CHAPTER III

RESEARCH METHOD

This chapter describes how the research study was conducted. It presents about method and design of the research, population and sample of the research, instrument of the research, the technique of collection and data analysis.

3.1 Research Design

This study uses a quantitative research approach method, which meets all the requirements for causal testing. This research design uses a pre-experiment design, using the type of one group pre - test post - test. In this pre-experiment research there is only one class that is treated by using word chain games. Sugiyono (2019) states that experimental research methods are defined as research methods to seek the effect of certain treatments on other treatments under controlled conditions. (Creswell 2020) states that with a pre experimental design, researchers study one group and provide interventions during the experiment. This design does not have a control group to compare with the experimental group.

At the beginning of the study, the researcher will give a pre-test to students to find out the initial value of students' vocabulary mastery before being given the word chain game treatment. After conducting the pre-test, the researcher will provide classroom treatment using the word chain game for three meetings. After the treatment has been given to students, the researcher gives the last test, namely the post-test to see if by using the word chain game there is a comparison and improvement in the pre-test and post-test scores.

The reason researchers use pre-experimental design is to determine the effect of a change with treatment and to determine the causal relationship between the independent variable and the dependent variable. The researcher wants to know whether the word chain game has an effect on students' vocabulary mastery. In this study, there was a pre-test before treatment. With this, the results will be more accurate than before the treatment. The researcher also chose one group pre - test post - test because the fifth grade at SDN 88 Gresik only has one class and the number of fifth grade students is also not too large, the researcher will be a little difficult and it is not possible for researchers to divide one class into two groups. Sugiyono (2017) This research design is described in table 3.1 as follows:

Table 3. 1 One Group Pre-test Post-Test Design

Pre – test	Treatment	Post – test
O_1	X	O_2

Description:

O_1 : Score of Pre – test

X : The Treatment Given

O_2 : Score of Post – test

Explanation:

O1: The researcher doing the first test to know the students' writing skills by giving the question before giving the treatment.

X: The researcher giving the treatment to students by applying the word chain game.

O2: The researcher doing the last test to know the students‟ writing skills by giving the question after giving the treatment

This research will apply experimental study to determine the effect of using word chain game on vocabulary mastery in the fifth grade elementary school students. The basic purpose of the experimental design is to is to test and determine the impact of the results of the treatment carried out on the final result and organize the factors that influence it.

3.2 Population and Sample

3.2.1 Population

According to Creswell (2008), Population is a group of people who have the same characteristics. The population of this study will be the fifth grade students of SDN 88 Gresik located in Tambak Rejo, Duduk Sampeyan, Gresik, East Java. SDN 88 Gresik is one of primary schools in Gresik. Fifth grade at SDN 88 Gresik only consists of one class. The reason the researcher chose the school was because before conducting the research, the researcher made observations and the researcher found problems in students' vocabulary mastery. Therefore, the researcher decided to conduct research at the school and wanted to improve their grades and understanding of their vocabulary in English. The requirement to become a participant in this study is that in learning English

they must have received material about learning vocabulary mastery by their English teacher.

3.2.2 Sample

According to Ary, and Donald (2010), Sample is part of the population. The sample of this study was fifth grade. The sample selection for this study used purposive sampling technique. Researchers use purposive sampling because the variables in this study require samples or students who have criteria or characteristics that match what is needed, so the use of purposive sampling is an appropriate technique in this study. As the researcher said earlier if the reason the researcher chose fifth grade as the research sample was because fifth grade students were appropriate classes and had characteristics or met certain criteria relevant to the objectives of this study.

Based on the survey results and interviews with teachers, grade 5 was chosen due to several considerations, including: 1. The students' scores in vocabulary mastery were very low and still needed to be improved, 2. The fifth grade students had received basic material about develop vocabulary into sentences from their English teacher. The researcher used a fifth grade sample of 31 students. 17 female students and 14 male students. The average score of fifth grade students at SDN 88 Gresik on writing skills is 70.96, which is arguably still lacking and needs to be improved again.

