

## **CHAPTER III**

### **RESEARCH METHOD**

This chapter presents nine topics dealing with the research method. Those are: (1) research design, (2) population and sample, (3) research variable, (4) research instrument, (5) validity and reliability, (6) normality and homogeneity testing, (7) data collection method, (8) data analysis and (9) hypothesis testing.

#### **A. Research Design**

Research may define as the application of the scientific approach to study of the problem. It is a way to acquire dependable and useful information. According to Ary et al (2006: 21) research is an attempt to solve the problems by using scientific approach in a systematic way.

This research used experimental design using quantitative approach with one group Pretest- Posttest design. According to Ary et al (2006:26) experimental study is scientific investigation in which an investigator manipulates and constructs one or more independent variables and observes the dependent variable or variables for variation concomitant to the manipulation of the independent variables. Experimental research can be done in laboratory, in the class, and in the field. In this study the experimental research has been done in the class with taking students as population.

Experimental research is classified into pre-experimental design, true experimental, and quasi-experimental. Pre- experimental research does not

have random assignment of subject to groups or other strategies to control extraneous variables. True-experimental research uses randomization and provides maximum control of extraneous variables. Quasi- experimental research not randomly selected. This study used pre- experimental design in the form of one group pretest- posttest design using quantitative approach. In pre-test and post-test group the observation do two times, before giving treatment called pre-test and after giving treatment called post-test. In this study the researcher just puts one group and uses pre-test and post-test to see the result of the treatments.

**Table 3.1 A diagram of One Group Pre test – Post test design:**

Y1	X	Y1
Pretest	Treatment Independent variable	Posttest Dependent variable

The procedure of experimental research that use one pretest – posttest design:

1. Administering a pretest with a purpose measuring students' writing ability in descriptive text of the seventh grade students of MTs AL HUDA Bandung
2. Applying the experimental treatment by using Tourism Brochures to the subjects (seventh grade students of MTs AL HUDA Bandung )

3. Administering a Posttest with purpose to measure students' writing ability in descriptive text in the seventh grade students of MTs AL HUDA Bandung.

In this study, the researcher wanted to know the effectiveness of using tourism brochures towards students' writing ability in descriptive text by conducting pre – experimental research. The impact was assessed by providing a specific treatment. The effectiveness of using media was known after knowing the significant differences between the students who were taught before and after applying Tourism Brochures.

## **B. Population, Sample and Sampling**

### **1. Population**

Population is a generalization area consisting of object/subject/having quality and certain characteristic that is chosen by the researcher being studied and concluded. Arikunto (2006: 130) in Encyclopedia of Educational Evaluation population is a set of all elements possessing one or more attributes of interest.

In this study the population was all of seventh grade students of MTs AL HUDA Bandung on second semester. The seventh grade students of MTs AL HUDA Bandung consists of seven (7) classes, the total number of population is 218, with the following distribution:

**Table 3.2 Population of the Research:**

Class	X(total of students)
VII-A	25
VII-B	34
VII-C	33
VII-D	31
VII-E	31
VII-F	32
VII-G	32
$\Sigma X$	218

## 2. Sample

Sample is a portion of a population. Actually the researcher is unable to take data or information from all of the population, since the limitation of time, energy, and accessibility so the researcher takes smaller one called sample that can reflect the whole population.

Therefore the researcher often need to be able to obtain data from a smaller group or subset of the total population in such a way that the information gained is representative of the total population under the study. Furthermore, Cohen *et al* (2007) called this smaller group or subset as sample.

In this case the researcher investigates 31 students from only one class that is class VIII-D as the experimental group. Because the English teacher has recommended the researcher to take them to be the sample and the students of seventh D class had average proficiency in studying English. This sample is taken by sampling.

### 3. Sampling

Sugiyono (2013) states “sampling is technique to take sample”. The number of sample taken should appropriate to collect the data. The way to get the representative sample is by considering the nature and the distribution of population.

