

## CHAPTER III

### RESEARCH METHODOLOGY

#### A. The Research Design

The type of this research was an experimental research which consisted of two variables. The first variable is using Four Step Summary strategy as the independent variable (X) and the second is the students' reading comprehension of analytical exposition text as the dependent variable (Y). Experimental research is the only type of research that can hypothesises to establish cause-and-effect relationship.<sup>1</sup> It is procedures in quantitative research in which the investigator determines whether an activity or materials make difference in result for participants.<sup>2</sup> So, in experimental research, we want to try something one that can influence or give effect toward the result of studying.

In this research, the researcher used a quasy experimental design with non equivalent control group. It is the appropriate one to use in this research. This design used two classes. One class was as a control class and the other class was as a treatment/experimental class that used Four Step Summary in reading comprehension. In both of classes, the researcher gave pre-test first. It was to know the basic ability of the students. After that, the researcher gave treatment by using Four Step Summary to the experimental class and used

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<sup>1</sup> L.R Gay et.al, *Educational Research, Competencies for Analysis and Application*, (Prentice-Hall, Inc. 2000), 367.

<sup>2</sup> Jhon.W.Cresswell, *Educational Research:Planning, Conducting, and Evaluating Quantitative and Qualitative Research*(New Jersey: Pearson Education,2008), 60.

usual technique for the control class. The last one after teaching several meetings, the researcher gave post test to know the significant effect by using the Four Step Summary to the experimental class. The control class was also given the post test to know the differences between both classes. Finally, the writer would like to show the design of the research as follows<sup>3</sup>:

Pre and post test design

Select control group	Pre test	No treatment	Post test
Select experimental group	Pre test	Experimental treatment	Post test

## **B. The Subject and Object of The Research**

The subject of the research was the second year students of SMAN 1 Tualang. Besides, the object of the research was the effect of using Four Step Summary toward students' reading comprehension on analytical exposition text.

## **C. The Location and Time of The Research**

The research was conducted at the second year of SMAN 1 Tualang, from August until September 2013. It was located on Sultan Alamuddinsyah, Perawang, Siak.

## **D. The Population and Sample**

The population and sample of this research was the second year of students of SMAN 1 Tualang especially science class. The total number of students was 179 students that consisted of 5 classes. The population was large

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<sup>3</sup>*Ibid.*, 299.

enough to be all taken as sample of the research. Based on the design of the research, the researcher took only two classes as the sample of this research by using cluster sampling. According to Kothari, cluster sampling is defined as follows:<sup>4</sup>

“If the total area of interest happens to be a big one, a convenient way in which a sample can be taken is to divide the area into a number of smaller non overlapping areas and then to randomly select a number of these smaller areas (usually called clusters), with the ultimate sample consisting of all (or samples of) units in these small areas or clusters.”

In addition, Singh states that to select the intact group as a whole is known as a Cluster sampling. In Cluster sampling the sample units contain groups of elements (clusters) instead of individual members or items in the population.<sup>5</sup> Beside that, according to Gay and Airisan, cluster random sampling is a way to select a sample by grouping or not individuals. All the members of selecting group have similar characteristic<sup>6</sup>.

**Table III. 1**  
**The Total Population of The Second Year Students of SMA N 1 Tualang**

NO	CLASS	TOTAL
1	XI IPA I	36
2	XI IPA II	35
3	XI IPA III	34
4	XI IPA IV	37
5	XI IPA V	37
Total		179

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<sup>4</sup> C. R. Kothari, *Research Methodology Methods and Techniques [Electronic Book]* (Jaipur: New Age International Publication, 2004), 65

<sup>5</sup> Yogesh Kumar Singh, *Fundamental of Research Methodology and Statistics [Electronic Book]*. (New Delhi: New Age International Publisher, 2006),89

<sup>6</sup> Gay and Airisan, *Education Research: Competencies for Analysis and Application*, (Upper Saddle River: New Jersey,1997), 130.

Based on the table above, the second year students of SMAN 1 Tualang was the population of this research which consisted of 5 classes, the number of population was 179 students.

The specification of the research sample can be seen on the table below:

**Table III.2**  
**The specification of the Research Sample**

No	Class	Male	Female	Total
1	XI IPA 4 (experimental class)	14	23	37
2	XI IPA 5 ( control class)	17	20	37
Total		31	43	74

Based on the table above, the researcher choose XI IPA 4 as experimental class and XI IPA 5 as control class as the sample of this research. The number of this sample was 74 students. The researcher determined both classes to be sample of population based on the preliminary study by asking the teacher in SMAN 1 Tualang, both classes were almost homogenous for the total number of the students in the class even the achievement in learning.

