

CHAPTER III RESEARCH METHODOLOGY

To find out the effectiveness of using words matching game to improve students' vocabulary, the researcher deemed the seventh-grade students of MTs NU Miftahul Ma'arif Kaliwungu to be studied. In chapter III includes research method, research population/sample, research participants/subject, instrument and data collection technique.

A. Research Method

This study is uses quantitative research. The aimed of this research is to know the effectiveness of words matching game to improve students' vocabulary. This research was conducted with a true experimental research design. True experimental research design is a research that participants are randomly assigned to either the experimen or the control group.¹ It means that the researcher would scramble students first and then pick them into control or treatment group.

The dependent variable is students' vocabulary while the independent variable is words matching game. The researcher used pretest-posttest control group design. There were two groups randomly were given a pre-test and post-test to find out whether there was a difference between the experimental group and control group.²

B. Research Population/Sample

The population of this research is two classes of seventh grade students at Islamic Junior High School NU Miftahul Ma'arif Kaliwung, namely VII A and VII B. Class VII A consist of 21 students and class VII B cosist of 30 students, so the total population was 51 students. Whereas the technique that researcher used in determining the research sample is simple random sampling technique. This technique is used to determine the sample without considering strata in the population because they are considered homogeneous.

Because this research was using true experimental research design and the seventh grade students only has two classes, the researcher cannot decided the participants of treatment and control group directly. But, the researcher need to scramble the participants first and pick them into the same number in each number. After that

¹ Sugiyono, Metode Penelitian Pendidikan : Pendidikan Kuantitatif, Kualitatif, dan R&D, (Bandung: Alfabeta, 2015), 112.

² Sugiyono, 112

each group will be taken 15 students randomly as the sample of this research. So, the total students whom researcher used to be samples are 30 students.

C. Research Participants/Subject

The researcher choose MTs NU Miftahul Ma'arif as location of her research. It's based on the researcher's observations while PPL there. The school is located at Kudus Jepara km 07 street, Kaliwungu Kaliwugu Kudus regency. The researcher examined seventh graders of MTs NU Miftahul Ma'arif Kaliwungu in academic year 2021/2022.

D. Design and Definition of Operational Variable

This section contains everything that becomes a research variable include the dimensions and indicators of each such variable. It is these that will be tested according to the data gathered through data collection.³ The explanation of the variables contained in the author's title is:

1. Independent Variable

Independen variable is a variable that influence or be a cause change/appearance of dependen variable.⁴ Independen variable written with X symbol on research. Words matching game as independen variable on this research.

Words matching game is one of the kinds of games that can be applied in teaching vocabulary. This game can be done in a way students have to match either words in target language with some pictures that describe about the definition of its word and vice versa. The purpose of this method is to improve students' vocabulary by fun activity.

2. Dependent Variable

Dependen variable is variable that affected or caused by independen variable.⁵ Dependen variable written with Y symbol on research. Vocabulary mastery as dependen variable on this research.

Vocabulary is the word that someone teach in the foreign language as a basic for their knowledge. Vocabulary is basic of language skills and the main communication tool. Because of

³ Siti Supaat dkk, Pedoman Penyelesaian Tugas Akhir Program Sarjana, LPM, 2018, 36.

⁴ Sugiyono, Statistika untuk Penelitian, 4.

⁵ Sugiyono, Statistika untuk Penelitian, 4.

that students have to improve their vocabularies first to be able to communicate in English easily. Furthermore, vocabulary give a big effect to students in mastery the other four skills.

E. Instrument and Data Collection Technique

The instruments used on this research were pre-test in the first meeting and post-test and questionnaire in the last meeting. The researcher used some techniques to get complete data, they were:

1. Test

In this research, the researcher used two test to collecting data:

a. Pre-test

The researcher given the pre-test in the beginning of attending class before the researcher applying the treatment. The pre-test used to measure students’ ability in vocabulary mastery. In the pre-test, all of students have to answer the questions that consisted of 25 questions with multiple choices type.

b. Post-test

The post-test was given by researcher after students got treatment at the end of the meeting. The aim of the post-test is to examine the effectiveness of using words matching game on students’ vocabulary. The researcher given 25 questions with multiple choices type to students at the experimental class.

