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CHAPTER III

RESEARCH METHOD

A. Research Design

This research was a quasi-experimental research. According to Creswell (2009:145), experimental research is to test the impact of a treatment on an outcome, controlling for all other factors that may influence that outcome. This research operated two variables, they were; an experimental group and a control group. The design of this research was a quasi-experiment; itended to find out the effect of using Board Word Game on students' vocabulary comprehension.

In this research, the researcher took two classes. They were an experimental class and a control class. The resercher only gave the students treatment during six meetings and made the lesson plans. Meanwhile, the control group was not given treatment. After experimenting, the students were given a post test. They were treated differently. The experimental group was treated by using Board Word Games, whereas, the control was treated as usual without using Board Word Game.

According to Creswell (2012: 310), the design of this research can be illustrated as follows:

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Table III.1
Research Design

Class	Pre-test	Treatment	Post-test
Experiment	T1	X	T2
Control	T1	θ	T2

Note:

T1: Pre-test to experiment and control class

T2: Post-test to experiment and control class

θ: No treatment

X: Receiving treatment, that is Board Word Games Technique

B. Time and Location of the Research

1. Location of the Research

This research was conducted at State Junior High School 02 Bangkinang that is located on Laboi Jaya, Kampar regency.

2. Time of the Research

This research was conducted on July 2016.

C. Subject and Object of the Research

1. The subject of the Research

The subject of this research was the first grade of State Junior High School 02 Bangkinang.

2. The object of the Research

The object of this research was the effect of using Board Word Game on students' vocabulary comprehension.

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D. Population and Sample of the Research

1. Population

The population of this research was the first grade of State Junior High School 02 Bangkinang. There were 117 students, which consisted of four classes, they were; VII A, VII B, VII C, and VII D. It can be seen as follows:

Table III.2
The Total Population of the First Grade of State Junior High School 02 Bangkinang

No	Class	Population		
		Female	Male	Total
1	Class VII A	16	13	29
2	Class VII B	16	13	29
3	Class VII C	16	13	29
4	Class VII D	17	13	30
Total		65	52	117

2. Sample

According to Freankle et.al, (2012:96), the selection of group or clusters, of subjects rather than individuals is known as cluster random sampling. Therefore, Gay and Airasian (2010:123) stated that random sampling is the process of selecting a sample in such a way that all individuals in the defined population have an equal and independent chance as the samples. Likewise, Keppel (1991) in Creswell (2009:155) stated that with random selection or random sampling, each individual has an equal probability of being selected from the population, ensuring that the sample will be the representative of the population.

The writer took the sample by doing cluster random sampling. Based on the data above, the writer concluded that the experimental class was VII

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A, and the control class was VII B. The total sample of this research was 58 students.

Table III.3
The Total Sample of the First Grade of State Junior High School 02 Bangkinang

No	Class	Sample			Experiment/ Control class
		Female	Male	Total	
1	VII A	16	13	29	Experimental class
2	VII B	16	13	29	Control class
Total		32	26	58	

E. Technique of Collecting Data

1. Test

In the research, the researcher used test to collect the data (pre-test and post-test). Both of these were given to the experimental and control class. The type of the test was multiple choice test. The test consisted of 25 items. The test was done twice, the first was pre-test given before treatment and the second was post-test given after treatment intended to obtain the vocabulary comprehension of the students at State Junior High School 02 Bangkinang.

The blue print of the vocabulary comprehension test is as follows:

Table III.4
The Blue Print of The Test

No	INDICATORS	NUMBER OF ITEMS	TOTAL
1	The students are able to spell the word correctly in English	2, 8, 14, 19, 23	5 items
2	The students are able to use correct word grammatically	3, 6, 12, 18, 21	5 items
3	The students are able to mention the correct meaning of words	1, 7, 11, 16, 22	5 items
4	The students are able to find the synonym or antonym of the words	5, 9, 15, 17, 25	5 items
5	The students are able to find the word formation of word (noun, verb, adverb and adjective)	4, 10, 13, 20 24	5 items
TOTAL			25 items

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After the students did the test, the researcher then took the total score of the result of the vocabulary comprehension test. Arikunto (2013: 45) stated that the classification of the students' score can be seen below:

Table III.5
The Classified of Score

No	Scores	Categories
1	80-100	Very good
2	66-79	Good
3	56-65	Enough
4	40-55	Less
	0-39	Fail

2. Validity of the Test

Validity in general refers to appropriateness of a given test or any of its component parts as measure of what it was purposed to measure. It means the test was valid to the extent that was measured what it was supposed to measure. There are four kinds of validity. They are face, content, construct and empirical validity, Brown (2003: 22).

