

## **CHAPTER III**

### **RESEARCH METHOD**

This chapter contains the description of the method employed in the research. The description covers research design, population and sample, research instrument, validity and reliability testing, data collecting method, and data analysis.

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

Research design refers to the structure of an enquiry: it is a logical matter rather than a logistical one. The function of a research design is to ensure that the evidence obtained enables us to answer the initial question as unambiguously as possible.

In this research the researcher wants to know students' achievement using e-reading tools and wants to conclude whether these tools are effective or not to be applied toward students' reading achievement. Based on the purpose of research, the research uses quantitative approach, which used an experimental research with quasi-experimental design.

According to Ary, et.al (2010:276) an experimental is a scientific investigation in which the researcher manipulates on a or more independent variable, controls any other relevant variable, and observes the effect of the manipulation on the dependent variable. An experimental design serves two functions:

1. It establishes the condition for the comparisons required to test the hypothesis before and after being taught by using tools. Then both of the

score are computed by using t-test to find out if there is significant influence of teaching reading comprehension by a tool.

2. It enables the researcher through statistical analysis of the data to make a meaningful interpretation of the result of the study.

In this research, the researcher use e-reading tools as the independent variable to be manipulated and controlled. It's labeled as X. Then the researcher observes the effect of manipulation on the dependent variable. The dependent variables are students' achievement of pre and post test. It's labeled as Y.

This experimental design uses a single subject design. Single subject experiment design is as a mean of using the same subject as control group and experimental group. Experimental design used by comparing between the experimental group and the control group. The class before being taught by using e-reading tools is indicated as a control group and the class after being taught by using e-reading tools is indicated as experimental group. Both control and experimental group in this research are taken from the same students.

The procedure of experiment in this research consisted of pre-test – treatment and post-test. The pre-test and post-test are given to take the score of the student's achievement before and after being taught by using e-reading tools. Then both of the scores are computed by using t-test to find out whether there is significant influence of using e-reading tools in reading comprehension instruction or not. See Table 3.1.

**Table 3.1 Procedure of Doing Experiment**

Pre-test	Treatment	Posttest
Y1	X	Y2

Notes:

Y1 = pre-test

X = Treatment using e-reading

Y2 = post-test

This research was intended to investigate the effectiveness of using e-reading tools in reading comprehension instruction at MA Terpadu Al Anwar Durenan Trenggalek in academic years 2015/2016. The use of the treatment aimed to prove whether there will be increasing scores possibly gotten by the students or not. Thus, the effectiveness of that treatment can be known from applying e-reading tools to the students reading comprehension instruction.

## **B. Subject of the Research**

### **1. Population**

According to Ary, et.al (2010: 163), population is all members of any well defined class of people, events, or objects. Thus, this research take all of the second semester of ten grade students at MA Terpadu Al Anwar Trenggalek in 2015/2016 academic year as the population.

In this case, the chosen number of population in ten grade of MA Terpadu Al Anwar Durenan in academic years 2015/2016 is 100 students who divided into 4 classes, they are A, B, C, and D. See Table 3.2.

**Table 3.2 Total Population of X Grade Students of MA Terpadu Al Anwar  
Durenan Trenggalek**

Class	Male	Female	Total
X A	20	-	20
X B	22	-	22
X C	-	35	35
X D	-	23	23
			100

Source: MA Terpadu Al Anwar Durenan Trenggalek in academic years 2015/2016

## 2. Sampling

Sampling is the process of selecting a group of subjects for a study in such a way that the individual represents the large group from which they were selected. According to Ary, et.al (2010: 149), sampling is indispensable to researcher.

Cohen, et.al (2005:92) suggest that decisions and problems such as these face researchers in deciding the sampling technique to be used. Judgements have to be made about four key factors in sampling:

1. the sample size;
2. the representativeness and parameters of the sample;
3. access to the sample;
4. the sampling technique to be used.

The decisions here determine the sampling technique to be used.

On the basis of Cohen, et.al suggestion above in this research the researcher takes C class. There are four classes in 10<sup>th</sup> grade, in this research the

researcher uses purposive sampling to choose one of the classes to conduct the research. The researcher is suggested by the teacher of that school to conduct the research in C class because the students of that class can represent the whole class of ten grade. Beside of that, the sample is chosen because it is appropriate with the researcher requirements of needed sample.

