

CHAPTER III

RESEARCH METHOD

3.1. Research Design

The researcher conveyed the research as quantitative method. Sugiyono (2009: 14) Quantitative Research Methods can be interpreting as a research method base on the philosophy of positivism, using to examine certain populations / samples, sampling techniques are generally carried out randomly, data using research instruments, quantitative / statistical data analysis with the aim of hypotheses that have been set. So that in quantitative research, according to the name, many are requiring to use numbers, starting from the data, the interpretation of the data, and the appearance of the results (Arikunto: 2006).Based on expert definition above, it was indicatingthis research is research that used numbers in data presentation and analysis using statistical tests.

This research used experimental design. Experimental research is research conducting with a scientific approach using two sets of variables. There were several types of pre-experimental designs, namely: One-Shot Case Study, One-Group Pre-test–Post-test Design, One Group Pre-test–Post-test Design, and Intact-Group Comparison. So the research design used in this study is form One Group Pre-test–Post-test design. This research design were control class and experimental class and given a pre-test and post-test.

Table 3.1 Research Design

Class	Pre-test	Treatment	Post-test
Control class	√	Conventional way	√
Experimental class	√	Simile games	√

3.2. Population and Sample

3.2.1. Population

Population was totally the sample of research subject (Arikunto, 2006:130). The population of this research was taking from the eighth grade students of SMP Swasta BPI Paluh Kurau.

3.2.2. Sample

Sample is a portion of that population (Sugiyono, 2013:389). Sample in this research decided with *Total Sampling* and from that technique acquiring two classes of 54 Students, that each class separated into Experimental Class (Teaching vocabulary using Simile games) and Control class (Teaching vocabulary used conventional technique).

Table 3.2 The sample of the Research

No	Class	Population	Sample
1	VIIIa(Control class)	27	27
2	VIIIb (Experimental Class)	27	27
Total			54

3.3. Treatment

First of all, the researcher separated classes into control class and the experimental class, namely class VIIIa as the control class and Class VIIIb as the experimental class. Both

of the experimental class and the control class given a pre-test to determine the students' prior abilities. Then the experimental class taught by used simile games. While, the control class taught by using conventional method.

After given treatment, the final phase to calculate how far the effect of this technique in the way to increase students' vocabulary, then post-test given to both experimental and control classes.

Table 3.3 The Treatment in The Experimental Class

First Meeting
<ul style="list-style-type: none"> • Opening <ul style="list-style-type: none"> - The researcher greeted the students and the teacher asked how the students are doing, after which the teacher invited students to pray together before the lesson begun.
<ul style="list-style-type: none"> • Main Activity <ul style="list-style-type: none"> Stimulation <ul style="list-style-type: none"> - The researcher asked the students opinions the effect of simile games to increase vocabulary mastery. Problem statement <ul style="list-style-type: none"> - Students asked to observe the clues given by the teacher, then students asked to look for the simile of the words. Data Collection <ul style="list-style-type: none"> - The students given worksheet to make the simile games vocabulary mastery based on their own knowledge.
<ul style="list-style-type: none"> • Closing <ul style="list-style-type: none"> - The researcher end the first meeting.

Second meeting
<ul style="list-style-type: none"> • Opening - The researcher greeted the students and the teacher asked how the students are doing, after which the teacher invited students to pray together before the lesson begins.
<ul style="list-style-type: none"> • Main Activity <p style="margin-left: 40px;">Data Processing</p> <ul style="list-style-type: none"> - Students was asked to guess things in the class and its meaning in English. - Students asked to write vocabulary and their meaning in front of the blackboard. <p style="margin-left: 40px;">Verification</p> <ul style="list-style-type: none"> - The teacherer provided simile games presentations and invited students to be actively involved in the learning process. <p style="margin-left: 40px;">Generalization</p> <ul style="list-style-type: none"> - Students was asked to write words from objects that are in the class.
<ul style="list-style-type: none"> • Closing - The researcher end the second meeting.
Third meeting
<ul style="list-style-type: none"> • Opening - The researcher greeted the students and the teacher asked how the students are doing, after which the teacher invited students to pray together before the lesson begun.
<ul style="list-style-type: none"> • Main Activity <p style="margin-left: 40px;">Explanation</p>

<ul style="list-style-type: none"> - The researcher given an explanation of simile games technique. - The researcher explained how to apply the simile games technique.
<ul style="list-style-type: none"> • Closing - The researcher end the third meeting.

