CHAPTER III

RESEARCH METHOD

In this chapter, the researcher presents the description of the method applied in this study. The description covers: research design; population, sampling, and sample; variable of study; data; research instrument; validity and reliability; normality and homogeneity; hypothesis testing; data collection; data analysis.

A. Research Design

The research method is a step carried out by researcher to be able to collect information or data and conduct an investigation on the data that has been obtained. This method is carried out by systematically according to established procedures. In this study, the approach used is a quantitative approach where the data is in numerical form.

According to Ary et al, (2010: 22) Quantitative research is research that tests a theory with data analysis using numeric or numbers to prove a correct data. Sarmanu (2017) also said quantitative research uses objective measurement and numerical analysis of data to try to explain the causes of changes in social phenomena. This type of research usually begins with hypotheses that will be supported by the data.

The designs used in this study are experimental method. Experimental method is the only type of research that attempts to influence a particular variable. It is research that can really test hypotheses about cause-and-effect relationships. According to Ary, et al (1996: 21) states as follow: In experimental research, the

researcher administers different treatment (called independent variable) to two or more groups and then compares the group to determine the effect of the treatment on another variable (called the dependent variable). It means, the experimental design is a method that aims to find out the effect of cause and effect between the independent and dependent variables. The use of this experimental design is used by researchers with the purpose of this study was to determine the effect of Quizizz application as a teaching media on students' grammar understanding.

The researcher used one class. This method is to use a pre-experimental design method with the type of pre-test and post-test one group design. This method is given to one group only without a comparison group. Arikunto (2010: 124) said that one group pretest-posttest design is a research activity that provides a pretest before given treatment, then given treatment and at last also given a final test (posttest). After seeing this understanding, it can be concluded that the results of the quantity can be known more accurately because it can compare with the situation before being given treatment.

The first thing in conducting experiments using the subject design. This single test is done by giving a test to a subject before given a treatment is called a pre-test (O1). After obtaining data pre-test, then treatment (X). After give the treatment to students, than another test is given to measure the level of student learning outcomes after being subjected to the experimental variable (O2). In post-test data will be obtained from the results of experiments where student learning outcomes increased or no. Compare O1 and O2 for determine how big the difference is, if it exists as a due to the given experimental variable. Then the

data is analyzed by using SPSS.

Table 3.1 One Group Pre-Test &Post-Test Design

Pre-test	Treatment	Post-test
O1	X	O2

According to table 3.1 the procedures of using one group in this design were:

1) Administering a pre-test to measuring the dependent variable

2) Applying the experimental treatment x (using Quizizz application) to the subjects

3) Administering a post-test, this step aims to measuring the dependent variable.

B. Population, Sampling and Samples

1. Population

Fraenkel and Wallen (1990: 140) state population is a group who have the same characteristic. It can be concluded, the population is all of the object that can consist of people, objects, event, times, and places with the characteristics in research should be the same. The populations of this study were the eighth grade students of the SMPN 1 Sumbergempol. The total number of the population was 344 students. The students divided into 11 classes. There are from class VIII A, VIII B, VIII C, VIII D, VIII E, VIII F, VIII G, VIII H, VIII I, VIII J, VIII K.

2. Sampling

Imran (2017) state sampling is the process of taking a certain amount of population. Sampling technique is a method used to obtain samples in accordance with the expectations of researchers. This aims to obtain a representative sample

and can represent the actual population. To determine the research sampling, the researcher uses purposive sampling technique.

Fraenkel and Wallen (2012: 92) state that purposive sampling is rather using their judgment to select a sample that they believe, based on prior information, will provide the data they need. Purposive sampling is a technique sampling used by researcher when the researcher has some considerations in taking the sample. The reason of the researcher used non-random sampling technique, because it has the characteristics not all elements in the populations have the opportunity or probability to be sampled. This technique is intended to obtain the effective result for this research. The researcher selects the class based on the teachers' opinion. So, the teacher had given class VIII B to do this research.

3. Sample

Fraenkel and Wallen (2012: 91) state that sample is any group on which informations are obtained. Sample is a small part of populations which is observed. In this study, the researcher took the students of class VIII B SMPN 1 Sumbergempol. It consists of 30 students as sample.

C. Variable of the Study

Variable is one of the important elements in research. Variable can be divided into two: dependent variable and independent variable

1. Independent variable (X)

Fraenkel and Wallen (2012: 80) state that independent variable is an attribute or characteristic to assess their possible effects on one or more other variable.