### **3. Sample**

Selecting sample is very important step in conducting a research study. According to Ary, et.al (2010:149) The small group that is observed is called a sample, and the larger group about which the generalization is made is called a population. A sample is a portion of a population. It means that a good sample must represent the entire population as good as possible, so that the generalization of the sample as true as population.

In addition, Cohen, et.al (2005:92) stated that the quality of a piece of research not only stands or falls by the appropriateness of methodology and instrumentation but also by the suitability of the sampling technique that has been adopted. According to technique sampling above, the sample of this research is C class that consists of 35 students at MA Terpadu Al Anwar Durenan Trenggalek in 2015/2016 academic year.

### **C. Research Instrument**

Research instrument is tool of collecting data that should be valid and reliable. In this research, researcher uses one instrument to collect the data. The instruments is test. Ary, et.al (2010:201) state that tests are valuable measuring instruments for educational research. A test is a set of stimuli presented to an individual in order to elicit responses on the basis of which a numerical

score can be assigned. This score, based on a representative sample of the individual's behavior, is an indicator of the extent to which the subject has the characteristic being measured.

Further, Ary et.al maintain the utility of these scores as indicators of the construct of interest is in large part a function of the objectivity, validity, and reliability of the tests. Objectivity is the extent of agreement among scorers. Some tests, such as multiple-choice and true–false tests, are described as objective because the scoring is done by comparing students' answers with the scoring key, and scorers need make no decisions. Essay tests are less objective because scores are influenced by the judgment and opinions of the scorers.

In this research, the test was intended to collect the data from the test result of control and experimental group. Before the test was made, the researcher first made the test spesification of the instrument to take it as a manual or guide-sheet in formulating the test items. For the Try Out test formulation, see Appendix 4. Then, the researcher conducted Try Out test of pre-test and post-test to 15 students of eleventh grade of MA Terpadu Al Anwar Durenan Trenggalek. The try out test was conducted on Monday, 26<sup>th</sup> of April 2016. For the result of Try Out test, see Appendix 5.

After conducting Try Out test, the researcher analyzed and revised some mistakes of both of pre and post test items. Then, she proposed those two tests to experts in order to get the test validation. Finally, pre-test was conducted on Thursday, 4<sup>th</sup> of Mei 2016 while post-test was conducted on Saturday, 14<sup>th</sup> of Mei 2016. The tests were given to the chosen samples, second semester students of ten

grade students of MA Terpadu Al Anwar Durenan Trenggalek. For the Instrument test formulation and the key answer, see Appendix 6 and 7.

#### **D. Validity and Reliability Testing**

Before testing the students of control and experimental group, it's necessary to test the validity and the reliability of the instrument used to conduct the research. It's aimed to ensure that the result of this research can be valid and reliable. Both concepts of validity and reliability are important to consider when it comes to select instruments a researcher intends to use.

##### **1. Validity**

Historically, validity was defined as the extent to which an instrument measured what it claimed to measure. The focus of recent views of validity is not on the instrument itself but on the interpretation and meaning of the scores derived from the instrument Ary, et.al (2010:225). In recent years, validity has been defined as referring to the appropriateness, correctness, meaningfulness, and usefulness of the specific inferences researchers make based on the data they collect Fraenkel and Wallen (2009:148).

Validity is the most important consideration in developing and evaluating measuring instruments Ary, et.al (2010:225). Fraenkel and Wallen (2009:147) give addition that validity is the most important idea to consider when preparing or selecting an instrument for use. More than anything else, researchers want the information they obtain through the use of an instrument to serve their purposes. The drawing of correct conclusions based on the data obtained from an assessment is what validity is all about.

According to Muijs (2004:66) Validity has three distinct aspects, all of which are important. They are: content validity, criterion validity and construct validity. In this case, the researcher analyzed the tests using content validity and construct validity.

a. Content Validity

In order to judge whether the test has content validity or not, it needs to test a specification of skills or structure. The skill that is tested is reading comprehension skill. Further, a test specification comparison and the content of test is the basis of judgment for content validity. Then, The researcher made this test based on the course objectives in the syllabus of X grade of MA Terpadu Al Anwar Durenan Trenggalek. Therefore, these tests are valid in term of content validity. See Table 3.4.

