CHAPTER III

Research Method

In this chapter the resarcher describes the research method. It consists of research design, population and sample, variable, research instrument, data collecting method, validity and reliability testing, normality and homogenity testing, hypothesis testing, and method and data analysis.

A. Research Design

The research design is the framework for the methods and techniques he will use. Quantitative research and qualitative research are two types of research approaches. The researcher chose quantitative research for this research because it is a method to test the relationship between two variables. The researcher contrast the two factors to see if playing the Scattergories game had an influence on students' vocabulary mastery. According to Sugiyono (2013:13) quantitative research is traditional research that employs a positivist approach to investigate a specific population or sample, collect data using research instruments, analyze data quantitative or statistically, and test with the aim of testing predefined hypotheses.

Quantitative research classified design research into two categories there are experimental research design and non-experimental research design. The researcher used experimental research design because it entails the investigation of the impact of systematic modification of one variable on another. This idea is in line with that of Ary et al (2010: 265) is a scientific study in which the researcher manipulates one or more independent variables. Creswell (2012:295) an

experimental study is a research method for determining the cause and effect relationship between independent and dependent vaiables. The purpose of this study is to determine how effective the Scattergories game is at teaching vocabulary to students.

The types of experimental research include pre-experimental research design, quasi-experimental research design, and true experimental research design. This study is conducted in quasi-experimental research design. In that both involve modifying an independent variable, the quasi-experimental design is similar to the randomized experimental design in that both entail changing an independent variable, but the difference is that participants are not randomly assigned to treatment groups in the quasi experimental design (Ary, et al, 2006:316). The first group was assigned as the experimental group, and was given strategy treatment for the Scattergories game. The second group is control group, so named because they were not taught the method of playing the Scattergories game. For both groups, the researcher gave pre and post-test. The experimental group was given treatment before the post-test, which was the only difference between them.

Table 3.1 The Illustration of Quasi Experimental Research Design

Group	Pre-test	Treatment	Post-test
A	Y1	X	Y2
B	Y1	-	Y2

In which:

A : Experimental group

B : Control group

Y1 : Pre-test

X : Treatment using Scattergories game strategy

Y2 : Post-test

As a result, the researcher used quasi experimental design (an experimental group and control group). Based on the table, the startegies of using two group pre-test post-test design were:

a. Administering pre-test in both of groups (experimental and control) to measuring vocabulary mastery of eight grade student of VIII-A and VIII-C classes at Mts Darul Hikmah Mojokerto before being taught by using Scattergories game strategy.
b. Applying the experimental treatments in the experimental groupto teach vocabulary mastery using Scattergories game strategy to eight grade students of VIII-A class at Mts Darul Hikmah Mojokerto and applying conventional

strategy for control group to eight grade students of VIII-C class at Mts Darul Hikmah Mojokerto.

c. Administering pre-test in both of groups (experimental and control) to measuring vocabulary mastery of eight grade student of VIII-A and VIII-C classes at Mts Darul Hikmah Mojokerto after being gave a treatment and without treatment.

B. Population, Sample, Sampling

1. Population

According to Latief M, Adnan (2019) state that target population is often too large to reach, so researcher often limit data sources to the population that can be accessed, or data sources that can be accessed by researchers. The population in this researcher will eight grade students of Mts Darul Hikmah at the second semester in academic year 2020/2021. There were two class comprised VIII-A and VIII-C.

2. Sample

According to Latief M, Adnan (2019) say that the sample was chosen at random from the accessible population, that the sample reflects the accessible population, and that the information gathered from the sample may be securely applied to the complete accessible population. The research will take two class as sample of research, they were VIII-A class consisted 30 students as experimental group and VIII-C class consisted 30 students as control group.

3. Sampling

The term "sampling" refers to the process of choosing samples. Purposive sampling also known as judgment sampling, selects sample components from the population that are considered typical or representative, purposive sampling is classified into probability sampling and non-probability sampling according to *Aryel al* (2010:156). In this study, the researcher will obtain data from population using purposive sampling, which is a type of non-probability that represents the complete poplation. According Sugiono (2016:85) purposive sampling is data score sampling strategy that takes certain factors into account. As a result, it provides adequate information regarding students' ability to learn English, especially in terms of vocabulary mastery.

