

CHAPTER III

RESEARCH METHOD

This chapter presents the research method. It focuses the method used in conducting this study which covers (a) research design (b) population and sample, (c) research instrument (d) validity and reliability testing (e) normality and homogeneity (f) data collecting method, (g) data analysis and (h) hypothesis testing.

A. Research Design

Based on Sukardi (2003:3) Research is a way of observation or inquiry and has the objective to find the answer of problems or discovery process. This study belongs to a pre-experimental research with quantitative approach. Pre-experimental design does not have random assignment of subject to group or other strategies to control extraneous variables. Pre-experimental research is a research design involved one group which is pre-tested and post-tested. (Ary *et al*, 2002: 302). In other words, the goal of experimental research is to determine whether causal relationship exists between two or more variables.

This research is classified into pre-experimental research that uses one group pre-test and post-test. In the one group pre-test and post-test design, a single group is measured or observed not only after being treatment, but also before the treatment. Pre-test provides a measure on some attribute or characteristic that is assessed in an experiment before the group gets a treatment, while in the post-test measure on some attribute or characteristic that assessed for participants in an

experiment after the treatment. The reason why the researcher uses pre-experimental design is because the limited of time and cost. The illustration of the research design in this study is as table below:

Table 3.1 The Illustration of Research Design

Pre-test	Independent variable	Post-test
Y1	X	Y2

X : Reading descriptive text through brochure treatment

Y1 : students' achievement on reading comprehension before treatment.

Y2 : students' achievement on reading comprehension after treatment.

The procedures of experimental research that use one group pre-test and post-test design in this study are described as follows:

1. Administering pre-test (Y1) with a purpose of measuring students' reading comprehension ability before applying treatment.
2. Applying experimental treatment teaching reading comprehension by using brochure (X).
3. Administering pre-test (Y2) with a purpose of measuring students' reading comprehension ability after applying treatment.

As stated earlier on the design, this study was an experimental study about the effectiveness of brochure toward students' reading comprehension in descriptive text of eighth grade students at SMPN 2 Sumbergempol. The researcher wants to know the effectiveness of brochure toward reading comprehension ability. The effectiveness was known after finding out the significant difference between the students reading comprehension ability before being taught by using brochure and those are taught after using brochure by comparing pre-test and post-test score.

B. Population and Sample

The researcher needs to define the population before collecting the sample. Population is all members of well-defined class of people, events, or objects (Ary et al, 2010:148). In this study the population is all of eighth grade students of SMPN 2 Sumbergempol. The eighth grade students of SMPN 2 Sumbergempol consist of seven (7) classes. The quantity of students in each class of the population is as follow:

Table 3.2 Population of the Research

Class	X (total of students)
VIII A	30
VIII B	30
VIII C	32
VIII D	34
VIII E	34
VIII F	33
VIII G	33

$\sum X$	226
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Since the limitation in term of time, capability and cost to take all members of population, so the researcher can take a portion of population which is known as sample. In other words, sample is the representative of population (Sukardi, 2003:54). The technique in taking sample is called sampling (Sugiyono, 2006:90). In this research, the researcher used purposive sampling as the process of sampling, the researcher finally decided to choose VIII C class that consists of 32 students recommended by the English teacher. The English teacher recommended that class because the students are active and cooperative. However, they need an improvement in reading skill.

C. Research Variable

A variable is defined as anything that has quantity or quality that varies. Santrock (2004: 47) explained that a variable is the characteristic or attribute of individual, group, or educational system that researcher is interested in. There are two types of variable are independent and dependent variable. Where, dependent variable is a variable that researcher is interested in to change or to be affected. While independent variable, is a factor that affects a dependent variable. In this study, the independent variable is a brochure media and the dependent variable is students' reading comprehension 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 test. According to Ary *et al* (2010:201) test is a set of stimuli presented to individual in order to elicit response on the basis of which a numerical score can be assigned.

There were two kinds of tests for this study, those were pre-test and post-test. Pre-test was intended to measure students' reading comprehension ability before the treatment given, while post-test was to measure students' reading comprehension ability after the treatment given. The total items of the test were 25 in the form of multiple choice tests.

Furthermore, the scoring for test is there was only one correct answer for each items. The scoring guide is as the formula below:

$$\text{Score} = \frac{\text{number of correct items}}{25} \times 100$$

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' reading comprehension ability. The tests should fulfill some factors to get the data as well. The factors tested here are 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 Testing

Validity is the most important consideration in developing and evaluating measuring instrument. Ary et al (2010:225) defines validity as the extent to which as 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 test validity the researcher used construct validity, and content validity.

a. Content validity

Content validity is a kind of a validity which depends on careful analysis of language being tested of the particular test. A test said to have content validity if its content constitutes a representative sample of language skill, structure, and etc. that being tested. The researcher made this test based on the course objectives in the syllabus of eighth grade in SMPN 2 Sumbergempol. Therefore, this test is valid in term of content validity.

