

CHAPTER III
RESEARCH METHODOLOGY

A. The Research Design

The research design of this study is an experimental research. It is detailly stated in Creswell that “an experimental design is the traditional approach to conducting quantitative research.”¹ He categorizes some paces to be done by an experimenter about when the experimenter uses it, assesses the key characteristics of it, and advances the steps in conducting and evaluating this design. According to Gay, an experimental design is the only method of research that can trully test hypotheses concerning cause and effect relationships.

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Gay and Peter state that in the non-equivalent control group design, two or more treatment groups are pretested, administered a treatment, and posttested. In this research, there were two classes used. One class was as an experimental group, and the rest was as a control group. The experimental group was treated by using Think-Pair-Share Strategy, and there was no treatment for control group. This is called a quasi-experimental design. After that, the writer administered a post-test to both of them in order to assess the differences between the two groups. The model of research design can be illustrated as follows:³

Table III.1
Non Equivalent Design

GROUP	PRE-TEST	TREATMENT	POST-TEST
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¹ L.R Gay and Peter Airasian, *Educational Research Competencies for Analysis and Aplication Sixth Edition* (New Jersey: Pearson Education, 2000), p. 367

² *Ibid*

³ Jhon.W Creswell, *Educational Researcher Planning, Conducting, and Evaluating Quantitative and Qualitative Research*, (New Jersey: Prentice Hall, 2008) p. 314

X ₁	T1	X	T2
X ₂	T1		T2

Where:

X₁ : Control group

X₂ : Experimental group

T1 : Pre-test for experimental group and control group

: Receiving particular treatment

X : Without particular treatment

T2 : Post-test for experimental group and control group.

B. The Location and Time of the Research

This research was conducted at State Senior High School 1 Kuantan Hilir, Regency of Kuantan Singingi. The research was done from February to March 2014.

C. The Subject and Object of the Research

The subject of the research was the second year students of State Senior High School 1 Kuantan Hilir in the academic year of 2013-2014 and the object of the research was the students' reading comprehension taught by using think-pair-share strategy as experimental group and directed reading activity strategy as control group.

D. The Population and Sample of the Research

The population of this research was the second year students of state senior high school 1 Kuantan Hilir in 2013-2014 academic year. The total number of the students was 202. It has 6 classes; 2 classes of natural science and 4 classes of social science.

Table III.2

The Total Population of Second Year Students at State Senior High School 1 Kuantan Hilir

No	Class	Students	
		Female	Male
1	XI. Science 1	20	14
2	XI. Science 2	21	13
3	XI. Social 1	21	13
4	XI. Social 2	15	19
5	XI. Social 3	14	19
6	XI. Social 4	13	20
Total Population		104	98
		202	

Due to a large number of populations of this research, the writer needed to select the sample. The writer used cluster random sampling technique. According to Gay and Airasian, cluster random sampling selects the groups, not individuals. In this research, the researcher took two classes as the samples. XI science 1 as experimental class and XI science 2 as control class. Both classes consisted of 34 students respectively, so the total sample of this research was 68 students.

Table III.3

Sample of the Second Year Students at SMA N 1 Kuantan Hilir

No	Class	Male	Female	Number of students
1.	XI Science 1	14	20	34
2.	XI Science 2	21	13	34
Total				68

E. Technique of Collecting Data

In this research, the researcher used test as the technique of collecting the data. 20 items of multiple choice test was used to determine the students' comprehension in reading narrative text. According to Hughes, there are many techniques that can assess the students'

reading comprehension; one of them is multiple choice techniques.⁴ Multiple choice technique was a technique designed by using four choices, and the participants choose one correct answer.

The writer used test to control class and experimental class in order to know the comparison between reading comprehension taught by using directed reading activity strategy and think-pair-share strategy. In giving the test, the researcher correlated it to the goal of the reading in curriculum. Before that, the researcher gave try out for another class besides experimental class and control class in order to prove whether the test was valid and reliable or not. After the students did the test, the writer took the total score from the result of the reading comprehension test.

F. Validity and Reliability of the Test

Before the test was given to the sample, the test had been tried out to 33 students of the second year students in the social program. The purpose of try out is to obtain validity and reliability of the test.

1. Validity of the Test

According to Hughes, the test is said to be valid if it measures accurately what it is intended to measure⁵. A test is used to measure the ability, knowledge, achievement or performance of a person. A valid test should be useful, meaningful, and appropriate in terms of the purpose of the assessment.