### **E. The Technique of Data Collection**

In collecting the data, the researcher used test. According to Brown, test is a method of measuring a person's ability, knowledge, or performance in a given domain.<sup>7</sup> Furthermore, Hughes said that the purposes of testing are<sup>8</sup>:

- a. To measure language proficiency

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<sup>7</sup> H. Douglas Brown, *Language Assessment: Principle and Classroom Practices* (San Francisco: Longman, 2003), 3.

<sup>8</sup> Arthur Hughes, *Testing for Language Teacher* (New York: Cambridge University Press, 2005), 8.

- b. To discover how successful students have been in achieving the objectives of a course of study
- c. To diagnose students' strengths and weaknesses, to identify what they know and what they don't know
- d. to assist placement of students by identifying the stage or part of a teaching programme most appropriate to their ability.

There are many techniques that can assess the students' reading comprehension; one of them is multiple choice techniques.<sup>9</sup> Then, the researcher used multiple choice technique consisting of 20 items. The researcher has given the test twice. They are pre test and post test. Pre-test was given to both of classes (experimental and control class) before implementing Four Step Summary strategy. Post-test was given to both of classes (experimental and control class) after implementing Four Step Summary strategy (especially for experimental class).

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<sup>9</sup>*Ibid.*, 143.

**Table III.3**  
**The Blueprint of the test**

No	Questions indicator	Material	Question Number	Sources
1	The students are able to identify the topic of analytical exposition text.	<ul style="list-style-type: none"> <li>•The importance of English</li> <li>•Integrated pest management</li> <li>•Car should be banned in cities</li> <li>•Being fat is serious problem</li> </ul>	1, 6, 11, 16	Students' English textbook
2	The students are able to recognize the meaning of vocabulary in analytical exposition text.		2, 7, 12, 17	
3	The students are able to identify the generic structure (thesis, arguments, and reiteration) of analytical exposition text.		3, 8, 13, 18	
4	The students are able to indentify reference		4, 9, 13, 19	
5	The students are able to identify communicative purpose of analytical exposition text		5, 10, 14, 20	

The researcher took the total of score from the result of the reading comprehension test by using the classification of the students' score that can be seen below:<sup>10</sup>

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<sup>10</sup>Suharsimi Arikunto, *Dasar-dasarEvaluasiPendidikan*,(Jakarta: Bumi Aksara, 2009), 245.

**Table III.4**  
**Classification of Score**

No	Classification	Score
1	Excellent	80-100
2	Good	66-79
3	Fair	56-65
4	Poor	40-55
5	Very poor	30-39

## F. The Validity and Reliability of the Test

### 1. Validity of the test

In giving the test to respondents, the test should be valid. The research instrument should be qualified. The instrument can be valid if the instrument is measuring what the writer wants to find out. It is supported by Hughes, he states that a test is said to be valid if it measures accurately what it is intended to measure.<sup>11</sup>

In this research, researcher used the formula for item difficulty to determine. Whether the test was valid or not. The formula can be seen as follows:<sup>12</sup>

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

P : index of difficulty

B : the number of correct answer

JS : the number of examinees

The standard level of difficulty is 0.31 - 0.70.<sup>13</sup> It means that an item is accepted if the level difficulty is 0.31 - 0.70, and it is rejected if the

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<sup>11</sup> Arthur Hughes, *Op.Cit*, 26.

<sup>12</sup> Suharsismi Arikunto, *Op.Cit* 223.

level of difficulty is less than 0.31 (an item is too difficult) and over than 0.70 (an item is too easy). The proportion of correct answer is presented by “P”, and the proportion of incorrect answer is presented by “Q”. The calculation of item difficulty can be seen in the following table:

**Table III. 5**  
**The students are able to identify the topic of analytical exposition text.**

<b>Variable</b>	<b>Identify the topic</b>				<b>N</b>
<b>Item number</b>	1	6	11	16	34
<b>Correct</b>	19	18	18	18	
<b>P</b>	0.56	0.53	0.53	0.53	
<b>Q</b>	0.44	0.47	0.47	0.47	

The table above shows proportion of correct answer for number 1,6,11 and 16 of question for identifying topic. By comparing to the standard level of difficulty, the item numbers of question 1,6, 11, and 16 are between 0.31 – 0.70. So, the item numbers of question 1,6, 11, and 16 are accepted.