Fourth meeting
<ul style="list-style-type: none"> • Opening - The researcher greeted the students and the teacher asked how the students are doing, after which the teacher invited students to pray together before the lesson begun.
<ul style="list-style-type: none"> • Main Activity <p style="margin-left: 20px;">Creating</p> <ul style="list-style-type: none"> - The students was asked to applied simile games technique to vocabulary mastery. <p style="margin-left: 20px;">Share</p> <ul style="list-style-type: none"> - The researcher showed the clues then the students asked to write the simile of the words.

Table 3.4 TheTreatment in The Control Class

Meeting	Teacher activity	Students' activity
I	<ul style="list-style-type: none"> • Opening - Thereasearcher greeted the students and the teacher asked 	<ul style="list-style-type: none"> - The students answerd the greeting.

	<p>how the students are doing, after which the teacher invited students to pray together before the lesson begun.</p>	
	<ul style="list-style-type: none"> • Main Activity - The researcher asked the students prior knowledge about vocabulary. - The researcher explained about vocabulary mastery. 	<ul style="list-style-type: none"> - The students mention vocabulary based of their prior knowledge - The students pay attention to the teacher explanation.
	<ul style="list-style-type: none"> • Closing - The researcher end the lesson and telling the activity for next meeting. 	
II	<ul style="list-style-type: none"> • Opening - The researcher greeted the students and the teacher asked how the students are doing, after which the teacher 	<ul style="list-style-type: none"> - The students answered the greeting - The students answered the teacher question

	<p>invites students to pray together before the lesson begins.</p> <ul style="list-style-type: none"> - Researcher asked the students' understanding about the material before. 	
	<ul style="list-style-type: none"> • Main Activity - Researcher explained about vocabulary mastery. - The Researcher asked students to write vocabulary based on their own understanding. 	<ul style="list-style-type: none"> - The students pay attention to the teacher explanation. - The students write vocabulary individually.
	<ul style="list-style-type: none"> • Closing - The Researcher end the lesson and was telling the activity for next meeting. 	
III	<ul style="list-style-type: none"> • Opening - The Researcher greeted the students and the teacher asked 	<ul style="list-style-type: none"> - The students answered the greeting.

	<p>how the students are doing, after which the teacher invited students to pray together before the lesson begun.</p>	
	<ul style="list-style-type: none"> • Main Activity - The Researcher explained about vocabulary mastery. - The Researcher asked students to memorize the vocabulary they write. 	<ul style="list-style-type: none"> - The students pay attention to the teacher explanation. - The students asked their difficult to the teacher.
IV	<ul style="list-style-type: none"> • Opening - The Researcher greeted the students and the Researcher asked how the students are doing, after which the Researcher invited students to pray together before the lesson begun. - The Researcher asked 	<ul style="list-style-type: none"> - The students answered the greeting

	about students vocabulary last meeting	
	<ul style="list-style-type: none"> • Main Activity - The Researcher asked students to write down the vocabulary on the board along with its meaning. - The Researcher asked students to read ahead. 	<ul style="list-style-type: none"> - The students pay attention to the teacher. - The students read the vocabulary and it was meaning in front of the class.
	<ul style="list-style-type: none"> • Closing - The Researcher end the lesson 	

3.4. Research Instruments

The instrument of this research was a test. To obtain the data in this research, the researcher used multiple choicetest with total of 20 items. In scoring the test, the researcher was score ranging from 0 – 100 by counting the correct answer and applying this formula :

$$s = \frac{R}{n} \times 100$$

Where :

