

## CHAPTER III

### RESEARCH METHODOLOGY

This chapter presents research methodology. There are some subs, those are research design, population and sample, research variable, instrument of the study, technique of collecting data and technique of analyzing data.

#### **3.1 Research Design**

In this research, the researcher used experimental research. Experimental research is a research method that is used to find out the certain treatment to some group in uncontrolled conditions (Mubarok, 2015, p. 78). In experimental design, the researcher used quasi experimental design. In this case, the design is nonequivalent control group design. So, the groups were chosen by the researcher. Quasi experimental design of nonequivalent control group design was not chosen randomly. In this design, both the experimental and control group are compared, although the group was selected and placed without random. Two groups that existed were given pretest, treatment and posttest (Mubarok, 2015, p. 91). It meant both of experimental group and control group were compared and chosen depended on the researcher. After that, both groups gave pretest, treatment and posttest.

In this research, the researcher gave pretest-posttest to each group. Pretest and posttest were given to each group for checking their ability. Pretest was given before treatment and posttest was given after treatment. From pretest, the

researcher knew initial condition in control group and experiment group. Then from posttest, the researcher knew the students' achievement after giving treatment in control group and experiment group. Here is the design of nonequivalent control group design as follow:

$$\frac{O_1 \times O_2}{O_3 - O_4}$$

(Sugiyono, 2011, p. 79)

Note

- $O_1$  : Pretest for experimental group
- $O_2$  : Posttest for experimental group
- X : Treatment for experimental group
- : Without treatment
- $O_3$  : Pretest for control group
- $O_4$  : Posttest for control group

### 3.2 Population and Sample

Population is a generalization area which consists of objects or subjects that have qualities and characteristics determined by control group and experiment group (Sugiyono, 2011, p. 80). The researcher conducted the research in SMA Negeri 1 Kembang in academic years 2019/2020. The researcher chose tenth grade students as the population. It consists of 10 IPA 1, 10 IPA 2, 10 IPA 3, 10 IPA 4, 10 IPS 1, 10 IPS 2, 10 IPS 3, 10 IPS 4 and 10 Bahasa. Here is the table of population as follow:

**Table 1 Population**

<b>No</b>	<b>Class</b>	<b>Total of Students</b>
1.	<b>10 IPA 1</b>	<b>33</b>
2.	<b>10 IPA 2</b>	<b>36</b>
3.	10 IPA 3	36
4.	10 IPA 4	33
5.	10 IPS 1	36
6.	10 IPS 2	36
7.	10 IPS 3	34
8.	10 IPS 4	31
9.	10 BAHASA	33

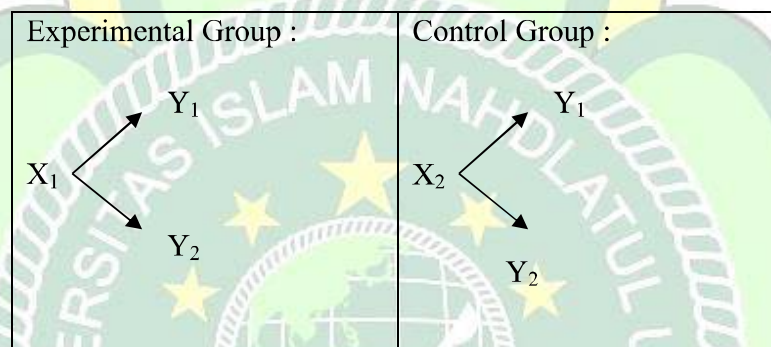
Sample is parts of characteristics of the population (Sugiyono, 2011, p. 81). In this research, the researcher needed sample to do this research. The sampling of this research was simple random sampling because the sample was taken from all population that was chosen randomly without looking up the strata of the population (Sugiyono, 2011, p. 82). The samples of the research were 10 IPA 1 and 10 IPA 2. The experimental group was 10 IPA 1 and the control group was 10 IPA 2. Experimental class was 32 students and control class was 32 students also.

### **3.3 Research Variables**

Research variable is an attribute, value, character from people, object or activities that have certain variation (Sugiyono, 2011, p. 38). There were 2 variables of this research, those were independent variable and dependent

variable. Independent variable is variable that influences the dependent variable (Sugiyono, 2011, p. 39). In this study, the independent variable was Kahoot. Dependent variable is a variable influenced by others variables (Sugiyono, 2011, p. 39) . In this study, the dependent variables were vocabulary mastery and learning motivation. Here are the tables of the research variables as follow:

**Table 2 Research Variables**



(Sugiyono, 2011, p. 45)

Notes:

X<sub>1</sub> = Kahoot

X<sub>2</sub> = Without Kahoot

Y<sub>1</sub> = Vocabulary Mastery

Y<sub>2</sub> = Learning Motivation

### 3.4 Instrument of the Study

In this research, the researcher used two different instruments. Those were test and questionnaire. Test was the first instrument. Test is a way to measure people's ability by giving specific questions (Mubarok, 2015, p. 59). The test was done in two sections, pretest (before treatment) and posttest (after

treatment). The pretest used to know initial of the students in experimental and control group. The post test used to know the students' achievement after giving treatment in control group and experiment group. The form of pretest and posttest were multiple choices. There were 50 questions that had to be answered by the students in experimental group and control group.