**Table 3.3 Pre and Post Test Specification**

Standard of Competence

- Understanding short functional text and simple essay in form of recount, narrative and descriptive in the daily life context and to access knowledge.
- Tell the meaning of short functional text and simple essay in form of recount, narrative and descriptive in the daily life.

Basic Competence	Indicator of Achieving Basic Competence	Questions Description	Test Item		Test Item Total
			Pre	Post	
To response meaning and rhetoric steps of	To identify the characteristic	1. Determining topic of the text	1, 6, 10, and	1, 5, 12, and	4



essay written text accurately, fluently and accepted in daily life context and to access knowledge of texts in form of recount, and descriptive.	of functional text		20	16	
	2. Determining the main idea of paragraph	7, 11, 16, and 25	4, 11, 13 and 22		4
	3. Discovering the propose of the text	4	2		1
	4. Discovering the reference of a word in the text	17, 18 and 23	3, 8 and 23		3
	5. Determining the conclusion of the text	13, 15, and 24	10,17, and 21		3
	6. Determining the text exception	22	24		1
	7. Identifying the information intended in the text.	2, 3, 5, 8, 9, 12, 14, 19, and 21	6, 7, 9, 14, 15, 18, 19, 20, and 25		9
Total Question					25

#### b. Construct Validity

In the case of validation using construct validity, the researcher used experts judgment to test the validity of instrument the researcher intends to use. After the instrument was constructed from aspects that were measured based on certain theory, then the instrument consulted to the expert. The construct validity was proposed to two lecturers and an English teacher.

Beside of that, the researcher tried to do try out of the tests of pre and post.

The try out was given to 15 students of XI grade of MA Terpadu Al

Anwar Durenan Trenggalek. In try out section the researcher ask the students to answer the tests in form of multiple choice test for both pre and post-test. The try out was aimed to measure the students' reading comprehension. This way fulfilled the construct of reading test. Therefore, these tests valid in term of construct validity.

Not only using content and construct validity, but the researcher also uses *Pearson Product Moment* corrected item-total correlation formulation in SPSS 16.0 after trying out the instrument (pre-test and post-test). The researcher uses SPSS 16.0 for windows to check the empirical validity of test instruments as well. From the calculation, it is found that all items have validity in pretest and post-test. See the Appendix 9.

## **2. Reliability**

Reliability refers to the consistency of the scores obtained—how consistent they are for each individual from one administration of an instrument to another and from one set of items to another Fraenkel and Wallen (2009:154). Scores should be nearly the same when researchers administer the instrument multiple times at different times. Also, scores need to be consistent. When an individual answers certain questions one way, the individual should consistently answer closely related questions in the same way Creswell (2012:159).

Furthermore, Ary, et.al (2010:236) stated that reliability of a measuring instrument is the degree of consistency with which it measures whatever it is measuring. This quality is essential in any kind of measurement. On a theoretical level, reliability is concerned with the effect of error on the consistency of scores.

In this research, the researcher uses SPSS 16.0 for window to know the reliability of test as instruments intended to use. The form used to test the reliability is Cronbach Alpha ( $\alpha$ ).

The formula for alpha is based on Ary at Al (2010:246) is as follows:

$$\alpha = \left( \frac{K}{K-1} \right) \left( \frac{S_x^2 - \sum S_i^2}{S_x^2} \right)$$

Where: K = number of items on the test

$\sum s_i^2$  = sum of variances of the item scores

$s_x^2$  = variance of the test scores (all K items)

To identify the interpretation of  $\alpha$ , see Table 3.5

**Table 3.4 Interpretation of  $\alpha$**

$\alpha$ Value	Interpretation
$\alpha \leq 0,20$	less reliabel
$0,20 < \alpha \leq 0,40$	rather reliable
$0,40 < \alpha \leq 0,60$	enough reliable
$0,60 < \alpha \leq 0,80$	reliable
$0,80 < \alpha \leq 1,00$	very reliable

From the analysis of reliability result, the value of pre-test score is 0,920 whether the value of post-test score is 0,921. from the evidence, it is found that for both of pre-test and post test are very reliable. See Appendix 10.