Generally, sampling is divided into two types; systematic sampling called probability sampling and the second, unsystematic non-probability sampling. The main character of probability sampling is that every member or element of the population has a known probability of being chosen in the sample. While non-probability sampling is in which each element has zero chance to be selected as sample (Creswell, 2008: 142). In this case, the researcher uses probability sampling. It means that all of individual in the population can be selected as sample and there is no some consideration in selecting sample.

In this research, the researcher chooses one kind of probability sampling that is simple random sampling because all of the classes have similar characteristics. According to Creswell (2012) in simple random sampling any individual has an equal probability of being selected from the population. The intent of simple random sampling is to choose individuals to be sampled who will be representative of the population. It means that all of the element or subject in a population is given an equal probability to be chosen as sample of study. The result, the researcher took VII-D class as the sample with 31 students.

### **C. Research Variable**

A variable is a concept that stands for variation within a class of objects. Variables can be classified in several ways. The most important classification is on the basis of their use within the research under the consideration, when they are classified as independent variables or dependent variables (Ary et al, 2006:37).

1. Independent variable: variable that consequence of or upon antecedent variables. In this research the independent variable is tourism brochures.
2. Dependent variable: is variable that is presumed to be caused by or influenced by the independent treatment conditions and any other. The dependent variable of this research is students' writing ability in descriptive text.

### **D. Research Instrument**

Research instrument refers to any equipment used to collect the data (Arikunto, 2010:262). As an experimental research, the instrument used in this research was tests. According to Ary et al (2006:201) test is a set of stimuli presented to individual in order to elicit responses on the basis of which a numerical score can be assigned.

In this case, there are two kinds of tests that should be done by the researcher, those are as follows:

a. Pretest

Pretest is the test that given to all students in class VII-D at MTs AL HUDA Bandung. The test is conducted to know the students' writing ability in descriptive text before conducting the treatment. In this pretest, the researcher asked VII-D students to write a descriptive text consisting of 2 paragraphs which include identification and description. The topic is about their lovely house during 40 minutes.

b. Posttest

Posttest is the test that given to all students in class VII-D at MTs AL HUDA Bandung to measure the students' writing ability in descriptive text which using Tourism Brochures. In this posttest, the researcher asked VII-D student to write a descriptive text. That is about "Brochure of Hotel Srinakarin". It consists of 2 paragraphs which include identification and description. And the students had 40 minutes to do the task.

### **E. Validity and Reliability Testing**

As previously mentioned, the researcher used tests as the research instrument. Both pre-test and post-test were intended to measure students' writing ability. The tests should fulfill some factors to get the data as well. The factors tested here is validity and reliability of the tests. By using a valid and reliable instrument to collect the data, it was expected that the data and the result of the research itself also valid and reliable.

## 1. Validity

Validity is the most important consideration in developing and evaluating measuring instrument. Ary et al (2006:225) defines validity as the extent to which an instrument measured what it claimed to measure. In other words, validity can be defined as the instrument that measures what is supposed to be measured. In this study, to ensure tests validity the researcher used content validity and construct validity.

### a. Content validity

Content validity means there is correspondence between curriculum objectives and the objectives being tested. It means that test is said to have content validity if its objectives are same with the curriculum objectives. It is sometimes called curriculum validity. The test will be valid if the objectives of the test do not outside from the curriculum objectives that have been set by educational policy.

In this case the researcher also learns the curriculum set to know what students must be able to do in certain level, especially in junior grade. The researcher found that students in seventh grade of junior high school should be able to write around three genres: descriptive, narrative and recount. In this case, the researcher used descriptive text as the topic.

### b. Construct validity

A test is said to have construct validity if it can be demonstrated that it measures just the ability which is supposed to measure (Isnawati, 2012:29). Construct validity is capable of measuring certain specific characteristics in



accordance with theory of language behavior and learning. In this study, the researcher tested the students writing ability by writing test and the technique of scoring the students writing ability based on five aspects of writing, they are: content, organization, vocabulary, grammar and mechanic.