Table 3.1
The Indicators of Test

| No. | Indicator | Number question | Total |
|-------|-----------|--|--------------|
| 1. | Noun | Number 1, 2, 3, 5, 6, 10, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 26, 31, 32, 34 | 20 questions |
| 2. | Verb | Number 7, 25, 28, 35 | 4 questions |
| 3. | Pronoun | Number 4, 9, 12, 27 | 4 questions |
| 4. | Adjective | 8, 11, 18, 19, 29, 30, 33 | 7 questions |
| Total | | | 35 questions |

2. Questionnaire

Beside the test, the researcher also administered questionnaires to seventh grade students of MTs NU Miftahul Ma’arif Kaliwungu to support the research results.

Questionnaire is one of collecting data type that contains a set of questions with written statement. The purpose of the questionnaire are distributed for knowing students' opinion about words matching game method can improve their vocabulary mastery.

Table 3.2
The Indicators of Questionnaire

| No. | Indicator | statement | | Total |
|-------|-------------------|--------------------------------------|--------------------------------|-------|
| | | Positive | negative | |
| 1. | Effective | 1, 3, 5, 6, 7, 9, 12, 14, 18, 21, | 2, 4, 8, 10, 13, 12, 15, 16 | 17 |
| 2. | Enjoyable | 11, 20, | 17, 19, 25 | 5 |
| 3. | Fun and Active | 23, 24 | 22 | 3 |
| Total | | | | 25 |

3. Documentation

Documentation used researcher to add the research data that researcher get from place of research directly. For example from relevant books, rules, activities, photos, and data that concern with research. Research results can be more believable if there are photographs or academic literature, art and other aspects that can support.⁶

F. Research Data Validity

The principle of research is to do measure, although not all researchers need a process of measurement. The process research must have a good measuring device in order to be accountable for its results. Collecting data have to using valid instruments and reliable.⁷ There are 2 criterias to an instrument that must be filled, they are validity and reliability:

1. Validity

A instrument is said to be valid if the instruments used according to what the research is intended to accomplish. Validity is a measure to determine that instruments can measure what should be measured and done assesment. This research used construct validity as validity test. At the testing of construct validity the researcher can use judgment experts.

⁶ Sudaryono, Metode Penelitian Pendidikan, (Jakarta: Kencana,2016),90.

⁷ Sugiyono, Statistika untuk Penelitian, 348.

After the instrument has been devised on the basis of the measurable aspects, it can be consulted to the experts. After the instrument tested by experts and empirical field experiences are completed, according to Sugiyono the instrumen must be tested in the sample.⁸ The instrument is said to be valid if the variable score correlates significantly with the total score. Testing uses a significant two-sided test 0.05, with the following criteria:

- a. If a correlation r count $< r$ table so the data is not valid.
- b. If correlation r count $> r$ table so the the data is valid.⁹

The formulation of moment products is as follows:

$$r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

Explanation:

r_{xy} = koefision correlation of product moment

n = respondent

$\sum X$ = score each item

$\sum Y$ = total score

$\sum XY$ = Number of the item scores with a total score

2. Reliability

Whereas the instrument is said reliable if it has a consistent value on the measurement of learning participants. It means that reliability test should be conducted in order to make the instrument reliable and appropriate. In addition, an instrument has good reliable level, when the instrument is used to measure the same object, it will be produces the same data.¹⁰

This research used Alpha Cronbach to testing the reliability. Using Alpha Cronbach test is done for instruments that have a correct answer more than one. The formula of coefficient reliability with Alpha Cronbach is as follows.¹¹

$$r_1 = \frac{k}{(k - 1)} \left\{ 1 - \frac{\sum s_t^2}{s_t^2} \right\}$$

Explanation:

K = number of items in the instrument

⁸ Sugiyono, Metode Penelitian pendidikan, 173.

⁹ Didi Nur Jamaludin, Penerapan Metodologi Penelitian dalam Pendidikan, (Institut Agama Islam Negeri Kudus 2020), 111.

¹⁰ Sugiyono, Metode Penelitian pendidikan, 173.

¹¹ Febrianawati Yusup, Uji Validitas dan reliabilitas Instrumen Penelitian Kauntitatif, Jurnal Ilmiah Kependidikan, Vol. 7, No. 1 (2018), 22.