In this study, the independent variable was the using Quizizz application, the teaching media to increase the students' grammar understanding.

2. Dependent variable (Y)

Cresswell (2012: 116) state that dependent variable is an attribute or characteristic which is influenced or which is the result of independent variable. This study dependent variable includes of students' grammar understanding score after taught by Quizizz application.

D. Data

The data in this research was obtained from sample in form of number or scores. The sample of this research used one class from all population of eighth grade in SMPN 1 Sumbergempol. The data was taken by distributing the test as instrument. Fraenkel and Wallen (2012: 111) state that instrument is the device (such a pencil-and-paper test, a questionnaire, or a rating scale) the researcher uses to collect data. The researcher conducted a set of tests. Those are pre-test and post-test. According to Hatch and Farhady (1982: 22) the pre-test and post-test nonequivalent groups design is often used in classroom experiments. Besides, according to Anas Sudijono (1996: 69) "Pre-test is a test carried out with the aim of knowing how far which learning materials are will be taught has been mastered by students". It means pre-test is the test that was conducted before the researcher applies the treatment or before taught the students by Quizizz application. While the post-test according to Anas Sudijono (1996: 70) "is a test carried out with aim of find out whether all the learning materials as important materials, it can be mastered by students". It means post-test is the test that was conducted after the

researcher applies the treatment or after taught the students by Quizizz application. The test was in multiple choices and the total number of tests was 20 items.

E. Research Instrument

In collecting data, researchers must create a research instrument that serves as a tool to collect data. Without research instruments, the research is considered a failure. According to Arikunto (2006: 26) state that instrument is a tool used researchers to conduct data collection. Moreover, Sugiyono (2011) also said research instrument is a tool to measure something the researcher observed to obtain the data and answer the research problem.

In quantitative research, the research instrument is a tool commonly used by researchers to collect information about variables from the theory to be tested in teaching-learning. It is used to obtain quantitative information about the required data objectively. Data never exists without instrument research. In this case, it can be concluded that the instrument is all the tools used by researchers to collect accurate data.

There are many types of measuring instruments used as measuring instruments used, including questionnaires, tests, interviews, and observations. In this study, the researcher applied test. According Ary et al (2010: 20) said a test is a set of stimuli presented to individuals to obtain a numerical response to a score for the given knowledge. The type of test used is an objective test, in the form of a multiple-choice test. There two types of tests were used, namely pre-test and post-test. The pre-test and post-test questions consist of 20 questions. The time

allocation is 40 minutes. The test is distributed using googleforms. In compiling instrument items, the researcher arranged the test specification. These test specifications are needed as a guide in formulating instrument items. Here is the test specification:

Table 3.2 The Test Specification

Indicator	Number of question	Total
Students are able to determine the appropriate sentence for the part of the hiatus in the sentences of simple present tense	1, 2, 3, 5, 6, 11, 12, 13, 14, 17, 18, 19, 20.	13 item
Presented dialogue, students are able to analyze the right answer.	4, 7, 8, 9, 10.	5 item
Students can arrange the words into sentences simple present tense.	15, 16.	2 item

The instrument that has been made by the researcher then, the instrument was validated by the validator. Validators in this instrument include English teachers at SMPN 1 Sumbergempol. This can be seen in appendix 12 Validation of Research Instruments (Tests). Validation by this validator aims to make the instrument appropriate with the indicator variable in content. Then, the instrument in this study was tested on other classes that were not the research class, in class VIII A.

F. Validity and Reliability Testing

Validity and reliability testing are two important elements since the test used as instrument must be valid and reliable. In this study, validity and reliability used to ensure that test is appropriate to be given.

1. Validity Testing

Prasetyo (2019: 98) said validity is related to the accuracy of using indicators to explain the meaning of the concept being studied. Validity is testing whether the test can measure what it is supposed to measure or not. It is to know the result of the instruments that appropriate, meaningful, and useful in terms of students' grammar understanding. The researcher analyzed the test form content validity, face validity to measure whether the test has a good validity.

a. Content validity

The content validity refers to how much a measure covers the entire range of meanings associated with the concept. It means the researchers must prove that the instrument is a test that is used to determine whether the sampling that is balanced and relevant from knowledge, skills, and content. It refers to the items on the test which present all the test questions that want to measure.

