups was analyzed and used as final data for this research.

## **F. The Technique of Collecting Data**

In order to get data needed to support this research, the writer applied the techniques to determine the result of the teaching learning process by using *what do you know?* Game, the writer used a test as an instrument to collect data. The test was divided into two ways:

1. Pre-test was used to determine students' reading comprehension before getting treatment.
2. Post-test was used to determine students' reading comprehension after getting the treatment. Post-test was carried out once, after treatment, to get the maximum result.

In giving the assesment, the writer correlated it to the goal or purpose of the reading in curriculum. The technique used by writer was multiple choices. Hughes says that there are many techniques that can assess the students' reading comprehension: one of them is multiple choice tehnique. Multiple choice technique was a technique where the candidate provides evidence of successful reading by making a markone out of a number of alternatives.<sup>6</sup> Then, the writer used multiple choice techniques consisting 25 item. This technique could assess the students' reading comprehension.

---

<sup>6</sup>Arthur Hughes. *Testing for Language Teachers*, Second Edition. (Cambridge: Cambridge University Press, 2003),p. 143

**TABLE. III.2**  
**THE BLUE PRINT PRE-TEST**

<b>No</b>	<b>Indicators</b>	<b>Number of Items</b>
1	Identify the main idea in report text.	1,6,11,16,21
2	Identify the character in a report text.	5,9,13,19,23
3	Identify the cases and events in report text.	2,7,12,17,22
4	Identify the generic structure in report text.	4,10,15,20,25
5	Identify the language features in report text.	3,8,14,18,24

**TABLE. III.3**  
**THE BLUE PRINT POST-TEST**

<b>No</b>	<b>Indicators</b>	<b>Number of Items</b>
1	Identify the main idea in report text.	1,6,11,16,21
2	Identify the character in a report text.	3,8,14,18,25
3	Identify the cases and events in report text.	2,7,12,17,22
4	Identify the generic structure in report text.	4,9,15,20,24
5	Identify the language features in report text.	5,10,13,19,23

After the students did the test. The reasercher then took the total score from the result of the reading comprehension test. The classification of the students' score can be seen below<sup>7</sup>:

**TABLE. III.4**  
**THE CLASSIFICATION OF THE STUDENTS' SCORE**

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

---

<sup>7</sup>Suharsimi Arikunto. *Dasar-Dasar Evaluasi Pendidikan*.(Jakarta: Bumi Aksara, 2009), p. 245

## G. The Validity and Reliability of Instrument

### 1. Validity of Instrument

According to Hughes, a test is said to be valid if it measures accurately what it is intended to measure<sup>8</sup>. Validity is to measure what will be measured<sup>9</sup>. In addition, Gay states that validity is the appropriateness of the interpretations made from the test score<sup>10</sup>. Furthermore, Gay said that there are three kinds of validity. They are content validity, criterion-related validity, and construct validity. All of them have different usage function.

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. The formula of item difficulty is as follows.<sup>11</sup>

$$P = \frac{\sum B}{N}$$

Where: P : Proportion of correct answer= index difficulties

B : The number of correct answer

N : The number of students taking the test

The formula above was used to find out easy or difficult test items that writer gave to the respondents. The items did not reach the standard

---

<sup>8</sup>Arthur Huges. *Op. Cit.*, p.22.

<sup>9</sup> Husaini Usman and Purnomo Setiady Akbar, *Pengantar Statistika: Edisi Kedua*, (Jakarta: Bumi Aksara, 2011),p, 287

<sup>10</sup>L.R. Gay and Peter Airasian. *Op. Cit*,161.

<sup>11</sup>Hartono. *Analisis Item Instrumen*, (Bandung: Zanafa Publishing, 2010), p.38

value of difficulty were modified. the standard value of the proportion of correct can be seen in the table below:<sup>12</sup>

**TABLE III.5**  
**INDEX DIFFICULTY LEVEL OF INSTRUMENTS**

Proportion correct (p)	Item category
P > 0.70	Easy
0.30 P 0.70	Average
P < 0.30	Difficult

The facility value under 0.30 is considered difficult and above 0.70 is considered easy. The items categorized in the level of easy or difficult ( $p < 0.30$  or  $p > 0.70$ ) should be modified. Therefore, the standard value of the proportion of correct is between 0.30 and 0.70. Based on the table above, it can be seen that there were some item numbers rejected, they are 6,7,10,26,28 items of instrument. Remaining of items was accepted.

## 2. Reliability of Instrument

A test must be reliable as measuring instrument. Reliability is the degree to which the test consistently measures whatever it is measuring<sup>13</sup>. The mean and standard deviation of the test must be known for obtaining the reliability of the test. To know the reliability of the test, the writer used the formula KR-20<sup>14</sup>:

$$r_{ii} = \frac{k}{k-1} \frac{s^2 - \sum pq}{s^2}$$

---

<sup>12</sup> *Ibid.*

<sup>13</sup> L.R. Gay and Peter Airasian. *Op. Cit*, 175.

<sup>14</sup> Suharsimi Arikunto. *Prosedur Penelitian: Suatu Pendekatan Praktek*. (Jakarta: PT Rineka Cipta, 2006), p. 180

Where:

rii : Instrument reliability

k : Number of items

S : Deviation standard

p : The proportion of the students making correct answers was divided by the total number of the students

q : The proportion of the students making incorrect answers was divided by the total number of the students.

