

## CHAPTER III

### RESEARCH METHOD

This chapter presents and discusses methodology of the research which consists of research design, variable, population, sampling, sample, data sources, research instrument, validity and reliability testing, normality and homogeneity testing, data collecting method, data analysis, and hypothesis testing.

#### A. Research Design

Research design is all process in conducting a research. In fact, there are two kinds of research approaches namely quantitative and qualitative approach. This research used quantitative approach with experimental design. There are many kinds of experimental research design, such as pre-experimental, true experimental, and quasi experimental (Ary *et al*, 2010:302). This research used quasi experimental design, that was directed to know relationship by using control group and experimental group and did not selects those group randomly.

The researcher used quasi-experiment as the design of the research to see the effectiveness of Wattpad Application on students' vocabulary mastery of the first grade at SMAN 1 Karanganyar. Wiersma and Jurs (2009:187) stated that, "quasi-experiment is an approximation of a true experiment that uses groups that have not been formed randomly. In this design were selected two groups. The first group as experimental group was given treatment by using Wattpad Application, and the other group as control group was not be given a treatment, but by using conventional

method. In this study both of two groups were given pretest to know the first achievement that was there any differences between control group and experimental group.

In this study took two classes of the first grade students of SMAN 1 Karangas as experimental and control classes to see the effectiveness of Wattpad Application by comparing the gained pre-test and post-test scores of the two classes. The effectiveness could be seen from the improvement of students' scores of experimental class in post-test after they were given a treatment and from the computation of the gained scores of the classes. The experimental class was given the technique by using Wattpad Application but the control class was not given treatment by using Wattpad Application.

**Table 3.1 Quasi – Experimental Research Design**

Group	Pre-test	Independent variable	Post-Test
A	$Y_1$	X	$Y_2$
B	$Y_3$	-	$Y_4$

A: Experimental group

B: Control group

$Y_1$ : Pre-test for experimental group

$Y_3$ : Pre-test for control group

X: Represent the independent variable. It will also refer to ask the experimental variable or the treatment (Wattpad Application)

$Y_2$ : Post-test for experimental group

Y<sub>4</sub>: Post-test for control group

#### A. The Population, Sampling Technique, and Sample.

This sub-heading presents about population, sample, and sampling in this research;

##### 1. Population

A population is defined as the whole subject of the research. Setiyadi (2006:38) states research population is all individuals which are being target in research while research sample is individual who give the data. The population of this research was the first grade students SMAN 1 Karanganyar (science class) in academic year 2019/2020. The totals of first grade students are 165 students.

**Table 3.2 The Member of Population and Sample.**

No	Class	Male	Female	Total
1.	X MIA 1			36
2.	X MIA 2			36
3.	X MIA 3			36
4.	X MIA 4			36
5	X MIA 5			34
	Total			178

## **2. Sampling Technique**

Sampling is as a way the researcher select number of individuals as a sample which represents the population. Sampling is the process of selecting a number of individuals for a study in such as a way that the individuals represent the large group from which they were selected.

In this research, the researcher used Purposive Sampling Technique to obtain the sample. Arikunto (2000:139) explain that:

Purposive sampling is technique which researchers do not consider strata, random or area when they handpick a subject. However, they consider the certain purpose. In addition, this technique is done because there are some consideration such as the limitation of time, energy, and money.

The researcher used purposive sampling because the researcher found some characteristic of the sample. They were good attitude, active in the class, and almost have the same average in medium ability. The classroom having those characteristic in X MIA 2 class and X MIA 4 Class. It was proved by one of English Teacher said that X IPS 1 class and X IPS 3 class are active, quite, and they always pay attention when the teacher explained the material. So, it can represent the population on the average ability on vocabulary.

## **3. Sample**

Selected of the sample is very important step in conducting a research. According to Charles (1995:96), a sample is a small group of people selected to represent the much larger entire population from which

it is drawn. It means that a good sample must be representative of the entire as possible, so that the generalization of the sample as true as population.

## **B. Research Variable**

According to Fraenkel (1996:61) a variable is any characteristic or quality that varies among the members of particular group. In experimental research, there are two variable: Independent Variables and Dependent Variables.

