

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, sampling and sample, (c) research instrument, (d) Validity and Reliability Testing, (e) Normality testing, (f) Data Collection Method, (g) Data Analysis.

A. Research Design

Before doing the research, the researcher arranged a research design. Because it is needed before discussing more the topic of research. Research design is the way or the strategy to arrange the setting of the research in order to get valid data. Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issues (Creswell, 2008:3). It means that a research design is the way to conduct the research. Therefore, in conducting this research the researcher needs some plans or steps to find out new information and discover the scientific truth.

Considering the purposes of the research and the nature of the problems, the design of this research is an experimental research design using quantitative approach with One-Group Pretest-Posttest. Douglas (2013:1) define an experimental is a test or series of runs in which purposeful changes are made to the input variables of a process or system

so that we may observe and identify the reasons for changes that may be observed in the output response. According to Ary et al (2006:325) Experimental research design is to enable researcher to estimate the effect of an experimental treatment.

This experimental design classified as pre- experimental research design (one group pretest-posttest design). This design consist of three steps, they are pre-test, treatment and post-test. The pre-test are given before the treatment. It is used to know the students' reading comprehension score before they will have been taught by using Graphic Organizer strategy. Post-test are given after the treatment. Meanwhile, during the treatment, the researcher applied Graphic Organizer as the strategy for teaching reading. The design of this research can be seen at the table below:

A diagram of One Group Pretest – Posttest design:

Table 3.1 The Design of One Group Pretest-posttest which Adapted from Ary, et al. (2010: 304)

Pretest	Treatment (independent variable)	Post-test
YI	X	Y1

Notes:

Y1 = pre-test

X = Treatment

Y2 = post-test

Based on the diagram above, the experimental design used pre experimental research design (one group pretest posttest design) that consist of pretest (Y1), treatment (X) and posttest (Y2). Pretest (Y1) Administered with a purpose to measure the student's ability in reading comprehension of report text. In pre-test, students are given a test that appropriate to be a good measure the score before given treatment. After conducted pretest, the researcher gave treatment (X) for the students. After given a treatment, the researcher administered a posttest with a purpose of measuring the score that the students got before and after the treatment.

B. Population, Sampling and Sample

1. Population

Population is all of the research of subject. Population is defined as all members of any well-defined class of people, events or objects (Ary, Donald et. Al, 2002:163). Based on the definition above can be conclude that the population is a group of subject that have certain characteristics used by the researcher. In this research, the researcher was conducted at MAN Tenggalek in academic year 2015/2016. The population in this research were all students of eleventh grade at MAN Trenggalek in academic year of 2015/2016, The eleventh grade Students of MAN

Trenggalek was divided into eleven classes. The total number of all population are 335 students in 11 classes. The distribution of the whole students in the school can be seen in the Table 3.2.

Table 3.2

The Number of Eleventh Grade

No	Classes	Female	Male	Total
1	Acceleration	11	1	12
2	IJK	21	15	36
3	IIS 1	22	3	25
4	IIS 2	18	12	30
5	IIS 3	14	20	34
6	MIA 1	26	7	33
7	MIA 2	27	2	29
8	MIA 3	22	11	33
9	MIA 4	25	10	35
10	MIA 5	26	7	33
11	MIA 6	23	12	35
Total	11 classes	235	100	335

Source: MAN Trenggalek

2. Sample and sampling

Selecting sample is very important part in scientific research. Sample is a part of population using certain procedure for a study that represents the large group from which they were selected. Ary, Donald

et. Al (2002:163) stated that the small group that is observed is called a sample. In this research, the researcher took one class of eleventh grade of MAN Trenggalek in the academic year 2015/2016. That was class MIA It consists of 35 students, 9 male students and 26 female students.

Technique to take sample is called sampling. According to Ary, Donald et. Al (2010: 149), sampling is indispensable to researcher. The purpose of sampling is to obtain a group of subjects who will be representative of the larger population or will provide specific information needed (H, James, 1996:86). In this study the researcher used purposive sampling to choose one of the classes to conduct the research. The sample was chosen purposively because the achievement of the students in English was average, the students was active in the class and the writer decided MIA 1 as recommendation by the teacher who handle English lesson in MAN Trenggalek.

C. Research Instrument

Instrument is the measurements tool that used by the researcher to collect the data. according to Arikunto (2010: 192) research instrument is a device used by the researcher while collecting data to make her work become easier and get a better result complete and systematic in order to make the data easy to be processed. The instrument in this research is test

Related with the test, Brown (2006:401) sees a test as an instrument or procedure designed to elicit performance from the learner

with the purpose of measuring their attainment of specified criteria. In this research, the test used to measure the students' achievement in reading comprehension before and after they taught by using graphic organizer method. Scott (2006:141) states that the steps to arrange the test are as follows: (1) Limit the tested material. Here, the material is limited in reading recount text. (2) Determine the term to do the test. (3) Determine the test type. Here, the multiple choice test was used because it was considered can appropriately measure the students' knowledge in in reading comprehension.