Table 3.3 The indicators of tests

Kompetensi Dasar	Indikator Pencapaian Kompetensi	Test Item	
		Pre-test	Post-test
5.3 Merespon makna dan langkah retorika dalam esei pendek sederhana secara akurat, lancar dan berterima yang berkaitan dengan lingkungan sekitar dalam teks berbentuk <i>descriptive</i> dan <i>recount</i> .	1. Siswa dapat memahami isi bacaan sederhana (<i>descriptive text</i>) tentang ciri/informasi seseorang, tempat, dan perlombaan.	1,2,3,4,7,1 3,14,15,16, 17,19, 20,21,23,2 4	1,2,3,4,6, 7,11,12,1 3,14,16, 20,21,24, 25
	2. Siswa dapat menyebutkan makna/gagasan dalam suatu bacaan.	5,6,8,11,12 ,18	5,8,10,15, 19, 23
	3. Siswa dapat menyebutkan kata ganti (<i>pronoun</i>) yang terdapat dalam bacaan.	9,25	9,22
	4. Siswa dapat menyebutkan persamaan kata (<i>synonym</i>) / lawan kata (<i>antonym</i>) yang terdapat dalam bacaan.	10,22	17, 18

b. Construct Validity

According to Brown (2004:45) mentioned that a construct is any theory, hypothesis, or model that attempts to explain observed phenomena in our universe of perception. Based on the theory above, the researcher asked the students to answer the question about descriptive text based on brochure to measure students' achievement in reading comprehension in the form of multiple choices to fulfill the construct of reading test and therefore valid in term of construct validity.

1. Reliability

According to Howit and Cramer (2000:28) reliability is the extent to which the measure will give the same response under similar circumstances. In other words, reliability shows a measure of consistency in measure the same phenomenon.

In this research, the researcher used test where the researcher examines the test as try out only once. The tryout administered on May, 8th 2016. After that, the researcher analyzed the scores by using Kuder Richardson Reliability with KR-20 formula. The formula showed as the following.

$$r_{11} = \left[\frac{n}{n-1} \right] \left[\frac{s_t^2 - \sum p_1 q_1}{s_t^2} \right]$$

Where,

r_{11} = reliability coefficient

n = number of test items

s_t^2 = standard deviation

p_1 = the right response

q_1 = the wrong response

a) The analyzing reliability of Pre-test

$$r_{11} = \left[\frac{25}{25-1} \right] \left[\frac{s_t^2 - \sum p_1 q_1}{s_t^2} \right]$$

$$r_{11} = \left[\frac{25}{25-1} \right] \left[\frac{94.575 - 4.42}{94.575} \right]$$

$$r_{11} = \left[\frac{25}{24} \right] \left[\frac{90.155}{94.75} \right]$$

$$r_{11} = [1.041667][0.9532646048]$$

$$r_{11} = 0.9929842811$$

b) The analyzing reliability of Post test

$$r_{11} = \left[\frac{25}{25-1} \right] \left[\frac{s_t^2 - \sum p_1 q_1}{s_t^2} \right]$$

$$r_{11} = \left[\frac{25}{25-1} \right] \left[\frac{82-5.24}{82} \right]$$

$$r_{11} = \left[\frac{25}{24} \right] \left[\frac{76.76}{82} \right]$$

$$r_{11} = [1.041667][0.936097561]$$

$$r_{11} = 0.975101938$$

After calculating the reliability of pre-test and post-test, the researcher classified the reliability coefficient according to Sudjiono (1996: 209-230), as follows:

Table 3.4. Classification of Reliability Test

Reliability Test Coefficient	Classification
0.90-1.00	More highly
0.70-0.89	High
0.50-0.69	Fair
0.30-0.49	Low

From the calculation of the reliability coefficient, the result showed that reliability coefficient of pretest is 0.99 and posttest is 0.97. Based on Table 3.2, the result of pretest is has classification in more highly meanwhile in posttest also have more highly classification. It means that the both of pretest and posttest are reliable

F. Normality and Homogeneity

1. Normality

According to Sujianto (2009:77) normality distribution test is a test to measure whether our data has a normal distribution or not. To know the

normality, the researcher used One-Sample Kolmogorov-Smirnov test with SPSS. The hypotheses for testing normality are:

- a) H_0 : Data is in normal distribution
- b) H_a : Data is not in normal distribution.

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

Table 3.5 The output of Normality Test by SPSS

		One-Sample Kolmogorov-Smirnov Test	
		Pretest	Posttest
N		10	10
Normal Parameters ^a	Mean	66.00	67.60
	Std. Deviation	8.894	8.733
Most Extreme Differences	Absolute	.250	.182
	Positive	.150	.182
	Negative	-.250	-.140
Kolmogorov-Smirnov Z		.791	.575
Asymp. Sig. (2-tailed)		.559	.896

a. Test distribution is Normal.

