

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

The method in this research is quantitative research. According to Sugiyono (2018: 14) quantitative research methods can be interpreted as research methods based on the philosophy of positivism, used to research certain populations or samples, sampling techniques are generally carried out by means of quantitative/statistical data analysis with the aim of testing predetermined hypotheses . In the experimental class, researcher will use Word Wheel games, while in the control class, researcher will use conventional methods. At the end of the experimental class and control class will be given a post test. In this study, researchers used a quasi-experimental design, especially the pre-test and post-test nonequivalent groups design. (Sugiyono, 2015: 116).

Table 3.1

The Research Design

Class	Pretest	Treatment	Posttest
Experiment class	01	Word wheel games	02
Control class	03	Conventional Method	04

3.2 Population and Sample

3.2.1 Population

The research population is all the objects studied and analyzed. According to Sugiyono (2018: 117) population is a generalized area consisting of objects or subjects that have well-ordered qualities and characteristics that are applied by researchers to study and then draw conclusions. The population of this study was students of class X SMA Budi Agung Medan. The researcher determined the research location at SMA Budi Agung Medan. Budi Agung Medan Senior High School located in North Sumatra Province, Medan with the address Jl. Plantina Raya, Rengas Pulau , Marelan.

TABLE 3.2

Population of SMA SWASTA BUDI AGUNG MEDAN

NO	CLASS	POPULATION
1.	X Ibnu Sina	35
2.	X Abu bakar	35
3.	X Al Battani	35
4.	X Isaac Newton	32
5.	X Aristoteles	32
6.	X Jendral Sudirman	32
	X Aguste Comte	32
	Total	233

3.2.2 Sample

According to Sugiyono (2018:37) the sample is part of the number and characteristics of the population. Sample in this research decides with total sampling and from that technique acquires two classes of 70 students, that each class is separated into experimental class and (word wheel) and control class (teaching vocabulary using conventional method).

Table 3.3

The Sample of the Research

No	Class	Sample
1	x – Ibnu Sina	35
2	x –Abu Bakar	35
Total		70

3.2 Treatment

The researcher divided the control class and the experimental class, namely class X Abu Bakar as the control class and class X Ibnu sina as the experimental class. Before giving treatment, the researcher first gave a pre-test to assess students' vocabulary tests. The pre-test was conducted to find out the students' vocabulary before being given treatment. Experimental and control classes was used the same materials with different instruments. After the researcher has done the treatment, the researcher was gave a post-test for both classes.

Table 3.4 The Treatment in The Experimental Class

Frist Meeting
• Opening The teacher greets the students and the teacher asks how the students are doing, after which the teacher invites students to pray together before the lesson begins.
• Main Activity Stimulation - The teacher asks the students opinions the influence of word wheel games vocabulary mastery. problem statement - Students are asked to observe some of the words that are on the Media word wheel in front, then students are asked to interpret between the existing key words, for example if in a noun there are people, animals, then say it, for example a cat Data Collection - - Students are given worksheets to find and master vocabulary based on their own knowledge.
• Closing - The teacher ends the first meeting.

Second meeting
• Opening The teacher greets the students and the teacher asks how the students are doing, after which the teacher invites students to pray together before the lesson begins.
• Main Activity Data Processing - Students are asked to play the media and follow the directions of the game instructions, dance the appropriate vocabulary obtained from the round and say the meaning in English. - Students are asked to write down the vocabulary words and their meanings in front of the Verification - The teacher gives a presentation about what is a word wheel and invites students to be actively involved in the learning process. Generalization - Students are asked to write words from the media that is played and obtained from each group
• Closing - The teacher ends the second meeting.

Third Meeting
• Opening The teacher greets the students and the teacher asks how the students are doing, after which the teacher invites students to pray together before the lesson begins.
• Main Activity Explanation - The teacher gives an explanation of word wheel games. - The teacher explains how to apply the word wheel games
• Closing - The teacher ends the third meeting.

Fourth Meeting
• Opening The teacher greets the students and the teacher asks how the students are doing, after which the teacher invites students to pray together before the lesson begins.
• Main Activity Creating - The students are asked to applied Word wheel to vocabulary mastery. Share - The teacher shows the games then the students are asked to write the

meaning of the word wheel game
• Closing - The teacher ends the lesson

Table 3.5 The Treatment in The Control Class

five meetings	Students' Activity
Opening • The teacher greets the students and the teacher asks how the students are doing, after which the teacher invites students to pray together before the lesson begins. Main Activity • The teacher asks the students prior knowledge about vocabulary • The teacher explains about vocabulary mastery Closing • The teacher ends the lesson and telling the activity for next meeting	• The students answer the greeting • The students mention vocabulary based of their prior knowledge • The students pay attention to the teacher explanation.