### **1. Independent Variable (X)**

Independent variable is variable that consequence of upon antecedent variables. In this research the independent variable was using Wattpad Application.

### **2. Dependent Variable (Y)**

Dependent variable is the response on the criterion variable that is presumed to be caused by or influenced by the independent treatment conditions and any other independent variable. In this research the dependent variable was students' vocabulary mastery.

## **C. Research Instrument**

Instrument of the research are tools to measure something that we observe in order to obtain the data and answer the research problems, stated by Sugiyono (2011). The instrument used in this research was a test which was administered before and after taught by using Wattpad Application media. The researcher applied a vocabulary test. According to

Ary et al (2010:20), “Test is a set of stimuli which presented to an individual in order to elicit responses on the basis of which a numerical score can be assigned”. The format of the test was objective multiple-choice test. The questions consist of 20 multiple-choices item test, and the time allocation was 40 minutes. The correct answer from each question was multiplied by 5. Then, the score will be  $20 \times 5 = 100$ . In the other hand, if the students answer incorrectly, they will get 0.

**Table 3.3. Score Criteria**

Score	Criteria
85 – 100	Excellent
75 – 80	Good
55 – 70	Average
35 – 50	Poor
0 – 30	Very Poor

## **F. Validity and Reliability Testing**

### **1. Validity Testing**

One of the criteria of a good instrument is valid. According to Ary et al (2010:225) Validity as the extent to which as instrument measured what it claims to measure. While, Fraenkel and Wallen (2006:150) stated that validity is the most important idea to consider when preparing or selecting an instrument for use. In other words, validity can be defined as the instrument that measures what is supposed to be measured. In this research, the researcher

used content validity as a non-empirical expert judgment of the extent to which the content of a test is comprehensive and representative of the content domain purported to be measured by the test, construct validity as the criteria of a person who full filled the success speaking ability, and face validity as the subjective measurement.

**a. Content Validity**

The content validity of the test is showed with relevancy of the objective of the test and the content of the test items. According to Ary et al (2010:225) states that validity is to have teachers examine the test and judge whether the test is adequate sample of the content and objective to be measures. The test was said have content validity if its contents constitute a representative sample of language skills, structures, etc., being tested. It that the test based on competency of standard and basic competency of school based curriculum grade eight of the English subject. Content validity is a kind of validity which depends on careful analysis of the language being tested and of the particular test subjective. According to Gay in his book, *Educational Research Competencies for analysis and Application Fourth Edition*, “Content validity is of prime importance for achievement test. A test score cannot accurately reflect a student’s achievement if it does not measure what the student was supposed to learn (Gay, 1992:156). A test is said to have content validity if its contents constitutes a representative sample of the language skill, structure, etc. Being tested, the try out

test was valid in terms of content validity because this test accord with Syllabus. Thus, the researcher can conclude that the test were valid in content validity because the material are tested have been taught to the students.

Therefore, this test was valid in term of content validity:

**Table 3.4. Matrix of Content Validity**

Syllabus	Indicator	Learning Material	Technique	Test Item
4.11 Read aloud meaningful short functional simple text or story of Wattpad Application by pronunciation, stress, and intonation which acceptable involving surrounding.	Student can identify the vocabulary from the content of the story or the text.	Text 1. “Bermuda Discover” part 1-2	Written Test  Students answer multiple- choice question based on the text	Pre-Test
	Student can identify the vocabulary from the content of the story or the text.	Text 2. Bermuda Discover part 3-4	Written Test  Students answer Multiple-	Post-Test



			Choice question based on the text.	
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Based on the table above, the instrument of the test could be said to have the content validity because the test has equal purpose with the core competence and basic competence in syllabus of Curriculum of 2013, which was testing the students' ability in vocabulary with the correct structures.

#### **b. Construct Validity**

Brown (2003:25) explained that "Construct is any theory, hypothesis, or model that attempts to explain observed phenomena in our universe of perception." In the term of construct validity, the test is considered to have construct validity if it can be demonstrated that it measured just the ability which is hypothesized in a theory of language ability. Both in the pre-test and post-test, the researcher gave vocabulary test through written test. The test were considered to have construct validity for the purpose of testing proficiency in vocabulary mastery.