The researcher also used questionnaire as the instrument. Questionnaires are a group of questions that given to respondents to get some information (Mubarok, 2015, p. 43). In this research, the researcher used closes questionnaire. Close questionnaire is the form of questions or statement and then gives answers to be chosen by the respondent without any freedom to determine the answer (Mubarok, 2015, p. 45). Then, the researcher gave questions to the students from experimental group and control group. The questionnaire consisted of 15 questions and the students just answered the questions by giving checklist for the best answer based on their opinion. The questionnaire was given twice, before treatment and after treatment. After that, the researcher accumulated and calculated the answers to know the effectiveness of Kahoot application to improve learning motivation of the students.

### **3.5 Trying Out Instrument**

#### **a. Validity**

Validity means the instrument that may be used to measure what should be measured (Sugiyono, 2011, p. 121). In this research, the researcher did the try out the instrument. Trying out the instrument was

done to know the validity and reliability of the test. The formula of the validity is as follows:

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\}\{N \sum Y^2 - (\sum Y)^2\}}}$$

Note:

$r_{xy}$  : the validity of the item test

$N$  : the total of the students

$X$  : the total of the students who answer correctly

$Y$  : the students' score

(Arikunto, 2013, p. 213)

#### b. Reliability

Reliability is the requirement to do instrument validity (Widoyoko, 2015, p. 252). To determine the reliability of the test, the researcher used formula of K-R 21. The formula is as follows:

$$r_1 = \frac{k}{(k-1)} \left( 1 - \frac{M(k-M)}{kV_t} \right)$$

(Sugiyono, 2011, p. 132)

Note:

$r_1$ : reliability instrument

$k$  : the total item of questions

$m$  : mean of the total scores

$V_t$  : total variants

### 3.6 Technique of Collecting Data

#### a. Pre-test

Pretest is a way to know the initial ability of the students before the treatment. Pretest is a form of test that has many questions inside it. The researcher gave pretest to experimental class and control class. This pretest was to know the level of knowledge of students about the material that has been taught before. In this research, the researcher did the pretest on October 2<sup>nd</sup>, 2019 to experimental group and control group.

#### b. Treatment

Treatment is doing treat to experimental class and control class. This section is done after pretest. It was aimed to help students improve their skill. Here, the researcher implemented Kahoot for the experimental class. The purpose of the treatment was to help students improve their vocabulary mastery and learning motivation.

**Table 3 Treatment for Experimental Class and Control Class**

<b>Date</b>	<b>Meeting</b>	<b>Experimental Class</b>	<b>Control Class</b>
October 9 <sup>th</sup> , 2019	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Researcher explained announcement by using video learning, example text of announcement, book, and other references</li> <li>• Students saw, asked,</li> </ul>	<ul style="list-style-type: none"> <li>• Researcher explained announcement by using video learning, example text of announcement, book, and other references</li> <li>• Students saw, asked, and</li> </ul>

		<p>and explored the material</p> <ul style="list-style-type: none"> <li>• Students made conclusion based on students understanding about the material</li> </ul>	<p>explored the material</p> <ul style="list-style-type: none"> <li>• Students made conclusion based on students understanding about the material</li> </ul>
October 16 <sup>th</sup> , 2019	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Students came forward to present their discussion</li> <li>• Researcher introduced Kahoot and how to play the application to the students</li> <li>• Researcher used Kahoot to assess students' understanding about the material</li> </ul>	<ul style="list-style-type: none"> <li>• Students came forward to present their discussion</li> <li>• Researcher asked students to do exercise with their group</li> <li>• Researcher used Number Head Together to assess the students</li> </ul>

### c. Post-test

Posttest is a way to know students' achievement after giving treatment in control class and experimental class. The test was same as in pretest, but the list of questions were random. This section was aimed to check the improvement of the students after giving treatment. In this research, the researcher did the posttest on October 30<sup>th</sup>, 2019 to experimental group and control group.



### 3.7 Technique of Analyzing Data

In this research, the researcher used SPSS to get the result of the research. The researcher used SPSS 16 because it was the best types to calculate the data. The researcher also used multivariate analysis of variances (MANOVA) to measure the data. Manova is a statistic technique that was used to calculate the testing of the significance of the mean differences between groups for two or more variables produced. The researcher used manova because the researcher had 2 dependent variables that have to test in the same time.

In questionnaire, the researcher used closes questionnaire. Then, the researcher gave questions to the students from experimental group and control group. The questionnaire consisted of 15 questions and the students just answered the questions by giving checklist in the best answer. The researcher used Likert Scale to measure learning motivation of the students. Likert Scale is used to measure attitude, opinion and perception of people about social phenomena (Sugiyono, 2011, p. 93).

There are 4 scales in this research, those are really disagree, disagree, agree and really agree. After that, the researcher calculated them and administered questionnaire to categorize them into high motivation and low motivation. Here is the table of categorize as follow:

**Table 4 Categorize of Questionnaire Score**

No.	Last Score	Criteria
1.	3,26-4,00	Highly Motivated
2.	2,51-3,25	Well Motivated
3.	1,76-2,50	Low Motivated
4.	1,00-1,75	Bad Motivated

Adapted from (Widoyoko S. E., 2016, p. 191)