In this case, the researcher used holistic scoring rubric by Cohen *et al* (2007: 327 - 328):

**Table 3.3 Scoring Rubric for Writing Skill:**

No.	Criteria	Score	Predicate
1.	The main idea is stated very clearly, and there is a clear statement of change of opinion. The essay is well organized and coherent. The choice of vocabulary is excellent. There are no major or minor grammatical errors. Spelling and punctuation are fine.	90-100	Excellent
2.	The main idea is fairly, and change of opinion is evident. The essay is moderately well organized and is relatively coherent. The vocabulary is good, and there are only minor grammatical errors. There are few spelling and punctuation errors.	80-90	Good
3.	The main idea and a change of opinion are indicated but no so clearly. The essay is not well organized and is somewhat lacking in coherence. The vocabulary is fair, and there are some major and minor grammatical errors. There are a fair number of spelling and punctuation errors.	70-80	Average
4.	The main idea and change of opinion are hard to identify in the essay. The essay is poorly organized and relatively in coherent. The use of vocabulary is weak and grammatical errors appear frequently. Spelling and punctuation errors are frequent.	60-70	Poor
5.	The main idea and change of opinion are absent in the essay. The essay is poorly organized and generally incoherent. The use of vocabulary is very weak, and grammatical errors appear very frequently. Spelling and punctuation errors are very frequent.	50≤	Very poor

**The individual score:**

Content . . . + Organization . . . . + Vocabulary . . . . + Grammar . . . . +  
 Mechanic . . . = . . . (Total)

<b>Final score:</b> _____ × _____ = _____
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## 2. Reliability

A reliable test is consistent and dependable. If the students are given the same test on two different occasions, the test should yield similar results. The word “similar” is used here because it is almost impossible for the test takers to get exactly the same scores when the test is repeated the following day (Isnawati, 2011: 18). According to Heaton (1975: 155) reliability is necessary characteristic of any good test: for it to be valid all, a test must first be reliable as a measuring instrument. The range of reliability coefficient is 0-1. In this case, 0 means not reliable while 1 means perfectly reliable and the closer reliability coefficient to 1, the more reliable the test is.

In this case, the researcher tests the reliability of tests by using Pearson product-Moment Formula. Pearson product-Moment Formula required administration the same test, but it will be held twice. This is known as test-retest method (Isnawati, 2012:22. The instruments were tried out to 31 students that were not taken as sample before data collection of this study was done. The students were same for pre-test and post-test try out. They are then

coded as subject 1,2,3.....31. Furthermore, the formula used to test the reliability is as follow:

$$r_{xy} = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}}$$

Where:

$r_{xy}$  = Pearson-product moment reliability coefficient

X = each students score on test X

$\bar{X}$  = mean on test X

$S_x$  = standard deviation on test X

Y = each students score on test Y

$\bar{Y}$  = mean on test Y

$S_y$  = standard deviation on test Y

N = the number of students who took test

After the tried out of tests were done, the researcher analyzed the score in to the following table:

**Table 3.4 Analysis of Pre-test and Post-test try out:**

No.	Score (X)	$\bar{X}$	(X - $\bar{X}$ )	Score (Y)	$\bar{Y}$	(Y - $\bar{Y}$ )
1	95	84.8	10.5	80	77.5	2.5
2	87	84.8	2.5	73	77.5	-4.5
3	92	84.8	7.2	75	77.5	-2.5
4	88	84.8	3.2	85	77.5	7.5
5	87	84.8	2.5	87	77.5	9.5
6	87	84.8	2.5	75	77.5	-2.5