**Table III.6**  
**The students are able to recognize the meaning of vocabulary in analytical exposition text.**

<b>Variable</b>	<b>Recognize the meaning of vocabulary</b>				<b>N</b>
<b>Item number</b>	2	7	12	17	34
<b>Correct</b>	19	19	17	19	
<b>P</b>	0.56	0.56	0.5	0.56	
<b>Q</b>	0.44	0.44	0.5	0.44	

The table above shows proportion of correct answer for number 2, 7, 12 and 17 of question for recognizing the meaning of vocabulary on analytical exposition text. . By comparing to the standard level of

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<sup>13</sup>*Ibid.*,225.

difficulty, the item numbers of question 2, 7, 12 and 17 are between 0.31 – 0.70. So, the item numbers of question 2, 7, 12 and 17 are accepted.

**Table III.7**  
**The students are able to identify the generic structure (thesis, arguments, and reiteration) of analytical exposition text.**

Variable	Identify the generic structure (thesis, arguments, and reiteration)				N
Item number	3	8	13	18	34
Correct	15	20	18	21	
P	0.44	0.59	0.53	0.62	
Q	0.56	0.41	0.47	0.38	

The table above shows proportion of correct answer for number 3, 8, 13 and 18 of question for identifying the generic structure of analytical exposition text. By comparing to the standard level of difficulty, the item numbers of question 3, 8, 13 and 18 are between 0.31 – 0.70. So, the item numbers of question 3, 8, 13 and 18 are accepted.

**Table III.8**  
**The students are able to Identify reference**

Variable	Identify reference				N
Item number	4	9	14	19	34
Correct	16	17	18	16	
P	0.47	0.5	0.53	0.47	
Q	0.43	0.5	0.47	0.53	

The table above shows proportion of correct answer for number 4, 9, 14 and 19 of question for identifying reference on analytical exposition text. By comparing to the standard level of difficulty, the item numbers of question 4, 9, 14 and 19 are between 0.31 – 0.70. So, the item numbers of question 4, 9, 14 and 19 are accepted.

**Table III.9**  
**The students are able to identify communicative purpose**  
**of analytical exposition text**

Variable	Identify reference				N
Item number	5	10	15	20	34
Correct	18	20	20	16	
P	0.53	0.59	0.59	0.47	
Q	0.47	0.41	0.41	0.53	

The table above shows proportion of correct answer for number 5, 10, 15 and 20 of question for identifying communicative purpose of analytical exposition text. By comparing to the standard level of difficulty, the item numbers of question 5, 10, 15 and 20 are between 0.31 – 0.70. So, the item numbers of question 5, 10, 15 and 20 are accepted.

## 2. Reliability of the test

Reliability is a necessary characteristic of a good test. It is possible that the test can be reliable but it is not valid, whereas the test is valid automatically it is automatic reliable. To obtain the reliability of the test given, the writer used the formula Kuder-Richardson 20 (KR-20) The formula can be seen as follows:<sup>14</sup>

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

Where,

$r_{11}$  : reliability of the test

$n$  : the number of item in the instrument

$p$  : the proportion of respondent that answers in item correctly

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<sup>14</sup> *Ibid.*,115.

$q$  : the proportion of respondent that answers in item incorrect (1- p)

$S^2$  : standard deviation of the test

$$S^2 = \frac{\sum X^2 - \frac{\sum X^2}{N}}{N}$$

$$S^2 = \frac{3946 - \frac{362^2}{34}}{34} = \frac{91,76}{34} = 2.70$$

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

$$= \frac{20}{19} \frac{2.70 - 4.88}{2.70}$$

$$= 1.05 \{0.80\}$$

$$= 0.84$$

Based on the statistical formula above, the score of reliability of the test is 0.84. Then comparing  $r_i$  to  $r_t$  (r table), in the level of significance of 5% is 0.339, and in the level of significance of 1% is 0.436. The  $r_i$  is higher than r table whether in the level of 5% and 1% ( $0.339 < 0.84 > 0.436$ ). It means that the test is reliable.

### G. The Technique of Data Analysis

In order to find out whether or not there was a significant effect of using Four Step Summary toward reading comprehension, the data were analyzed statistically. To analyze the data, the writer used the score of post test of the experimental and control class. These scores were analyzed by using statistical analysis. The data were analyzed by using T-test (independent sample t-test) and it was calculated by using software SPSS 16 version.

The  $t$  – table is employed to see whether there was a significant difference between the mean score of both experimental and control group.

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Statically hypothesis is:

Ha :  $t_o > t - \text{table}$

Ho :  $t_o < t - \text{table}$

Ha is accepted if  $t_o > t - \text{table}$  or there is a significant effect of using Four Step Sumarry toward students' reading comprehension on analytical exposition text.

Ho is accepted if  $t_o < t - \text{table}$  or there is no significant effect of using Four Step Sumarry toward students' reading comprehension on analytical exposition text.