It supported by Arikunto, the validity has two kinds; there are logical validity and empirical validity. In this research, the researcher used logical validity. Logical Validity

⁴Arthur Hughes, *Testing for Language Teacher, 2nd Edition*. (New York: Cambridge University Press, 2003), p. 143

⁵*Ibid.* p.22

is the validity stated based on the result of experience⁶. It means that the instrument of the research is stated valid if the instrument has been examined from the experience such as try out. It was determined by finding the difficulty level of each item. The formula of item difficulty is as follows⁷ :

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

Where, P : index of difficulty or facility value

B : the number of correct answers

JS : the number of examines or students taking the test

The standard level of difficulty used is > 0.30 and < 0.70 ⁸. It means that the item test that 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 correct is represented by “P”, whereas the proportion incorrect is represented by “Q”, it can be seen in the following tables:

Table III.4
Finding the Main Idea of the Text

Variable	Finding Main Idea				N
Item No	1	6	11	16	33
Correct item	23	16	16	22	
P	0.70	0.48	0.48	0.67	
Q	0.30	0.52	0.52	0.33	

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

$$Q = 1.00 - P$$

Based on the table III.5, the proportion of correct answer for item number 1 was 0.70, the proportion of correct answer of item number 6 was 0.48, the proportion of correct answer of item number 11 was 0.48, and the proportion of correct answer of item

⁶ Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*. (Jakarta: Bumi Aksara, 2011), p. 65

⁷ *Ibid.* p. 208

⁸ *Ibid.* p. 210

number 16 was 0.67. Based on the standard level of difficulty, all items were exceeding the lower standard of students' classification score or "p" > 0.30 and < 0.70. So, the items of finding main idea were accepted.

Table III.5
Identifying the Generic Structure of the Text

Variable	Identifying Generic Structure				N
Item No	2	7	12	17	33
Correct item	19	19	18	21	
P	0.58	0.58	0.55	0.64	
Q	0.42	0.42	0.45	0.36	

Based on the table III.6, the proportion of correct answer for item number 2 was 0.58, the proportion of correct answer of item number 7 was 0.58, the proportion of correct answer of item number 12 was 0.55, and the proportion of correct answer of item number 17 was 0.64. Based on the standard level of difficulty, all items were exceeding the lower standard of students' classification score or "p" > 0.30 and < 0.70. So, the items of identifying generic structure were accepted.

Table III.6
Identifying Language Feature of the Text

Variable	Identifying Language Feature				N
Item No	3	8	13	18	33
Correct item	17	21	22	18	
P	0.52	0.64	0.67	0.55	
Q	0.48	0.36	0.33	0.45	

Based on the table III.7, the proportion of correct answer for item number 3 was 0.52, the proportion of correct answer of item number 8 was 0.64, the proportion of correct answer of item number 13 was 0.67, and the proportion of correct answer of item number 18 was 0.55. Based on the standard level of difficulty, all items were exceeding

the lower standard of students' classification score or "p" > 0.30 and < 0.70. So, the items of identifying language features were accepted.

Table III.7
Identifying Reference

Variable	Identifying reference				N
Item No	4	9	14	19	33
Correct item	18	17	15	16	
P	0.55	0.52	0.45	0.48	
Q	0.45	0.48	0.55	0.52	

Based on the table III.8, the proportion of correct answer for item number 4 was 0,55, the proportion of correct answer of item number 9 was 0.52, the proportion of correct answer of item number 14 was 0.45, the proportion of correct answer of item number 19 was 0.48. Based on the standard level of difficulty, all items were exceeding the lower standard of students' classification score or or "p" > 0.30 and < 0.70 . So, the items of identifying reference were accepted.

Table III.8
Making Inference

Variable	Making Inference				N
Item No	5	10	15	20	33
Correct item	18	14	14	18	
P	0.55	0.42	0.42	0.55	
Q	0.46	0.58	0.58	0.45	

Based on the table III.9, the proportion of correct answer for item number 5 was 0.55, the proportion of correct answer of item number 10 was 0.42, the proportion of correct answer of item number 15 was 0.42, the proportion of correct answer of item

number 20 was 0.55. Based on the standard level of difficulty, all items were exceeding the lower standard of students' classification score or "p" > 0.30 and < 0.70. So, the items of making inference were accepted.