S = The score

R = The number of the correct answer

N = The number of test item

3.5. Validity and Reliability of Instruments

3.5.1. Validity

Maxwell (1996 :87) that “validity is truth or credibility of descriptions, conclusions, explanations, interpretations”. Marecki (2009) describes validitas as “evaluation of an extent to which the research evidence supports or justifies the interpretations and conclusions that are based on it”. Then Kimberlin and Winterstein said “validity is often defined as the extent to which an instrument measure what it purports to measure”. Something the questionnaire / test is said to be valid if the questions on the questionnaire / test are capable to reveal something that the questionnaire will measure (Kimberlin & Winterstein, 2008).

In determine the suitability of an item used, usually the significance level of the correlation chore efficient test carried out at a significance level of 0.05 an item considered valid if it had a significant correlation to the total score. Technique testing that was often used by researchers to test the validity was using the Pearson moment product correlation. With the significance test if $r_{\text{count}} \geq r_{\text{table}}$, then the instrument or question items had a significant correlation to total score (declared valid). The formula used (Product Moment Correlation):

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

Where :

r_{XY} : X and y coefficients and correlations (pearson - r)

$\sum XY$: The sum of the squares the item multiplies by the total score

$\sum X$: Total item score

$\sum Y$: Total score total

N : The number of subjects in the sample studied

$\sum X^2$: Sum of squares of item score

$\sum Y^2$: The sum of the squares of the total score

Provision if $r_{count} > r_{table}$ then the question was valid and conversely, if $r_{count} < r_{table}$ with $df = n - 2 = 20 - 2 = 18$ for the level 5% error then the question was invalid. To determine the extent to which the validity of a questionnaire done by interpreting the correlation questionnaire (Arikunto, Suharsimi 2002: 245) below is the interpretation of the r value:

Tabel3.5 The Interpretation of the Value

The Value of r	Interpretation
Between 0.800 until 1,00	High
Between 0,600 until 0,800	Enough
Between 0,400 until 0,600	A little low
Between 0,200 until 0,400	Low
Between 0,000 until 0,200	Very low (not correlation)

Validity indicated by the support or support for the total item. If we used more than one factor, it means that the item test validity was obtaining by correlating the item score with the factor score, then we can correlate the item score with the total factor score. From the calculation results obtainwas being a data obtain from the data using to measure the level of validity of an item and determine whether an object is suitable for use or not. Only valid items can then was being tested for reliability. The testing technique that was often used by researchers in SPSS to test the validity is to use the Pearson Bivariate Correlation and Corrected Item-Total Correlation.

Testing criteria

- If $r \text{ count} \geq r \text{ tabel}$ (2-sided test with sig. 0.05): the instrument was valid
- If $r \text{ is calculated} < r \text{ table}$ (2-sided test with sig. 0.05): the instrument was invalid

Steps to use the SPSS application :

- Click the *variable view* in the SPSS data editor.
- In the *Name* column, type score_1 to score_10 and total score.
- In the *Decimals* column, change the number to 0 for all items.
- Other columns can be ignored (default).
- Open the *data view* in the SPSS data editor.
- Enter the data according to the variables (including the total score).
- Click *Analyze - Correlate - Bivariate*.
- Enter all variables or items into the variables box
- Klick **OK**.

3.5.2. Reliability

Reliability or reliability of an instrument is stability or stability between the results of observations with instruments or measurements (Wahyono, 2012). A measuring instrument (instrument) had good reliability if the measuring instrument had a reliable consistency even if it was done by anyone (at level the same), wherever and whenever they are. To measure the reliability of the questions used the alpha - cronbach formula: namely:

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

Notes:

r_{11} = coefficient reliability item test

n =sum of test

$\sum \sigma_i^2$ = the number of grain variances

σ^2 = the total variance value

This instrument reliability testing carried out on 20 students with significance level of 5% and degrees of freedom (df) = $n - 2 = 20 - 2 = 18$, so that 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 was meaning that the questions are not reliable, that is, it was possible if several times asked students produced different measurement results (Heale & Twycross, 2015).