In this research, there were two kinds of test, they are pre-test and post-test. Pre-test was given before the students were taught by using graphic organizer and post-test have been taught by using graphic organizer after the treatment. Before administered the pre-test and post-test, the researcher do tryout. The result of try out is good because the test is not too difficult and too easy. So, it can be used as a pretest and posttest to apply in sample class. The pretest was conducting to know how far the students' score in reading comprehension of report text before giving treatment. While the post -test was conducted to know the students score after giving treatment. In order to know the students' achievement in reading comprehension of report text.

The scoring technique of pretest and posttest were same. There was only one correct answer for each item because form of test was objective test. The formulating scores as follow:

Correct answer x 5

= 20 x 5

= 100

$$score = \frac{\text{obtained scores}}{\text{total scores}} \times 100$$

D. Validity and Reliability Testing

According to Ary et Al (2002:213) states that there are two important characteristic that every measuring instrument should possess: validity and reliability. In this study, the test of reading comprehension has constructed to meet the criteria of validity and reliability test

1. Validity

The most complex criterion of a good test is validity. The degree to which the test actually measure what it is intended to measure (Brown, 2000:387). There are four types of validity below will provide evidence to achieve the validity of the test:

a. Content validity

The test can be said to have content validity if the content of the test match or appropriate with the sample of language skill. Ary et al (2010:226) stated that to have a content validity, the instruments are representative of some defined universe or domain of content. Content validity is the extent to which a measuring

instrument provides adequate coverage of the topic under study. If the instrument contains a representative sample of the universe, the content validity is good (Kothari, 2004:74). In this research, the test, pre-test and post-test were in the form of multiple choices. The students must answer the test related to report text.

In order to know if the contents of the test items given are have validity, the researcher checked the content of the test to content of the curriculum 2013 and consult the items with her advisors. In this case, the researcher made four indicators of the test, pre-test and post-test. They are: (a) to identify the structure of the report text (b) to find out the correct topic and main ideas of the text, (c) to find out the specific information related to report text, (d) to integrate the information from their own ideas into the text.

Table 3.3 Content validity of pre-test

No	Indicators	Items number	Total
1.	to identify the structure and the purpose of the report text	1,3,9,11,16	5
2.	to find out the correct topic and main ideas of the text	2, 6, 10, 12, 14, 17	6
3.	to find out the specific information related to report text	4, 7, 13, 18, 19	5
4.	To inferring the meaning of the report text	5, 8, 15, 20	4
total			20

Table 3.4 Content validity of post-test

No	Indicators	Items number	Total
1.	to identify the structure of the report text	1, 7, 12, 13, 18, 19	6
2.	to find out the correct topic and main ideas of the text	2, 3, 6, 8, 11, 16	6
3.	to find out the specific information related to report text	4, 9, 14, 17	4
4.	to inferring the meaning of the report text	5, 10, 15, 20	4
Total			20

From the explanation above, it could be concluded that the test have a content validity.

b. Face Validity

A test is said to have validity if it looks as if it measure what is supposed to measure. Face validity almost is always perceived in term of contents: if the test samples the actual content of what the learner has achieved or expects to achieve, then face validity will be perceived. In this study, the item of the tests was designed to measure the students' reading comprehension ability in report text. The writer ensured face validity by consulting to English teacher of MAN 1 Trenggalek. Based on theory above, in the tryout of the test, the students do the test well therefore valid in term of face validity.

c. Construct Validity

The test can be said to have construct validity if it can be demonstrated that it measured what it is supposed to measure. According to Kothari (2004:74) Construct validity is the most complex and abstract. A measure is said to possess construct validity to the degree that it confirms to predicted correlations with other theoretical proposition.

Construct validity is one kind of validity that is measures the ability which is supposed to measure. Based on theory above, in the test, the researcher asked the students to answer the multiple choice based reading text on report text to measure the students' comprehension in reading and this fulfill the construct of reading test and therefore valid in term of construct validity.

2. Reliability

Reliability are consistent and dependable. Ary (2002: 250) states that reliability is concerned with the effect of such random errors of measurement on the consistency of scores. If the students are given the same test on different occasion, the test should yield similar result. The similar means that because it is impossible for the test taker to get exactly the same score when the test is repeated the following day. To measure the reliability of the test item, the researcher used the KR-20 Formula because this formula requires test administration only once and the scoring is one correct answer given point 1, while incorrect answer

was given 0. Thus this formula is appropriate for calculating the reliability of multiple choice and matching test form.