Base on the output of SPSS 16.0 was known that the significant value (2-tailed) is 0.559 and 0.896. As explanation above, that H_0 is rejected if the significant value lower than 0.05 ($\alpha= 5\%$). Because the significant value (2 tailed) was bigger than α that are ($0.559 > 0.05$) and ($0.896 > 0.05$), It means that H_0 is accepted and H_a is rejected. So, it can be interpreted that the scores of both pretest and posttest are normal distribution

2. Homogeneity

Homogeneity testing is intended to make sure that the collected data in analysis is truly taken from a population which is too different each other. Especially in a study which is predictive, the model which is used must be appropriate with the composition and its distribution (Sujianto, 2009:112). To know the homogeneity, the researcher used One Way Anova with SPSS as follows:

Test of Homogeneity of Variances

VAR00001

Levene Statistic	df1	df2	Sig.
.461	1	18	.506

ANOVA

VAR00001					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	12.800	1	12.800	.165	.690
Within Groups	1398.400	18	77.689		
Total	1411.200	19			

Base on the output above, was known the significance value is 0.506. Because the significance value is bigger than α ($0.506 > 0.05$), can be concluded that the data both pretest and posttest having homogeneity of variances. In addition, the lower the value of Levena Statistic is the higher the degree of homogeneity.

G. Data Collecting Method

The data collecting method is the method to obtain the data in the research. The aims of the data collecting in conducting scientific research was to get data that needed by the research. The technique of collecting data was clarified as follow:

1. Pre-Test

Pre-test was given to the students before the researcher taught by using brochure. Pre-test is needed to know the basic competence for student and how far the students know about the subject that will be taught. Pre-test was given to the students at the first meeting on June, 13th 2016. The form of pre-test is multiple choices. The students must answer correctly based on information on the text.

2. Treatment

The treatment was conducted after the administration of the pre-test on June, 13th-16th 2016. The purpose of treatment is to help students in understanding English text, especially in descriptive text. The experimental class was taught by using brochure.

Table.3.6 Procedure of treatment

No	Steps	Teacher Activities	Students Activities
1	Opening	Greeting	<ul style="list-style-type: none">• Answer greeting• Brain storming
2	Main Teaching	Introduction the material about descriptive text	<ul style="list-style-type: none">• Pay attention

		<p>Giving explanation about descriptive text</p> <ul style="list-style-type: none"> • Giving the students example of descriptive text • Asking the students to identify the generic structures of descriptive text • Giving the students brochure of Holiday Package • Asking questions to the students about Holiday Package brochure • Asked students to describe the facilities and benefits of Holiday Package brochure <p>Reviewing the previous material</p> <ul style="list-style-type: none"> • Giving the students about English Competition brochure • Asking questions to the students about English Competition brochure • Asked students to describe it 	<ul style="list-style-type: none"> • Listen the explanation from the teacher • Students answer the teacher's questions • Describing the holiday package brochure • Giving responses • Answer the teacher's questions • Describing the English Competition brochure
3	Closing	<ul style="list-style-type: none"> • Asking the students about descriptive text • Giving evaluation/feedback about students' errors 	<ul style="list-style-type: none"> • Giving responses

3. Post-Test

After the treatment, post-test was given to the students on June, 16th 2016. The test item in the post-test is exactly same as those in the pre-test. The goal of this test is to measure students' reading

comprehension after treatment. It is intended to know the mean scores of experimental class. Post-test was given to the students at the third meeting. The form of post-test was also an multiple choice.

H. Data Analysis

Data analysis is a review of a series of activities, grouping, systematization, interpretation and verification of data so that phenomenon has social value, academic, and scientific (Tanzeh, 2009: 69). The data obtained from research result of students test that were analyzed quantitatively. Quantitative analysis was done using statistic which is called statistical analysis or inferential statistic. The quantitative data of this research in analyzed using statistical computation.

The data result (post-test) was data of students score after taught by using brochure as a media. The first data (pre-test) was data of students score before taught by using brochure as a media. If the post-test on the students' reading test is higher than pre-test, it means that teaching reading by using brochure as a brochure is effective. To get the achievement of reading test, the researcher give the students a test after got treatment teaching reading by using brochure. In this research, the researcher used paired sample T-test at SPSS to know the significant difference effect before and after taught using brochure on the students' reading comprehension.

The formula of t-test can be seen in the following computation:

$$t = \frac{d}{s \times \sqrt{n}}$$

d = mean

s = std. deviation

n = total of students

I. Hypothesis Testing

To know the effectiveness of Brochure in this research, the researcher analyzing the data of students' score in pre-test and post-test by using statistic calculation. If the result of t-table is bigger than t-obtained at the level of significance 0.05, the null hypothesis cannot be rejected indicating that Brochure as a teaching media is not effective toward students' reading comprehension skill. Meanwhile, if t-obtained is bigger than t-table at level of significance 0.05, null hypothesis can be rejected indicating that Brochure as a teaching media is effective toward students' reading comprehension skill.