Reliability test used to determine the consistency of measuring instruments, whether the gauges used reliable and remain consistent if the measurement was repeat. A questionnaire said to be reliable (reliable) if someone's answer to a question was consistent or stable over time. Reliability testing was only done on valid variables.

SPSS Reliability Test Procedure :

- Klick *Analyze - Scale - Reliability Analyze*.
- Enter a valid variable (after being tested with a validity test) into the items box.
- Click *Statistics*, under Descriptives for click Scale of deleted items.
- Klick *Continue*.
- Klick *OK*.

The output results

Table 3.6 Reliability Statistics

Cronbach's Alpha	N of items
.887	5

Table 3.7 Item-Total Statistics

	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Skor_2	11.75	12.932	.583	.892
Skor_3	11.92	11.902	.703	.867
Skor_4	11.42	11.720	.736	.860
Skor_6	11.75	11.114	.814	.842
Skor_7	11.83	9.970	.812	.843

If $\alpha > 0.7$ means that the reliability was perfect. If α is between 0.70-0.90 then the reliability was high. If $\alpha < 0.50$ then reliability is low. If the α was low that the item is not reliable.

3.6. Technique of Data Collection

Data collection techniques were the most important step in research, because the main purpose of research is to get data. Without knowing the data collection technique, the researcher was not get data that meets the fixed data standards. The technique that the researcher was used in collecting data were pre-test, treatment and post-test. Described as follows:

3.6.1 Pre-test

Both Experimental and Control classes was given the Pre-test to calculate their scores before given the treatment.

3.6.2 Treatment

The treatment was given for both classes (VIIIa and VIIIb) were same material of teaching vocabulary. The experimental class used Simile games technique and Control class was used conventional method.

3.6.3 Post-test

After given treatment, the final phase to calculate how far the effect of this method in the way to increase student's vocabulary, then post-test given to both Experimental and Control classes.

3.7. Technique of Data Analysis

In this research, quantitative used to measure the score of the students. The data that collected from Pre-test, Post-test calculated to measure their ability before and after the treatment has been given. And the procedures as follows:

1. Analyzing the students' answered for pre-test
2. Analyzing the students' answered for post-test (experimental and control groups)
3. Finding out the percentage of the students' achievement by the following rule:

Tabel 3.8 The Percentage of the Students' Achievement

Standard Calculation of the Students' Ability Score	Description	Ability
9,00 – 10,00	A (Very good)	Able
8,00 – 8,99	B (Good)	Able
7,00 – 7,99	C (Enough)	Able
0,00 – 6,99	D (Not pass)	Unable

Source: Departemen Pendidikan Nasional, direktorat Jenderal Pendidikan Dasar dan Menengah, Direktorat Pendidikan Menengah Kejuruan, Jakarta, 2008

4. Finding out the mean, and the percentage of the students' achievement (experimental and control groups).
5. Answering the research problems:

Is there effect of using simile games to increase students' vocabulary skills at the eighth grade of SMP Swasta Bpi Paluh Kurau?

6. Finding out the validity and reliability of the tests. Ary (224: 2010) defines validity as the extent to which scores on a test enable one to make meaningful and appropriate interpretations. Meanwhile reliability indicates how consistently a test measures whatever it does measure. Sugiyono (356: 2007) suggests the following formula:

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

Where :

r_{XY} : X and y coefficients and correlations (pearson - r)

$\sum XY$: The sum of the squares the item multiplies by the total score

$\sum X$: Total item score

$\sum Y$: Total score total

N : The number of subjects in the sample studied

$\sum X^2$: Sum of squares of item score

$\sum Y^2$: The sum of the squares of the total score

Meanwhile to find out the reliability of the alpha - cronbach formula following:

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

Notes:

r_{11} = coeficient reliability item test

n = sum of test

$\sum \sigma_i^2$ = the number of grain variances

σ_t^2 = the total variance value