## H. The Effect Size

In this research, the writer used effect size. According to Miles and Banyard: "in the case of the independent groups *t*-test, an appropriate measure of effect size is called Cohen's *d*. Cohen's *d* is a measure of how far apart the means of the two samples are; in standard deviation units".<sup>15</sup> To analyze the effect size the writer used the following formula:<sup>16</sup>

$$d = \frac{2t}{df}$$

Where:

*d* = The effect size

*t* = The result of the *t*-test

*df* = The degrees of freedom, which is  $N_1 + N_2 - 2$

---

<sup>15</sup>Jeremy Miles and Philip Banyard. *Understanding and Using Statistics in Psychology*. (London: SAGA Publication, 2007). P. 154

<sup>16</sup>ibid

To interpreted the effect size of the difference between the experimental and control group, the writer used the following criteria:<sup>17</sup>

**TABLE III.6**  
**INTERPRETING OF THE STRENGTH OF A RELATIONSHIP**  
**(EFFECT SIZE)**

No	General Interpretation of the Strength of a Relationship	The d family
1	Very large	1.00
2	Large	0.80
3	Medium	0.50
4	Small	0.20

## I. The Technique of Data Analysis

### 1. Normality Test

Before analyzing the data by using t-test formula, the writer had to find out the normality test of the data. The normality test of the data was analyzed by using Kolmogorov-Smirnov technique<sup>18</sup>, with SPSS 17 version.

Analysis:

H<sub>0</sub>: population with normal distribution

H<sub>a</sub>: population with not normal distribution

If the probability > 0.05 H<sub>0</sub> was accepted

If the probability < 0.05 H<sub>0</sub> was rejected

---

<sup>17</sup>Nancy L. Leech, et.al. *SPSS for Intermediate Statistics Use and Interpretation*. (New Jersey:Lawrence Erlbaum Associates Publishers, 2005). P. 56

<sup>18</sup>Syofian Siregar, *Statistic Parametric Untuk Penelitian Kuantitatif: Dilengkapi Dengan Perhitungan Manual Dan Aplikasi Spss Versi 17*, (Jakarta: Bumi Aksara, 2013), p, 153

**a. Post-Test Experimental**

**TABLE III.7  
DESCRIPTIVE STATISTICS**

	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	29	71.59	5.590	60	80

Based on the table above, the mean was 71.59, the minimum was 60, the maximum was 80 and the standard deviation was 5.590.

**TABLE III.8  
ONE-SAMPLE KOLMOGOROV-SMIRNOV TEST**

		Experimental
N		29
Normal Parameters <sup>a,b</sup>	Mean	71.59
	Std. Deviation	5.590
Most Extreme Differences	Absolute	.185
	Positive	.126
	Negative	-.185
Kolmogorov-Smirnov Z		.995
Asymp. Sig. (2-tailed)		.276

a. Test distribution is Normal.

b. Calculated from data.

Based on the output SPSS above, the test of normality shows:

Sig or p was  $0.276 > 0.05$ . It means  $H_0$  was accepted or the data were normal.

**b. Post-Test Control**

**TABLE III.9  
DESCRIPTIVE STATISTICS**

	N	Mean	Std. Deviation	Minimum	Maximum
Control	29	64.28	5.444	56	72

Based on the table above, the mean was 64.28, the minimum was 56, the maximum was 72 and the standard deviation was 5.444.

**TABLE III.10**  
**ONE-SAMPLE KOLMOGOROV-SMIRNOV TEST**

		Control
N		29
Normal Parameters <sup>a,b</sup>	Mean	64.28
	Std. Deviation	5.444
Most Extreme Differences	Absolute	.163
	Positive	.163
	Negative	-.132
Kolmogorov-Smirnov Z		.879
Asymp. Sig. (2-tailed)		.422

a. Test distribution is Normal.

b. Calculated from data.

Based on the output SPSS above, the test of normality shows:

Sig or p was  $0.422 > 0.05$ . It means  $H_0$  was accepted or the data were normal.

## 2. Analysis Data t-test

In this research, the data were analyzed by using statistical method. The writer analyzed the data by using t-test to know the result of the research statistically. Therefore, the suitable formula for analyzing the data was Independent Sample t-test.

After computing t-test, it is necessary to obtain the degree of freedom that is used to determine whether t-score is significant or not. The t-obtained value is consulted with the value of t-table by using degree of freedom. The formula of degree of freedom is as follows:

$$Df = (N1 + N2) - 2.$$

Where: Df : The Degree of Freedom

Nx : The Number of Students' in Experimental Class

Ny : The Number of Students in Control Class

The writer had consulted the t-obtained value with t-table by using degree of freedom, the writer concluded that if  $t_o < t_{table}$ , Ho is accepted. It means that there is no effect of *what do you know?* Game on students' reading comprehension. If  $t_o > t_{table}$ , Ha is accepted. It means that there is significant effect of *What Do You Know?* Game on students' reading comprehension of report text.

The writer used independent sample t-test through SPSS 17 to analyze the data of the research.