3.3 Data Collection

In this study, researchers used a quantitative pre-experimental study approach, so that the data collection techniques used for teaching vocabulary mastery using word chain games were written tests on the pre-test and post-test. The aim is to determine the effect of using word chain games on learning vocabulary mastery in grade V students of SDN 88 Gresik. The pre-test and post-test questions used were 25 questions and contained 2 types of questions. The first type of question is arranged words with a total of 17 questions. And the second type of question is a fill-in question where students write numbers with the correct letters, and this test totals 8 questions. The researcher chose this type of problem because this type was used by the teacher in class learning and in accordance with this research, the teacher also suggested this type of problem because in the type of problem used by the researcher, students made many mistakes when working on the problem.

Researchers conducted research using word chain games for 5 meetings with 3 treatments. The of the researcher will be as teacher. Researcher teacher will conduct pre-test, treatment, and post-test. The duration used by researchers when conducting treatment

is 1 treatment that is as much as 2 lesson hours. It is known that in elementary school 1 lesson hour is 30 minutes. So the researcher provides treatment for 1 hour. In this study, researchers were also involved in providing treatment. From giving the first to the third treatment, the researcher did it alone without the help of the English teacher. However, the English teacher monitored the researcher behind the classroom when the researcher gave the treatment using the word chain game to the students. After getting the data, the researcher analyzed the data using the SPSS version 29.0 program.

3.4 Research Instrument

3.4.1 Test

In this study, researchers used tests as data collection instruments. The tests used consisted of pre-test and post-test. The tests used by researchers have two types, the first type of problem is arranged words with a total of 17 questions. And the second type of question is a fill-in question where students write numbers with the correct letters, and this test totals 8 questions. The questions used in this study are the result of modifications made by the researchers themselves and the questions are taken from the students' textbooks and the reference questions used come from the syllabus of grade V SDN 88 Gresik and also the books used by students when studying in class. The purpose of the test given to students is to measure students' ability in vocabulary mastery after and before students are given treatment. The pre-test was conducted before the application of the strategy to determine students' ability to write the vocabulary. While the post-test was carried out after being given treatment to determine the extent to which the effect of using the word chain game method was able to improve students' vocabulary mastery.

3.4.1.1 Pre-Test

To measure students' ability in vocabulary mastery before being given treatment, researchers need to conduct a pre-test. A pre-test is an assessment conducted before an activity or learning program begins to measure students' knowledge, skills, or abilities related to the learning material. This helps to adjust their teaching to meet the needs of students and determine the effectiveness of teaching. pre-test questions consist of 25 questions with 2 types of questions. the first type is sorting words with 17 questions and the second type is filling in questions with a total of 8 questions. students work on pre-test questions for 2 lesson hours.

3.4.1.2 Post-Test

The post-test is conducted when the treatment has been carried out on students. Therefore, the post-test is carried out to see the progress or improvement of students' vocabulary mastery during class treatment and compare it with the pre-test score. the post-test questions given by the researcher are the same as the pre-test questions, namely 25 questions with 2 types of questions. the time for working on post-test questions is also the same as the pre-test, which is for 2 lesson hours.

3.5 Validity Testing

According to Sugiyono (2017) that the degree of accuracy between the data that actually occurs on the object and the data collected by the researcher. The validity test in research aims to ensure that the test can measure students' abilities accurately and reliably. It can also help researchers make valid conclusions about the research they are researching. In this study, the researcher utilized content validity to determine the ability, or knowledge, of the students tested in their writing test. A test is said to be valid if its results match its criteria. The validity test was conducted on grade five at SDN 87 Gresik with a total of 31 students.

The validity test of the instrument used was a fill-in question instrument with a total of 30 questions. The questions were tested in one class, namely grade five. The results of the instrument question test are attached in appendix 1. The question items can be said to be valid if r count> r table. If the sig value <0.05 then the question instrument can be said to be "valid". If the sig value> 0.05 then the instrument is said to be "invalid". It can be seen from the table above that the question items that r count> r table and are said to be valid are 29 questions.

3.6 Reliability Testing

According to Sugiyono (2017), it states that the extent to which the measurement of a test remains consistent after being repeated on the subject and under the same conditions. A reliable test is a test that is reliable and consistent. The reliability test aims to make the resulting data more accurate. In this study researchers used a test instrument. To see the accuracy of research data, it is not only seen from the validity test but also needs to be seen from the reliability test. To measure its reliability, researchers used SPSS tool 16.0 for windows using reliability analysis.