#### **c. Face Validity**

According to Ary et al (2010:225) Face validity refers to the extent to which examine believe the instrument is measuring what it is supposed to measure. Henning (1987, p. 192) defines face validity as a subjective impression, usually on the part of

examinees, of the extent to which the test and its format fulfills the intended purpose of measurement.

Face validity refers to the degree to which a test looks right, and appears to measure the knowledge or abilities it claims to measure based on subjective judgment or the examinee who take it, the administrative personnel who decide on its use, and other psychometrically unsophisticated observers (Brown, 2004). The test in this research was design to measure students' vocabulary mastery. Thus, to achieve face validity, the researcher provided the instruction to ask students to test vocabulary. The researcher uses face validity in this research by consulting with expert and lecturer.

### **1. Reliability Testing**

Another criteria of a good test is reliability. Reliability is a necessary characteristic of any say good test for it to be valid at all and test must be reliable as meaning instruments. According to Ary (2002:250) states the reliability is concerned with the effect of such a random errors of measurement on the consistency of the scores. Reliability is the consistency the scores. Reliability is the consistency of the measurement, or degree to which an instrument the same subject. To measure that reliability of test item, the researcher conducted a try-out. The try-out was tested in 10 students of X IPA 3. The try-out was held to know how far the reliability of the test. So, after the researcher got the score from the try-out, the researcher

analyzed each item of the test and computed it by using SPSS 16.0 version to know the reliability of the test instruments.

The procedures were, inputting the data, then click ‘analyze’ and choose ‘scale’. After that click the ‘reliability analyses. There would be a table after clicking it, then move the data on the left table to the right table. After that click ‘statistics’ and choose item; scale, the procedures were inputting the data, then click ‘analyze’ and choose ‘scale’. After that click the ‘reliability analyses. There would be a table after clicking it, then move the data on the left table to the right table. After that click ‘statistics’ and choose item; scale, in inter-item part choose “correlations”.

The result is shown after that and the Cronbach’s alpha’ that would determine how reliable the test is will be existed. The result is shown after that and the Cronbach’s alpha that would determine how reliable the test would be existed.

According to Triton in Sujianto (2009:97) the value of Cronbach’s alpha can be interpreted as follow:

**Table 3.5. Cronbach’s Alpha Interpretation Based on Triton**

Cronbach’s Alpha	Interpretation
0,00 – 0,20	Less Reliable
0,21 – 0,40	Rather Reliable
0,41 – 0,60	Enough Reliable
0,61 – 0,80	Reliable
0,81 – 1,00	Very Reliable

The result of reliability testing by using SPSS 16.0 can be seen from the table:

**Table 3.6 The Result of Realiability Pre test**

**Case Processing Summary**

		N	%
Cases	Valid	20	100.0
	Excluded <sup>a</sup>	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha <sup>a</sup>	N of Items
-.540	10

To know the items was reliable or not it can be seen from Alpha Cronbach's column. If the Alpha Cronbach's is under 0,06, it means that the test was not reliable. But, if the Alpha Cronbach's is upper 0,06, it means that the test was reliable. The Alpha Cronbach's score of pre – test was = 0,540 it means that the test was enough reliable.

## **G. Normality and Homogeneity Testing**

Normality testing is used to examine whether a set of data is belong to normal distribution or not. After doing the normality testing then the researcher could determine whether the statistical test used parametric test or non-parametric test. In this research the normality testing was done toward students score in pretest and posttest. Because the variable was the achievement or score so the variable was interval, which was why we used the parametric test. Then, the data of the research itself belong to independent samples which the step of statistical testing are:

### **1. Homogeneity testing**

The variances of data is tested to find out if they are equal or homogeneous. This testing can be done by getting the score of the students then we subtract the lowest value to the highest value, the higher the range the more heterogeneous the class is. Finding the standard deviation is also helped to know the variability of the class. To achieve this data, Levene statistic test is applied in this research with the similar rule of the normality that is  $\alpha = 0.05$ .