C. Variables

For writer knowing the variable used to research it is very important. According to R.Franklen (1996:77) variable is a term that refers to the variation in a group of objects. According to Donald Ary (2010:37) a variable is a structure or a characteristic that can have many values or scores. In the study, there are two types of variables, they are classification as independent variable and dependent variable.

1. Independent Variable

Independent variable is the one that has an impact on another variable. According to Ary*el* (2010:266) state that the independent variable is controlled (changed) by the experimenter, that means that the independent variable has the ability to influence dependent variable. The independent variable in this research was Scattergories game strategy.

2. Dependent Variable

Dependent variable is the one affected by another variable. According to Ary*el* (2010:266), the dependent variable is a variable that comes from the observed changes influence but is not modified by the experiment. The dependent variable in this research was students' vocabulary mastery which was affected by Scattergories as the independent variable.

D. Research Instrument

A research instrument is a tool for gathering, analyzing, and evaluating data from study participants. Based on Sugiyono (2015:148) a tool is an instrument used to measure natural or social phenomena, according to the definition. The researcher used a vocabulary exam as an instrument to collect data. Pre-test and post-test were used in the study. Both the control and experimental hroups were given pre-test and post-test. The goal of the pre-test, which was administered before the treatments, was to determine the students' vocabulary before the treatments were carried out.

The instrument researcher used is a vocabulary test in collecting data. They are about Fruits, Rooms, Occupations, and Animals. Each point there are 20 items, each items has 5 score for every correct answer. So, the total of scores is 100 if the students can answer all of the question correctly. In the text, students instruct to use vocabulary text trough puzzle. The text aims to know the improvement of Scattergories game in teaching vocabulary in Mts Darul Hikmah Mojokerto.

E. Data Collecting Method

When we discuss the types of techniques and data, we are essentially discussing the same thing when we discuss evaluation. The goal is collect data that can later be analyzed by the researcher. The data collection technique refers to how the data for the study is gathered. The purpose of data collection in scientific research was to get material that was required for the study. The researcher used pre-test and post-test to collect data. The technique of collecting data as follow:

1. Pre – Test

Pre-test was a test given to students before the experimental treatment. It was administering for both VIII-A class experimental class and VIII-C class as control class to measure their vocabulary mastery. The researcher gave the test that contained 20 items of puzzle, each items has 5 score for every correct answer Pre-test was administered to experimental class and control class on Tuesday 25th May 2021.

2. Post – Test

The purpose of the post-test is to assess their capacity following treatment; it was provided to determine the student's basic competency as well as their prior knowledge. A post-test was given to both the experimental and control groups. The post-test was utilized to determine how the students' scores differed before and after treatment. For the experimental class, the researcher used the Scattergories game strategy, whereas for the control class, they used the standard technique. As like pre-test, post-test also contained 20 items of puzzle, each items has 5 score

for every correct answer. Post-test was administered to the experimental class on Thursday 27th May 2021 and control class on Friday 28th May 2021.

F. Validity and Reliability Testing

The test is utilized as a data gathering instrument, and validity and reliability testing are critical since the test's validity and reliability are used to verify that it is practical to employ

1. Validity

According to Brown (2004:22) as quote by isnawati (2011:16) Validity refers to a set of conclusions drawn from the assessment findings that are appropriate, relevant, and beneficial in relation to the assessment aim.

The validity and reliability of the instrument had to be checked through experimental study. According to Heaton (1988:159) the effectiveness of a test is determined by whether it measure only what it is supposed to measure. To see if the exam had acceptable content and construct validity, the researcher looked at it from both perspectives.

a. Content validity

If the content of the test is a good representation of language skills, structure, and other elements being researched, it is considered to have content validity. According to Glenn Fulcher and Fred Davidson (2007) Content validity refers to any attempt to demonstrate that the test material represents a sample of the domain

to be sampled that is indicative of the domain to be sampled. To assess whether a test has content validity, the skills or structure being tested must be specified. A comparison of test specifications with test content is used to determine content validity

b. Construct validity

Ary*el* al (2010:272) explained the construct validity of the psychological construct based on the subject, setting, treatment, and observation used in the experiment is known as construct validity. Based on the theory above, the researcher will utilize a writing test to assess students' vocabulary mastery in this study. As a result, in this exam, the researcher will ask students to discover language in a crossword puzzle to assess their vocabulary knowledge, which will satisfy the construct validity of the writing test and so be valid in terms of construct validity.