7	88	84.8	3.2	78	77.5	0.5
8	87	84.8	2.5	83	77.5	5.5
9	78	84.8	-6.5	70	77.5	-7.5
10	85	84.8	0.5	85	77.5	7.5
11	88	84.8	3.2	85	77.5	7.5
12	87	84.8	2.5	70	77.5	-7.5
13	87	84.8	2.5	83	77.5	5.5
14	85	84.8	0.5	78	77.5	0.5
15	87	84.8	2.5	70	77.5	-7.5
16	87	84.8	2.5	75	77.5	-2.5
17	75	84.8	-9.8	56	77.5	-21.5
18	75	84.8	-9.8	65	77.5	-12.5
19	87	84.8	2.5	70	77.5	-7.5
20	86	84.8	1.2	75	77.5	-2.5
21	95	84.8	10.2	82	77.5	4.5
22	90	84.8	5.2	85	77.5	7.5
23	87	84.8	2.5	90	77.5	12.5
24	85	84.8	0.2	80	77.5	2.5
25	84	84.8	-0.8	75	77.5	-2.5
26	75	84.8	-9.8	87	77.5	9.5
27	87	84.8	2.5	76	77.5	-1.5
28	78	84.8	-6.8	67	77.5	-10.5

29	78	84.8	-6.8	80	77.5	2.5
30	85	84.8	-0.2	80	77.5	2.5
31	85	84.8	-0.2	85	77.5	7.5
	$\Sigma = 2629$		$\Sigma = 21.9$	$\Sigma = 2405$		$\Sigma = 2.5$

The calculation result as follows:

$$S_x = \frac{\Sigma(\quad)}{\quad}$$

$$= \frac{\Sigma(\quad)}{\quad}$$

$$= \frac{\quad}{\quad}$$

$$= 3.93$$

$$S_y = \frac{\Sigma(\quad)}{\quad}$$

$$= \frac{\Sigma(\quad)}{\quad}$$

$$= \frac{\quad}{\quad}$$

$$= 0.201$$

$$N = 31$$

$$r_{xy} = \frac{\Sigma(\quad) \cdot (\quad)}{\quad}$$

$$= \frac{\quad}{\quad}$$

$$r_{xy} = 0.417$$

The calculation to know the reliability is done manual and using SPSS 16.00. The result of the calculation shows the reliability coefficient is 0.417. The ideal reliability coefficient is 1, in this case the calculation is quite to 1 (0.417~ 1). The test is enough reliable because the value is 0.417, it is between (0.41-0.60: enough reliable).

**Table 3.5 The result of SPSS 16.00 is as follow:**

Inter-Item Correlation Matrix		
	Rater X	Rater Y
Rater X	1.000	.417
Rater Y	.417	1.000

## F. Normality and Homogeneity Testing

### 1. Normality Testing

In this study the researcher looks for different mean between pre-test and post-test. The data will be analyzed using Paired T-test since the data are from the same sample or the sample only one group. Before conducting T-test, the researcher should surely assume that the data (in this case is score in pre-test and post-test) are in normal distribution. To test the normality the researcher conducts test using SPSS 16.00. The test of normality is done toward students' English score in both pre-test and post test. The data as follows:

**Table 3.6 Students' score in Pre-test and Post-test:**

No	Subject	Pretest (X)	Posttest (Y)
1	A	80	95
2	B	75	87
3	C	75	92
4	D	75	88
5	E	74	87
6	F	70	87
7	G	75	88
8	H	75	87
9	I	60	78
10	J	75	85
11	K	75	88
12	L	75	87
13	M	83	87
14	N	80	85
15	O	73	87
16	P	74	87
17	Q	50	75
18	R	50	75
19	S	70	87
20	T	80	86
21	U	80	95
22	V	75	90
23	W	75	87
24	X	73	85
25	Y	73	84
26	Z	60	75
27	A1	74	87
28	B1	68	78
29	C1	72	78
30	D1	80	85
31	E1	62	85

The hypotheses for testing normality are:

- a.  $H_0$ : Data is in normal distribution
- b.  $H_1$ : Data is not in normal distribution.

Critic area is in which  $H_0$  is rejected when the significance value is lower than 0.05 ( $\alpha = 5\%$ ). The analysis is as follows:

- a. Testing data from pre-test using SPSS 16.00.

		Pretest
N		31
Normal Parameters <sup>a</sup>	Mean	72.13
	Std. Deviation	8.011
Most Extreme Differences	Absolute	.253
	Positive	.166
	Negative	-.253
Kolmogorov-Smirnov Z		1.408
Asymp. Sig. (2-tailed)		.038

a. Test distribution is Normal.