### E. Normality Testing

Normality testing used to test whether a variable said to be normal or not. In this research, normal means the data is distributed normally. Testing data normality can be tested using *Kolmogorov-Smirnov*. In testing the normality, researcher used *SPSS (Statistical Product and Service Solution) 16.0 for Windows*. Here are the steps of testing normality using *SPSS 16.0 for Windows*:

First step : activate SPSS program

Second step: make data in Variable View

Third step : input the data in Data View

Forth step : click *Analyze* → *Non parametric Tests* → *1 Sample K S* → click *class* dan *value* variabel and move or set in *Test Variable List* → *Klik Ok*.

In addition, the criteria of normality testing using *SPSS 16.0* with *Kolmogorov Smirnov* is as follows:

1. If Kolmogorov-Smirnov Z value or  $D_{count} < D_{table}$  , the data is not distributed normally.
2. If Kolmogorov-Smirnov Z value or  $D_{count} \geq D_{table}$  , the data is distributed normally.

Based on the stated criteria above, the result of pre-test shows that  $0,600 > 0,242$  while the result of post-test shows that  $0,866 > 0,242$ . So, it can be concluded that both pre- and post-test are distributed normally.

Beside using the criteria above, it's appropriate to conclude the normality testing using the following criteria as well:

1. If Asymp. Sig. value  $\leq 0,05$  the data is not distributed normally.

2. Asymp. Sig. value  $> 0,05$  the data is distributed normally.

Based on the stated criteria above, the result of pre-test shows that  $0,864 > 0,05$  while the result of post-test shows that  $0,442 > 0,05$ . So, it can be concluded that both pre- and post-test are distributed normally. For further information, see Appendix 11.

#### **F. Data Collecting Method**

In this research, the data collecting method includes administering test. The researcher used some steps in conducting the research in order to get the intended result that is in line with validity concept. So that, the result of research may be maximally achieved. The steps done by researcher are:

1. Research Preparation

In this stage, researcher did some activities as follows:

- a. Asking IAIN Tulungagung approval sheet to conduct a research at an institution.
- b. Proposing the approval sheet to MA Terpadu Al Anwar Durenan Trenggalek in academic years of 2015/2016.
- c. Consulting the research purposes to English teacher of intended population and sample.
- d. Choosing the sample or the class that will be researched.
- e. Doing a try out about the reliability and validity of research instruments.

2. Conducting Research

In this stage, researcher did some activities as follows:

- a. Preparing some curricula in reading comprehension instruction process, such as:

1. lesson plan.
2. resesrch materials.
3. students precency list.
4. test.
5. scoring list.

### 3. Administering Pre-test

A pre-test provides a measure on some attribute or characteristic that is assessed for participant in an experimental before they receive a treatment, Creswell (2012:301). At the first meeting, the researcher gave a pre-test to the students. This test was given in order to know how far the students ability in reading comprehension. The pre-test comprised 25 items, in the form of multiple choices.

### 4. Doing Reading Comprehension Instruction by Using e-reading Tools

This instruction was conducted in C class of X grade, as reasearch sample. The researcher used the same student as control group and experimental group. The class before taught using e-reading tools is indicated as a control group and the class after being taught by using e-reading tools is indicated as experimental group. This term was done until the end of experiment activities, using e-reading tools in reading comprehension instruction. For further information about steps of experiment, see Appendix 4.

### 5. Administering Post-test

After implementing e-reading tools in reading comprehension instruction, the researcher then conducted post test. The post-test is a measure on some

attribute or characteristic that is assessed for participants after a treatment, Creswell (2012:301). The post-test was conducted in the end of meeting to get the data showing about e-reading tools in student reading comprehension instruction. The post-test comprised also 25 items, in the form of multiple choice.

### **G. Data Analysis**

In this research, the researcher used statistical data analysis technique to know the different score between the students' achievement in reading ability before and after being taught by using e-reading tools. This technique of data analysis belonged to quantitative data analysis and the data were analyzed statistically by using t-test. The use of t-test is to examine the hypothesis of the research. The research hypothesis is as follows:

1. Alternative Hypothesis ( $H_a$ ) states that there is significant difference of using e-reading tools on student's achievements in reading comprehension instruction on the basis of their high interest.
2. Null Hypothesis ( $H_0$ ) states that there is no significant difference of using e-reading tools on student's achievements in reading comprehension instruction on the basis of their low interest.