2. Reliability

According to Heaton (1988:162) each test is effective as a measuring tool that must be reliable, which is a criterion of reliability. The test was administered 20 students with the same grade as the sample of this research.

In this test, the researcher used split-half reliability, where the researcher involved two rates for scoring the students' vocabulary mastery. The two scores are then compared with the known reliability coefficients. The reliability coefficient must have a value of one. If the calculation result is close to one, the test is called high correlation. If the result is 0, the

correlation will be low. The researcher used SPSS 23 after trying out the instrument. Sarwono (2015:249) proposed the criteria of reliability as shown below:

Table 3.2 Criteria of Test Reabilitiy

No	Score	Criteria
1.	If the Guttman Split-Half Coefficient ≥ 0,80	Reliable
2.	If the Guttman Split-Half Coefficient ≤0,80	Unreliable

3.3 Result of Reliability Statistic

Reliability Statistics

Cronbach's Alpha	Part 1	Value	-.084[a]
		N of Items	10[b]
	Part 2	Value	.139
		N of Items	10[c]
	Total N of Items		20
Correlation Between Forms			.686
Spearman-Brown Coefficient	Equal Length		.814
	Unequal Length		.814
Guttman Split-Half Coefficient			.807

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

b. The items are: Soal_1, Soal_2, Soal_3, Soal_4, Soal_5, Soal_6, Soal_7, Soal_8, Soal_9, Soal_10.

c. The items are: Soal_11, Soal_12, Soal_13, Soal_14, Soal_15, Soal_16, Soal_17, Soal_18, Soal_19, Soal_20.

The result of calculation showed that reliability coefficient of the instrument was 0.807. Based on the criteria reliability the test was reliable.

G. Normality and Homogeneity Testing

Before analyzing the data using t-test, the researcher conducts preliminary data analysis:

1. Normality Testing

To identify whether the data follows a normal distribution, normality testing is required. The types of testing into two can be used to normality testing, those were Kolmogorov-Smirnov or Shapiro-Wilk. Based on in a journal of Oktaviani (2014), Dahlan (2010) states that if the research samples are more than 50, the normality test uses Kolmogorov-Smirnov and if research sample are less than 50, the normality uses Shapiro-Wilk. According to Nurul Chojimah (2020) steps in normality testing are as follows:

a. H_0 : The data are normally distributed

b. H_a : The data are not normally distributed

The normality testing assumptions stated that if H_0 was accepted, the data was normally distributed, and if H_a was accepted, the data was not normally distributed. The significance level is 0.05, and the researcher utilizes Kolmogorov-Smirnov. Because this study used 60 students as the research sample, it was created usin the SPSS bersion 23.

2. Homogeneity Testing

Homogeneity testing determines whether or not the variance of two samples from the same population is homogeneous. To determine the sample's homogeneity of variance score, the researcher utilized the homogeneity of variances test with SPSS 23. The value of significance (α) = 0,05. Based on Stanislaus (2009), the basic decisions making in homogeneity testing were as follows:

a. If the significance value > 0,05 then the data distribution is homogeneous
b. If the significance value < 0,05 then the data distribution is not homogeneous.

H. Hypothesis Testing

Hypothesis testing is necessarily initiated with the statement of both null and alternative hypothesis:

1. Null hypothesis (Ho)

   There is no different score to the eight grade before using Scattergories game and after using Scattergories game. The difference is not significant.

2. Alternative hypothesis (Ha)

   There is different score to the eight grade before using Scattergories game and after using Scattergories game. The difference is significant.

I. Method and Data Analysis

According to Ary*el* (2010:32) the data collected in the study required normality testing, whether normally distributed or not. The data will be compared between the first test (pre-test) and the second test (post-test) to see if there are any differences in scores before and after utilizing the scattergories game technique to teach. The researcher conducts a quantitative analysis of the data gathered. The researcher employed quantitative data analysis in this study. The statistical method is used to analyze the quantitative data. This method is used to determine if there is a substantial variation in the score after utilizing the Scattergories game.