$\sum s_t^2$ = mean square of mistakes

s_t^2 = varians total

Formula for varians total and varians item are follows:

$$s_t^2 = \frac{\sum x_t^2}{n} - \frac{\sum x_t^2}{n^2}$$

$$s_i^2 = \frac{JK_i}{n} - \frac{JK_s}{n^2}$$

Explanation:

JK_i = sum squared throughout score items

JK_s = square number of subjects

G. Data Analysis Technique

Data analysis is a step that researcher do when all the needed data in research is collected. The activities of data analysis includes: collecting the data based on variables and types of respondents, tabulating the data based on variable of all respondents, presenting the data based on each of the variables studied, calculating to answer research question and to calculate the hypothesis.¹²

This research used software of SPSS to analyze the data. Before analyzing the data with a t-test, the researcher have to measured instrument validity, reliability, normality and homogeneity of the data.it was aimed to know whether the instrument valid or not, the data normally and homogenous or not.

1. Normality

Normality was a test to know whether tha data were normally distributed or not. The researcher used shapiro wilk to testing the normality of the data. The criterias of normality test as follows:

- a) If sign. > α (0,05), then the data normally distributed population
- b) If sign. < α (0,05), then the data wasn't normally distributed population.¹³

2. Homogeneity

The homogeneity aimed to test the homogeneity (equality) of some samples. The formula that used to test homogeneity was test homogeneity of variance (levena of statistic). The criterias of homogeneity test as follows:

- a) If sign. > α (0,05), then the data was homogeneous

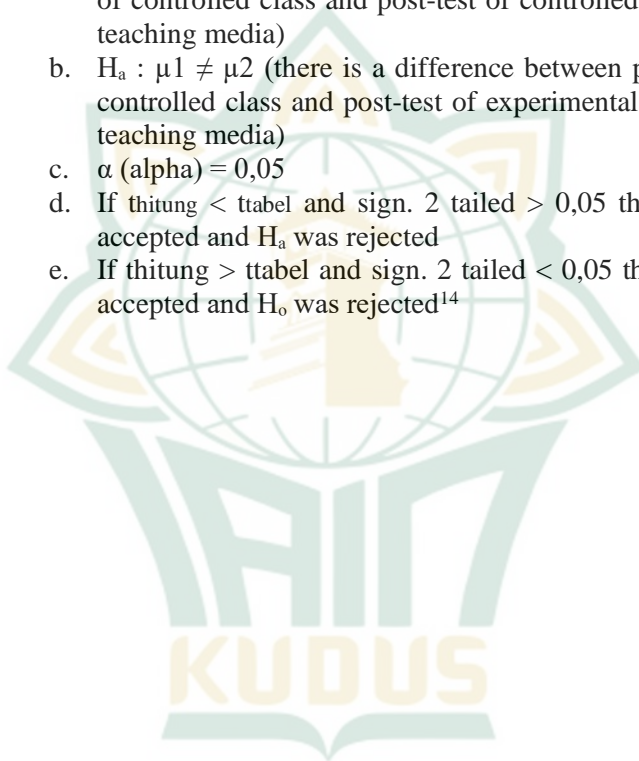
¹² Sugiyono, Metode Penelitian Pendidikan, 207.

¹³ Sugiyono,statistika untuk penelitian, (bandung:alfabeta,2017),107.

- b) If $\text{sign.} < \alpha (0,05)$, then the data was not homogeneous
3. Statistical hypothesis

After getting the data from pre-test and post-test, the researcher analyze the data to examine hypothesis. The researcher used independent sample t-test to investigate between the influence of words matching game and students' vocabulary. The criterias of hypothesis test as follows:

- a. $H_0 : \mu_1 = \mu_2$ (there is no any difference between pre-test of controlled class and post-test of controlled class with teaching media)
- b. $H_a : \mu_1 \neq \mu_2$ (there is a difference between post-test of controlled class and post-test of experimental class with teaching media)
- c. α (alpha) = 0,05
- d. If $t_{hitung} < t_{tabel}$ and $\text{sign. 2 tailed} > 0,05$ then H_0 was accepted and H_a was rejected
- e. If $t_{hitung} > t_{tabel}$ and $\text{sign. 2 tailed} < 0,05$ then H_a was accepted and H_0 was rejected¹⁴



¹⁴ Kadir, statistika terapan, (jakarta: PT raja grafindo persada,2015), 175.