KR 20 formula

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

Where

r_{11} : Reliability coefficient

n : number of test items

s_t^2 : Standard deviation

p_1 : The right response

p_2 : The wrong answer

After calculating the reliability of the test items, the researcher classified the reliability coefficient which taken from Guilford (1956: 145) as follows:

Table 3.5. Classification of Reliability Test Adapted from Guildford (1956:145)

Reliability Test Coefficient	Classification
0.80-1.00	More Highly
0.60 – 0.80	High
0.40 – 0.60	Fair
0.20 – 0.40	Low
<0.00	Very Low

To get the reliability of the pretest and posttest, the researcher compute by using KR 20. The result as follows:

1. Pretest

The writer had tried out the instrument to class XI MIA 3. From the instrument, the writer got the reliability as follows:

$$\begin{aligned}
 r_{11} &= \left[\frac{n}{n-1} \right] \left[\frac{s_t^2 - \frac{\sum p_i q_i}{n}}{s_t^2} \right] \\
 r_{11} &= \left[\frac{20}{20-1} \right] \left[\frac{12.65 - 4.16016}{12.65} \right] \\
 r_{11} &= \left[\frac{20}{19} \right] \left[\frac{8.48984}{12.65} \right] \\
 &= [1.05263158][0.6711336] \\
 r_{11} &= 0.70645642
 \end{aligned}$$

From the note above, the result showed that the test was reliable with the reliability coefficient of 0.70 or 70%, it means that the reliability of test is high.

2. Posttest

The writer had tried out the instrument to class XI MIA 3. From the instrument, the writer got the reliability as follows:

$$\begin{aligned}
 r_{11} &= \left[\frac{n}{n-1} \right] \left[\frac{s_t^2 - \frac{\sum p_i q_i}{n}}{s_t^2} \right] \\
 r_{11} &= \left[\frac{20}{20-1} \right] \left[\frac{12.25 - 3.53014}{12.25} \right] \\
 r_{11} &= \left[\frac{20}{19} \right] \left[\frac{8.71986}{12.25} \right]
 \end{aligned}$$

$$= [1.05263158][0.71182531]$$

$$r_{11} = 0.7492898$$

From the note above, the result showed that the test was reliable with the reliability coefficient of 0.74 or 74%, it means that the reliability of test is high.

E. Normality Test

Normality test is used to determine whether a data set is well modeled by a normal distribution or not. Normally test is intended to show that the sample data come from a normally distributed population. To know the normality, the researcher used Kolmogorov-Smirnov method. The normality testing was done toward the pretest posttest scores.

The hypothesis for testing normality were:

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

The hypothesis for normality testing said that the data was in normal distribution if H_0 was accepted and it was automatically, the data was not in normal distribution if H_a was accepted. The H_0 is rejected when the significance value is higher than 0.05 ($\alpha = 5\%$), while H_0 was accepted if the significance value was higher

than 0.05 ($\alpha = 5\%$). The result analysis for normality testing can be seen as follows:

Table 3.6 the Result of Pretest and Posttest in Normality Testing

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		35
Normal Parameters ^a	Mean	.0000000
	Std. Deviation	4.73533050
Most Extreme Differences	Absolute	.185
	Positive	.095
	Negative	-.185
Kolmogorov-Smirnov Z		1.097
Asymp. Sig. (2-tailed)		.180
a. Test distribution is Normal.		

Based on the output above, the significant value was 0.180. The test is normal, because significant is more than 0.05 ($0.180 > 0.05$).

F. Data Collection Method

Data collection in the research have very important role. It is because impossible to get result of the research without getting the appropriate data. The data collecting method is the method to obtain the data in the research. In this research the researcher uses test as data collecting method and also the instruments. Technique of collecting data in this research was clarified as follow:

1. Try-out instrument of the pretest and posttest

The writer prepared 20 items as the instrument of the test. Before the items were given to the students, the writer gave tryout test to analyze validity, reliability, difficulty level and also the discrimination power of each item. The tryout was given to eleventh grade students of MIA 3 in MAN Trenggalek. After finishing the test, the answer sheets were collected in order to be scored. An analysis was made based on the result of test by using the formula of validity, reliability, the degree of test difficulty and discriminating power.

2. Pre – test

A pre-test was given at the first meeting before giving treatment in experimental research or before teaching by using graphic organizer method. The pre-test was conducted to know how far the students score in reading. In order to know the reading comprehension of report score of the students before doing treatment. The pre-test was conducted on April 13th 2016. The pre-test was conducted comprised 20 items, in the form of multiple choices items. The researcher use this test because multiple choice items is one of the popular method of testing reading comprehension. Furthermore, the scoring guide for pretest was formulated as follows:

$$\text{Score} = \text{correct number} \times 5$$

2. Treatment

After giving a pre-test, the researcher gave the treatment to the students. The treatment was conducted three times. The first treatment was conducted on April 14th, 2015, the second on April 21th, 2015, the third on April 28st, 2015. The researcher applied the strategy or treatment using graphic organizer. Here the steps of treatment:

3. Post-test

The post test was given to measure the students' achievement after treatment. The researcher conducted post-test after conducting the teaching through graphic organizer method. It aimed to assess their achievement on the reading comprehension, particularly on report text. The post-test was conducted on May 4th, 2016. The post-test comprised also 20 items, in the form of multiple choice items.

F. Data Analysis

The result of the data will be compared between the first data (pre-test) and the second test (post-test) to know whether there are any significant student's scores before and after being taught by using Graphic Organizer. The researcher analyzed the collected data by quantitative.

In this research, the researcher used quantitative data analysis technique. The quantitative data was analyzed by using statistical method. This technique was used to find the significant difference on the student's

scores after taught by using Graphic Organizer. This technique of data analysis belonged to quantitative data analysis and the data was analyze by using SPSS 16.0.