2. Reliability of the Test

A test must first be reliable as measuring instrument. Reliability is a necessary characteristic of a good test. Reliability refers to the consistency of measurement, or the extent to which the score are similar or different forms of the same instrument or occasions as data collection.⁹ In this research, the researcher used the Kuder Richardson 20 (K-R 20) formula to calculate the reliability of the test¹⁰. The formula is as follows:

$$R_{11} = \frac{n}{n-1} \frac{S^2 - pq}{S^2}$$

Where, R_{11} : Reliability of the test

p : Proportion subject that answer the true of item

q : Proportion subject that answer the false of item (q= 1- p)

pq : Total equals between p and q

n : Total of the item

S : Standard Deviation

$$S = \sqrt{\frac{\sum X^2}{N}} = \sqrt{\frac{362}{33}} = \sqrt{10,96} = 3.31$$

$$S = 3.31$$

$$pq = 4.83$$

⁹James H. McMillan & Sally Scumacher, *Op.Cit*, p.130

¹⁰Suharsimi Arikunto. *Op.Cit*. p.100

$$x^2 = 362$$

$$N = 33$$

$$\begin{aligned} \text{So, } R_{11} &= \frac{33}{33-1} \frac{3.31^2-4.83}{3.31^2} \\ &= \frac{33}{32} \frac{10.96-4.83}{10.96} \\ &= 1.03 \cdot 0.55 \\ &= 0.57 \end{aligned}$$

The statistical counting above, the score reliability of the test is 0.57. To know the reliability of the test must be compared with r product moment. R_{11} must be higher than r_t . Then r_t at 5% level of significance is 0.344, while in the significance level of 1% is 0.442. So, it can be analyzed that r_{ii} higher than r_t . $5\% < r_{ii} > 1\%$. ($0.344 < 0.57 > 0.442$). In the other words, the instrument was reliable.

J.B. Heaton in Nurhikmah released the standard of item reliability as follows:¹¹

0,00- 0,20	= Reliability low
0,21- 0,40	= Reliability Sufficient
0,41- 0,70	= Reliability High
0,70	= Reliability very High

It means that the reliability of the test was categorized into high level.

G. Technique of Data Analysis

1. Normality Test

¹¹ Nurhikmah, *The Correlation Between Verb Mastery and Writing Ability on Narrative Text at the Senior High School Tarbiyah Islamiyah Seberida*. (Unpublished, 2012), p.43

Before the independent sample t-test formula was used to analyze the data, the writer had to make sure that the collected data were normally distributed. The normality test of the data was analyzed by using Kolmogorov Smirnov technique with SPSS. So, the writer needed to propose the hypothesis of the data normal distribution, as follows:

Ho : population with normal distribution

Ha : population without normal distribution

if the probability (*sig*) is bigger than 5% ($> 0,05$), Ho was accepted.

if the probability (*sig*) lower than 5% ($< 0,05$), Ho was rejected.¹²

2. Data Analysis

In order to find out whether there is or no a significant difference between reading comprehension taught by using Directed reading activity strategy and Think-pair-share strategy of the second year students at State Senior High School 1 Kuantan Hilir, the data were analyzed statistically. In analyzing the data, the researcher used the result scores of test of in experimental and control class. Those scores were analyzed by using statistical analysis. In this research, the researcher used T-test formula (independent sample t-test) and the data was analyzed by using statistic software using SPSS 16.0 program.

Hinton et al said that the independent sample T-test is undertaken when the samples are unrelated with different participant in each sample. This test is also called the unrelated T-test or the independent measure T-test¹³. Miles and Banyard also said that the independent

¹² Ir. Syofian Siregar, M.M, *Statistik Parametrik untuk Penelitian Kuantitatif*. (Jakarta : Bumi Aksara, 2013), p.153

¹³Perry R. Hinton, et al *SPSS Explained*. (New York: Routledge, 2004), p. 107

groups T-test is the most powerful and is the test most likely to spot significant difference in the data.¹⁴

T-test is obtained by considering the degree of freedom $(df) = (N1+N2) - 2$.

Statistically, the Hypothesis are:

H_0 is accepted if $t < t\text{-table}$ or there is no significant difference on reading comprehension between students being taught by using Directed Reading Activity strategy and Think Pair Share strategy of the second year students at State Senior High School 1 Kuantan Hilir.

H_a is accepted if $t > t\text{-table}$ or there is a significant difference on reading comprehension between students being taught by using Directed Reading Activity strategy and Think Pair Share strategy of the second year students at State Senior High School 1 Kuantan Hilir.

¹⁴ Jeremy miles and Philip Banyard. *Understanding and Using Statistic in Psychology*.(Los Angeles: SAGE Publication, 2007).p. 137