The researcher made a test that focused on student measurement. The vocabulary on the content learned in class. The questions are made based on the main competencies and basic competencies of students in the 2013 curriculum syllabus. It based on Gay (1992: 156) state Validity of the content is very important for achievement tests. Test scores may not accurately reflect student achievement if it does not measure what students should have learned. Therefore, the researcher can conclude that the test is valid in content validity because the material is tested teach to students. Accordingly, the test is valid in terms of content validity:

Table 3.3 English Syllabus of Simple Present for 8th Grade at Junior High School

Core Competence	Basic Competence	Indicator
3.7 Menerapkan struktur teks dan unsur kebahasaan untuk melaksanakan fungsi sosial menyatakan dan menanyakan tindakan/kejadian yang dilakukan /terjadi secara rutin atau merupakan kebenaran umum, sesuai dengan konteks penggunaannya.	4.7 Menyusun teks lisan dan tulis untuk menyatakan dan menanyakan tentang tindakan/kejadian yang dilakukan/terjadi secara rutin atau merupakan kebenaran umum, dengan memperhatikan fungsi sosial, struktur teks, dan unsur kebahasaan yang benar dan sesuai konteks.	3.7.1 Menentukan fungsi sosial, struktur teks, dan unsur kebahasaan teks interaksi transaksional lisan dan tulis kalimat deklaratif dan interogatif 4.7.1 menyusun kata acak menjadi kalimat deklaratif dan interogatif dalam simple present tense

Based on the table, the instrument of the test has equal point with core competence and basic competence in Syllabus.

b. Construct validity

According to Brown (2003: 25) said that construct is any theory, hypothesis, or model that attempts to explain observed phenomena in our universe of perception. In terms of construct validity, the test is said to have construct validity if it can shows that it measures only the ability hypothesized in language ability theory. Both of the pre-test and post-test, the researcher gave a grammar test. The test is considered to have construct validity for the purpose of testing proficiency in grammar understanding.

c. Face validity

Prasetyo (2019: 99) explains face validity refers to the extent to the instrument is measuring what it should be measure. Face validity is representative of the concept instrument. The researcher wants to measure the

students' grammar understanding. The test was given in the form of multiple choices. The researcher creates 20 items and the question and answer based on the syllabus. There are some characteristics to create the good test:

1) The instruction of questions must be clearly, so the students get the clue in it.

2) The instruction must be suitable on syllabus and the students' level

3) The time of allocation in the test must be clear, 40 minutes to finish 20 items of the test.

2. Reliability Testing

Reliability is a step before the researcher conduct pre-test and post-test. According to Gay (1992: 161) said that reliability is the degree to which a test consistently measures whatever it measures. In this test, the researcher will conduct try out with subject students from the eighth grade of SMPN 1 Sumbergempol. It is to know the reliability of this test. The researcher will analyze the result of try out by using Cronbachs' Alpha formula using SPSS Application.

According to Sugiarto and Situnjuk (2006), reliability test is a test that shows whether an instrument used to obtain information can be trusted to reveal information in the field as a data collection tool. High and low reliability is expressed by a value called the reliability coefficient, ranging from 0-1. Reliability testing uses Cronbachs' Alpha formula. The smaller value of alpha is more unreliable items. The standard used is alpha > 0.70 (sufficient reliability).

Table 3.4 TheRange Value of Cronbachs' Alpha

Cronbachs' Alpha	Interpretation
alpha < 0.50	Low reliability
alpha < 0.70	Moderate reliability
alpha > 0.70	Sufficient reliability
alpha > 0.80	Strong reliability
alpha > 0.90	Perfect reliability

Based on the try-out of instrument at class VIII A was done on Friday, 23rd July 2021. The researcher got the result of the reliability test. To calculate the reliability test, the researcher used IBM SPSS Statistic 25 program. The result of the test following in the table:

Table 3.5The Result of Reliability Testing

Case Processing Summary			
		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbachs' Alpha	N of Items
.819	20

The result of *Cronbachs' Alpha* in reliability testing was 0.819. Based on table 3.4, the range value of *Cronbachs' Alpha*more than 0.80 was strong reliability.