After conducting the validity test, there were 29 valid questions. However, the researcher reduced some valid questions with the strength of easy questions, until it

became 25 questions used in the study. The question was tested again with a reliability test. If the Cronbach's Alpha value> r-table then the test question is reliable but if the Cronbach's Alpha value < r-table then the test question is not reliable. The following are the results of the reliability test of the question items:

Table 3. 2 Question Item Reliability Test Result

Reliability Statistics

Cronbach's Alpha	N of Items
.960	25

From the data above, The researcher found that the pre-test and post-test were both reliable. This is known from the reliability of the test questions on SPSS 29.0. The reliability of 25 items is valid because the Cronbach's Alpha value is higher than the r-table which is 0.960.

3.7 Difficulty Testing

The level of difficulty is a question item that shows the percentage of students who answer correctly the question items presented. The level of difficulty is calculated using SPSS. The classification table for making basic categories in calculating the level of difficulty of questions can be seen in the appendix.

The classification table used in this study uses the classification table from (Arikunto 2012).The results obtained in the difficulty test are that there are 8 questions that fall into the category of very easy questions, there are 9 questions that fall into the category of easy questions, and there are 8 questions that fall into the category of moderate questions. the results can be seen in the appendix.

3.8 Data Analysis

3.8.1 Descriptive Analysis

In order to analyse the data, the researcher provide some procedures bellow:

1. Collecting the score of the students with the table:

Table 3. 3 Students Score of Pre-Test and Post-test

Code of Students	Experimental Class	
Experimental class	C	E
Students' Name		
SUM (Σ)		

Nb: C = Pretest, E = Posttest

2. Calculating the data to find out the mean, standard deviation and standard error, degree of freedom by using the formula as follows:

a. Mean

Where:

M =Mean

F = Frequency

Σ = The sum

X = The score

b. Measuring the sum of standard deviation

$$SD = \sqrt{\frac{\Sigma\, D2}{N} - \frac{(\Sigma D)2}{N}}$$

Where:

SD = Standard deviation

ΣD = The square deviation sum of experimental group

N = The total number of respondent

c. Measuring the Standard error

$$\text{SEM} = \frac{\text{SD}}{\sqrt{N-1}}$$

Where:

SEM = Standard error of the mean

SD = Standard deviation

N = Number of case

1 = Constant number

d. Measuring t-test between score of pre-test and post-test

$$\text{t0} = \frac{MD}{SEMD}$$

Where:

MD = Mean of different

SEMD = Standard error of the mean

t0 = T test

e. Calculate degree of freedom (d.f)

df = N-1

3.8.2 Inferential Analysis

1. Normality Test

This test used the Kolmogorov-Smirnov test because the researchers wanted to compare the data distribution to the normality test with the standard normal distribution. This test uses SPSS version 21 for windows. The distribution can be said to be normal or not. It can be seen from the value of the pre-test and post-test with the provisions of the level of significant $\alpha = 0.05$. The interpretation of the test of normality can be concluded as follows:

a. If the value of Sig. (2-tailed) is greater than the rate of 5% alpha (sig. (2-tailed) >0,05), it can be concluded that the data is derived from the populations that are normally distributed.

b. If the value of Sig. (2-tailed) is smaller than the rate of 5% alpha (sig. (2-tailed) < 0,05), it can be concluded that the data derived from the population distribution is not normal.

2. Hypothesis Test

To analyze the data of pre-test and the data of post-test scores, the researcher used the T test with paired sample t test by using SPSS version 21 for windows. The procedure inferential analysis in this research is:

Determine the hypothesis

Ha : There is significant effect using Word Chain Game on the students Vocabulary mastery for the fifth grade at SDN 88 Gresik.

H0 : There is no significant effect using Word Chain Game on the students Vocabulary mastery for the fifth grade at SDN 88 Gresik.

a. Determine the significant level (α)

A significant level of this research is $\alpha < 0,05$

b. Determine the criteria of the research:

$t0 < tt$: The alternative hypothesis (Ha) is accepted and the Null hypothesis (H0) is rejected. There is significant effect using Word Chain Game on the students vocabulary mastery for the fifth grade at SDN 88 Gresik.

$t0 > tt$: The alternative hypothesis (Ha) is rejected and the null hypothesis (H0) is accepted. It means that There is no significant effect using Word Chain Game on the students vocabulary mestery for the fifth grade at SDN 88 Gresik.