- b. Testing data from post-test using SPSS 16.00.

		VAR00012
N		31
Normal Parameters <sup>a</sup>	Mean	85.39
	Std. Deviation	5.130
Most Extreme Differences	Absolute	.244
	Positive	.176
	Negative	-.244
Kolmogorov-Smirnov Z		1.359
Asymp. Sig. (2-tailed)		.050

a. Test distribution is Normal.

Based on the output from SPSS above is known that the significance value from pre-test is 0.38 and from the post test is 0.50. Both value from pre-test and post-test are bigger than 0.05. The sig/p value on pre-test is 0.38 and it is bigger than 0.05 ( $0.38 > 0.05$ ). It means that  $H_0$  is accepted and  $H_1$  is rejected and the data is in normal distribution. Then, for post-test score the value of sig/p is 0.50 and that is bigger than 0.05 ( $0.50 > 0.05$ ). It also means that  $H_0$  is accepted and  $H_1$  is rejected and the data is in normal distribution. So, it can be



interpreted that both of data (pre-test and post-test score) are in normal distribution.

## 2. Homogeneity Testing

Homogeneity test is intended to know whether the variance of data is homogeneous or not. In this case, the researcher wants to know the variance score in the class (group) sample. The procedure used to test the variance of homogeneity is by determining  $F_{\max}$  value. In homogeneity test  $F$  empiric should be lower than  $F$  theoretic (table).

No	Score	$X_1^2$	Score	$Y_2^2$
	(pre-test) $X_1$		(post-test) $Y_2$	
1	80	6400	95	9025
2	75	5625	87	7569
3	75	5625	92	8464
4	75	5625	88	7744
5	74	5476	87	7569
6	70	4900	87	7569
7	75	5625	88	7744
8	75	5625	87	7569
9	60	3600	78	6084
10	75	5625	85	7225
11	75	5625	88	7744
12	75	5625	87	7569
13	83	6889	87	7569
14	80	6400	85	7225
15	73	5329	87	7569
16	74	5476	87	7569
17	50	2500	75	5625
18	50	2500	75	5625
19	70	4900	87	7569
20	80	6400	86	7396
21	80	6400	95	9025
22	75	5625	90	8100
23	75	5625	87	7569
24	73	5329	85	7225
25	73	5329	84	7056

26	60	3600	75	5625
27	74	5476	87	7569
28	68	4624	78	6084
29	72	5184	78	6084
30	80	6400	85	7225
31	62	3844	85	7225
2236		163206	2647	226806

$$SD_1^2 = \frac{\sum X_1^2}{N_1} - (\bar{X}_1)^2$$

$$= \frac{163206}{31} - 5195.3$$

$$= 69.5$$

$$SD_2^2 = \frac{\sum X_2^2}{N_2} - (\bar{X}_2)^2$$

$$= \frac{226806}{31} - 7191.04$$

$$= 125.37$$

$$F = \frac{SD_2^2}{SD_1^2} = \frac{125.37}{69.5} = 1.80$$

$$SD_1^2 = 69.5$$

$$SD_2^2 = 125.37$$

$$F_{\max} = 1.80$$

$$F_{\max} = 1.80$$

$$df_1 = N_1 - 1 = 31 - 1 = 30$$

$$df_2 = N_2 - 1 = 31 - 1 = 30$$

The calculation shows the result of  $F_{\max}$  is 1.80. Furthermore, the homogeneity is fulfilled if  $F_{\max}$  calculation is lower than F table. The value of F

table in 5% level and  $df_1=df_2=30$  is 1.84. It can be said that the result of  $F_{\max}$  calculation is lower than F table or  $F_{\text{table}} > F_{\text{calculation}}$  ( $1.84 > 1.80$ ). It means that the variance value in the class sample based on pre-test and post-test score is homogeneous.