G. Normality and Homogeneity Testing

1. Normality Testing

The normality test was carried out to find out the distribution of the data from the results of research is normal or not. In this study, the normality test used is the Shapiro-Wilk test. Testing the normality of the data with the Shapiro-Wilk test can be done with the help of the IBM SPSS Statistic 25 with a high level of significance used is 0.05. If the output value in the column sig. from the test results in SPSS is greater than the significance level ($p > 0.05$), then the data is normally distributed. Otherwise, if the output value in the column sig. from the test results in SPSS is smaller than the significance level ($p \leq 0.05$) then the data is not normally distributed.

2. Homogeneity Testing

Homogeneity test is carried out to test whether it is homogeneous or not which the sample of data taken from the same population. In this study, the researcher test homogeneity using Levenes' test on IBM SPSS Statistic 25. According to Stark weather (2010), Levenes' test has the main purpose of knowing the differences between two data groups with different variances. The calculation results from this test will show the significance value (p) of the two different data groups. The significance value ($p > 0.05$) indicates that the data group comes from a population with the same variance (homogeneous). On the other hand, a significance value ($p < 0.05$) indicates that the data group comes from a population with different (heterogeneous) variances.

H. Data Collecting Method

The data collection methods are one of the important elements in a study. It was the way the researcher got data. The distributing test was chosen the researcher in this study to collecting the data. The test consists of pre-test and post-test.

1. Pre-test was the test that given before the researcher implementing the Quizizz application. The purpose of this test is to find out the basic skills or the students' knowledge before the researcher implementing the treatment. The test distributed at the first meeting. The form of test is multiple choices which are consist of 20 numbers. Time allocation to finish the test is 40 minutes. The score for correct answer was 5, and for the wrong answer the score was 0.

2. Post-test was the test that given after the researcher implementing the Quizizz application. The function of this test is to measures the students' grammar understanding after the researcher implementing the treatment. The test distributed at the last meeting. The form of test is multiple choices which are consist of 20 numbers. Time allocation to finish the test is 40 minutes. The score for correct answer was 5, and for the wrong answer the score was 0.

Table 3.6 Research Schedule

No	Date	Time	Activity
1	Saturday, July 24th 2021	6-7	Meeting 1 Conducted pre-test Explain what is Quizizz application and ask to sign up the application

2	Tuesday, July 27th 2021	7-8	Meeting 2 Treatment 1 by Quizizz application
3	Saturday, July 31st 2021	6-7	Meeting 3 Treatment 2 by Quizizz application
4	Tuesday, August 3rd 2021	7-8	Meeting 4 Conducted post-test

On Friday, 23rd July 2021 the researcher had a try-out before conducting a pre-test. Try-out was held for another class, VIII - A, which included 30 students. The goal of the try-out is to ensure the instruments' validity and reliability. According to the table above, the researcher conducted a pre-test on Saturday, July 24th 2021. Treatment was conducted twice. It was on Tuesday, July 27th and Saturday, July 31st 2021. The treatment deals with the studies' subject, which was about simple present tense. The researcher used Quizizz application as a teaching media. Following the researchers' explanation of the content, the students were instructed to complete the quiz in the Quizizz application. Then, the researcher has to analyze how well the students comprehend the material being discussed. The aims of quiz by Quizizz application to the students were hoped the students will be more enthusiastic and have the willingness to be actively in the teaching learning process. The material for conducting the treatment was chosen from chapter in English book that has related to discussed. The last stage conducted the post-test that was on Tuesday, August 3rd 2021.

I. Data Analysis

The function of data analysis is to analyze the data that has been collected by the researcher. In accordance with the type of research and the type of data, the

analysis data in this study is quantitative analysis with using a statistical formula, which is includes a description of the comparisons of the different score pre-test post-test and the relationship between variables. The aim of using this analysis is to simplify the data into goals research.

From the result of the data that has been obtained, the researcher used IBM SPSS Statistic 25 program to analyze the data. After getting the data either from pretest and posttest, the researcher analyzed the data by using formula of Paired Sample Test. The using paired sample t-test was to know the significant difference on pre-test and post-test score. The significance level of the pre-test and post-test score should be less than 0.05 it can be said the alternative hypothesis (H_1) to be accepted, or simply said that there is a significant difference on students' grammar understanding between before and after being taught using Quizizz application. However, if the significance level is more than 0.05, it can be said the alternative hypothesis (H_1) is rejected that mean there is no significant difference on students' grammar understanding between before and after being taught using Quizizz application.