- a. If the homogeneity test resulted  $< \alpha = 0.05$  the data are not homogeneous.
- b. If the homogeneity test resulted  $> \alpha = 0.05$  the data are homogeneous or have equal variances.

### **2. Normality testing**

Normal distribution is the distribution on variables such as scores or a normal distribution in statistical research is one of the important

assumptions before T-test can be performed. It to know whether the samples collected are normally distributed or not. The analysis of normality test in this research used Kolomogorov - Smirnov with the rules  $\alpha = 0.05$ :

- a. If the normality test resulted  $< \alpha = 0.05$ . the data are not normally distributed and  $H_0$  is rejected
- b. If the normality test resulted  $> \alpha = 0.05$ . The data are distributed normally and  $H_0$  is accepted.

### **3. T-test**

T-test is a type of statistical test that is used to compare the means of two groups. T-test is a type of parametric method; it can be used when the samples fulfill some criteria such as, the conditions of normality, equal variance, and independence. There are two types of t-tests they are, independent t-test, which can be used when the two groups under comparison are independent of each other, and the paired t test, which can be used when the two groups under comparison are dependent on each other. In this research, independent t test is used. It can be done in SPSS Application.

### **H. Data Collecting Techniques**

Data collecting method is the way the researcher to collect the data. Method of data would provided reality about some steps which were used in the process of collecting data. Researcher used two kinds of tests, they were:

### **1. Pre-Test**

Pre-test was given to the students before the researcher taught by using Wattpad Application. Pre-test is needed to know how far the students' vocabulary mastery before being given a treatment. The format of pre-test was multiple choices which consist 20 items about part of speech. The time allocation was 40 minutes. The pre-test given to know the basic competence for students' and to know them earlier knowledge before they get treatment.

### **2. Treatment**

The treatment was conducted after the administration of the pretest. The treatment consists of 2 meetings. The purpose of treatment is to help students' in understanding vocabulary mastery. The treatment was taught by using story of Wattpad Application to the students'.

### **3. Post-Test**

After the treatment, the post test was given to the students'. The test item in the post-test was different with the pre-test, but both of them had same indicators and the text was almost same in level of difficulties. This test was to measure students' reading comprehension after treatment applied. The format post-test was also 20 items multiple choice about part of speech. It was given to know the final score and the students' difference achievement before and after they get treatment. Time allocation to answer the task was 40 minutes.

The schedule of collecting the data could be seen in the following table:

**Table 3.7. The Schedule of Conducting the Research**

No	Date	Group	Meeting	Activity	Time
1.		Experimental (X IPA 2)	I	Pre-Test and treatment 1 by Wattpad Application.	November 9 2020
2.		Control (X IPA 4)		Pretest and treatment 1 conventional	November 9 2020
3.		Experimental (X IPA 2)	II	Treatment 2 by Wattpad Application and Post- Test	November 11 2020
4.		Control (X IPA 4)		Treatment 2 conventional and Post- Test	November 11 2020



## **I. Data Analysis**

This data obtained in this research were the result of students test and they were analyzed quantitatively. Quantitatively analysis was done using statistic which is called statistical analysis or inferential statistics. The quantitative data of this research was analyzed by using statistical computation. The technique was used to find the significant difference on the students' vocabulary mastery after being taught by using Wattpad Application media. The researcher used T-test adopted from Ary (2010:177) with SPSS 16.0 version. After getting the data either from pre-test or post-test, the researcher analyzed the data by using formula of f-test to testing the equal variance of standard deviation and t-test by to know the significant difference of students' vocabulary mastery between students who are taught by using Wattpad Application and those taught by using a conventional method.

## **J. Hypothesis Testing**

After testing t-test by using SPSS 16.0 for windows program and determining that the significance level ( $\alpha$ ) is 0,05 or 5% (it has been programmed on the Application) the next step is reject or not reject the null hypothesis. The base of rejecting or not rejecting the null hypothesis is:

If P-value (denoted by Sig)  $< \alpha$  ( 5 % ),  $H_0$  is rejected and  $H_a$  is accepted.

Bu, if P-value  $\geq \alpha$  ( 5 % ),  $H_0$  is not rejected (accepted) and  $H_a$  is rejected.