Six meetings	
Opening - The teacher greets the students and the teacher asks how the students are doing, after which the teacher invites students to pray together before the lesson begins. - Teacher asks the students' understanding about the material before. Main Activity - Teacher explains about vocabulary mastery. - The teacher asks students to write vocabulary based on their own understanding. Closing - The teacher ends the lesson and telling the activity for next meeting.	- The students answer the greeting - The students answer the teacher question - The students pay attention to the teacher explanation. - The students write vocabulary individually.

Seven meetings	
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Opening • The teacher greets the students and the teacher asks how the students are doing, after which the teacher invites students to pray together before the lesson begins. Main Activity • The teacher explains about vocabulary mastery • The teacher asks students to memorize the vocabulary they write Closing • The teacher ends the lesson and telling the activity for next meeting	• The students answer the greeting. • The students pay attention to the teacher explanation • The students asks their difficult to the teacher
Eight meeting Opening • The teacher greets the students and the teacher asks how the students are doing, after which the teacher invites students to pray together before the lesson begins. • The teacher asks about students vocabulary last meeting	• The students answer the greeting

Main Activity • The teacher asks students to write down the vocabulary on the board along with its meaning. • The teacher asks students to read ahead. Closing • The teacher ends the lesson	• The students pay attention to the teacher. • Students read the vocabulary and its meaning in front of the class.
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3.2 Research Instruments

The data collection instrument in this study is a test consisting of 20 items. In data collection, pre-test and post-test was carried out in both the experimental and control groups. Students was gave a test consisting of 20 items. In assessing the test, the researcher used a score range of 0-100 by calculating the correct answers and applying the following formula:

$$S = R \times 100$$

Where:

S : The score

R : The number of the correct answer

N : The number of test item

3.5 Reliability and Validity of Instruments

3.5.1 Reliability

Reliability or reliability of an instrument is stability or stability between the results of observations with instruments or measurements Wahyono (2012), in Nurjnah (2013:32). A measuring instrument has good reliability if the measuring instrument has a reliable consistency even if it is done by anyone (at level the same), at any time. To measure the reliability of the questions using the formula, namely:

$$r_{11} = \left(\frac{n}{n-1} \right) \left(\frac{S^2 - \sum pq}{S^2} \right)$$

Where:

N = Sample size for the test.

P = Proportion of people passing the item.

Q = Proportion of people failing the item.

S^2 = Variant total.

R_{11} = Reliabilities instrument.

The value of reliability coefficient (Guilford, 1956) as he following:

0,80 – 1,00	:The realibility is very good
0,60 – 0,80	: The realibility is good
0,40 – 0,60	: The realibility is significant
0,20 – 0,40	: The realibility is low
-1,00 – 0,20	: The realibility is very low (Not reliable)

The value of $r_{11} = 0.5145$ and less than the minimum value of r_{11} according to the provisions stated by Heale and Twycross, which is 0.70 or in other words r_{11} count is smaller than 0.70 ($0.5145 < 0.70$) which is meaning that the questions are not reliable, that is, there is a possibility if several times asked students will produce different measurement results (Heale & Twycross, 2015) in Nurjanah (2013:32).

3.5.2 Validity

According to Arikunto (2010:211) stated validity is a measurement that indicates the level of validity instrument. In this research, the researcher will use content validity. To test the content validity, the researcher uses Pearson Moment Products with the formula adopted from Arikunto (2010) as followed:

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

r_{xy} = The product of the total amount variable X and Y

N = The number of data pairs X and Y

$\sum X$ = The total of variable Y

$\sum Y$ = The total of variable X

$\sum X^2$ = The squared total amount of variable X

$\sum Y^2$ = The squared total amount of variable Y

3.6. Technique of Data Collection

Data was collected from class X SMA Budi Agung Medan. Researcher collected data using the pre-test and post-test experimental class and control class. The results of the pre-test and post-test of the two classes was compared to see a significant difference between students' vocabulary mastery abilities with word stem games. In collecting data, researcher was used pretest, treatment, and post-test.

3.7 Technique of Data Analysis.

The researcher used Statistical Package for the Social Science (SPSS) for analyzing the data. Alan Bryan and Duncan Cramer (2005:21) stated SPSS is a manipulating, analyzing, and presenting data program which used in the social and behavior science. After the data is collected from the pre-test and post-test, the researcher analyze the data with the T-test formulation. The analysis of the data using the Ttest formulation is in the following

$$t = \frac{ma - mb}{\left(\frac{da^2 + db^2}{na + nb - 2} \right) \left(\frac{t}{na} + \frac{t}{nb} \right)}$$

Where:

T : Total score

Ma : The mean of experimental group

Mb : The mean of control group

da : The standartd deviation of experiment group

db : Thestandartd deviation of control group

Na : The total number sample of experiment group

Nb : The total number sample of control group.