### G. Data Collection Method

Data collection method is the method that is used by the researcher to collect data. The data collection method in this research was done in three steps:

#### 1. Pre test

As stated previously, the researcher administered pre-test that has been tried out before the treatment was given. It was done on Friday, May 9<sup>th</sup> 2014. In this pretest, the researcher asked VII-D students to write a descriptive text about their house during 40 minutes.

#### 2. Treatment

After administering the pre-test, the researcher gave the treatment to the students. The treatment was applied on Friday, May 16<sup>th</sup> 2014 and on Thursday, May 22<sup>th</sup> 2014. The researcher applied the tourism brochure in teaching a descriptive text. In the first treatment; the students invited to describe “Brochure of Bung Karno Grave”, and in the second treatment, the students invited to describe “Brochure of Waterland Mojokerto”.

#### **Table 3.7 Procedure in treatment:**

No	Steps	Teacher Activities	Students Activities
1	Opening	Greeting	<ul style="list-style-type: none"> <li>• Answer greeting</li> <li>• Brain storming</li> </ul>
2	Main Teaching	Introduction the material about descriptive text	<ul style="list-style-type: none"> <li>• Pay attention</li> </ul>
		<p>Giving explanation about descriptive text</p> <ul style="list-style-type: none"> <li>• Giving the students example of descriptive text</li> <li>• Asking the students to identify the generic structures of descriptive text</li> <li>• Giving the students brochure of Bung Karno Grave</li> <li>• Asking questions to the students about Bung Karno Grave</li> <li>• Asked students to describe the brochure of Bung Karno Grave</li> </ul> <p>Reviewing the previous materi</p> <ul style="list-style-type: none"> <li>• Giving the students brochure of Waterland Mojokerto</li> <li>• Asking questions to the students about Waterland Mojokerto</li> <li>• Asked students to describe it</li> </ul>	<ul style="list-style-type: none"> <li>• Listen the explanation from the teacher</li> <li>• Students answer the teacher's questions</li> <li>• Describing the Bung karno Grave</li> <li>• Giving responses</li> <li>• Answer the teacher's questions</li> <li>• Describing the Waterland Mojokerto</li> </ul>
3	Closing	<ul style="list-style-type: none"> <li>• Asking the students about descriptive text</li> <li>• Giving evaluation/feedback about students' errors</li> </ul>	<ul style="list-style-type: none"> <li>• Giving responses</li> </ul>

### 3. Post-test

The last method used to collect the data was administering post-test. Post-test was administered to the group after being exposed with tourism brochure as the treatment. It was done on Friday, May 23<sup>th</sup> 2014. In the post-test, the researcher asked VII-D students to write a descriptive text, it is about “Brochure of Hotel Srinakarin”. The purpose of administering post-test in this study was to observe and measure any changes of the students’ writing ability after being taught by using tourism brochure.

## H. Data Analysis

In quantitative research to analyze the data is by using statistical data analysis. The data gotten from the field is numerical data and can be formulated using statistical method.

In data analysis, the researcher used t-test and SPSS 16.00 program to know the effectiveness and to get stronger conclusion. The t-test is taken from the students’ test result which is conducted before and after being treatment or taught by using tourism brochure.

The researcher used t-test to calculate the numerical data from pretest and posttest. The formula is according to Arikunto (2006:306):

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sum (X - \bar{X})^2}{n}}}$$

Where:

Md : means of different pre-test and post-test

Xd : deviation in every subject ( $d - Md$ )

$\sum x^{2d}$  : total of quadrate deviation

N : subject of sample

### **I. Hypothesis Testing**

The hypothesis of this study was as follow:

1. If T-Test score is bigger than T-table, the alternative hypothesis ( $H_a$ ) is accepted. It means that there is different score to the seventh grade before being taught by using tourism brochure and after taught using tourism brochure. The difference is significant.
2. If T-Test score is smaller than T-table, the null hypothesis ( $H_0$ ) is rejected. It means that there is no different score to the seventh grade before being taught by using tourism brochure and after taught using tourism brochure. The difference is not significant.