This research used content validity. Content validity refers to whether or not the content of the manifest is right to measure the latent concept that we are trying to measure. In other words, tests were given based on material that they had learned, concerning five components:

- a. The students are able to spell the words correctly in English.
- b. The students are able to use correct words grammatically.
- c. The students are able to mention the correct meaning of words.
- d. The students are able to find the synonym or antonym of the words.

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- e. The students are able to find the word formation of words (noun, verb, adverb and adjective).

Before the test was given to the sample of this research, the researcher tried out the test items. The test given to the students was considered not too difficult or not too easy. According to Arikunto (2012: 223) for item difficulty is a follows:

$$P = \frac{B}{JS}$$

Note:

P = Index of difficulty or facility

B = the number of correct answers

JS = the number of examiners or students

The formula above was used to find out easy or difficult test items that researcher gave to the respondents. The items which did not reach the standard value of difficulty were modified. The standard value of the proportion of correct can be seen in the table below:

Table III.6
Index Difficulty Level of Instruments

Proportion correct (p)	Item category
$P > 0.70$	Easy
$0.30 \leq P \leq 0.70$	Average
$P < 0.30$	Difficult

The standard level of difficulty used is ≤ 0.30 and ≥ 0.70 . It means that an item is accepted if the level of difficulty is between 0.30-0.70 and it is rejected if the level of difficulty is less than 0.30 (the item is too difficult) and over than 0.70 (the item is too easy). The proportion of correct answer is

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represented by “p”, whereas the proportion of incorrect answer is represented by “q”.

Table III.7
Validity Test

Question no	Scores	Result
1	0.69	Valid
2	0.52	Valid
3	0.52	Valid
4	0.69	Valid
5	0.55	Valid
6	0.31	Valid
7	0.41	Valid
8	0.69	Valid
9	0.69	Valid
10	0.52	Valid
11	0.48	Valid
12	0.69	Valid
13	0.69	Valid
14	0.31	Valid
15	0.66	Valid
16	0.69	Valid
17	0.62	Valid
18	0.45	Valid
19	0.66	Valid
20	0.59	Valid
21	0.31	Valid
22	0.45	Valid
23	0.69	Valid
24	0.69	Valid
25	0.52	Valid

The calculation of item difficulty can be seen from the following table:

Table III.8
The students are able to spell the word correctly in English

variable	Spelling the word correctly					N
Item No.	2	8	14	19	23	29
Correct	15	20	9	19	20	
P	0.52	0.69	0.31	0.66	0.69	
Q	0.48	0.31	0.69	0.34	0.31	

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Based on the table, it was found that the proportion of students vocabulary comprehension for spelling the word correctly in English was in average level. The table shows that the proportion of correct answer for spelling the word correctly in English of test item number 2 was 0.52, the proportion of correct answer for test item number 8 was 0.69, the proportion of correct answer for test item number 14 was 0.31, the proportion of correct answer for test item number 19 was 0.66, the proportion of correct answer for test item number 23 was 0.69. Then, based on the standard level of difficulty “p” is ≥ 0.30 and ≤ 0.70 . so, the items for spelling the word correctly in English were accepted.

Table III.9
The students are able to use correct word grammatically

variable	Using correct word grammatically					N
Item No.	3	6	12	18	21	29
Correct	15	9	20	13	9	
P	0.52	0.31	0.69	0.45	0.31	
Q	0.48	0.69	0.31	0.55	0.69	

The table shows that the proportion of students' vocabulary comprehension for using correct word grammatically was the same as the table before; it was still in the average level. It was found that the proportion of correct answer for using good word grammatically of test item number 3 was 0.52, the proportion of correct answer for test item number 6 was 0.31, the proportion of correct answer for test item number 12 was 0.69, the proportion of correct answer for test item number 18 was 0.45, the proportion of correct answer for test item number 21 was 0.31. Then, based on the

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standard level of difficulty “p” is ≥ 0.30 and ≤ 0.70 . so, the items for using good word grammatically were accepted.

Table III.10
The students are able to mention the correct meaning of words

variable	Mention the correct meaning					N
Item No.	1	7	11	16	22	29
Correct	20	12	14	20	13	
P	0.69	0.41	0.48	0.69	0.45	
Q	0.31	0.59	0.52	0.31	0.55	

Based on the table, it was found that the proportion of students vocabulary comprehension for mentioning the correct meaning was in average level. The table shows that the proportion of correct answer for giving the right meaning of test item number 1 was 0.69, the proportion of correct answer for test item number 7 was 0.41, the proportion of correct answer for test item number 11 was 0.48, the proportion of correct answer for test item number 16 was 0.69, the proportion of correct answer for test item number 22 was 0.45. Then, based on the standard level of difficulty “p” is ≥ 0.30 and ≤ 0.70 . so, the items for mentioning the right meaning were accepted.

Table III.11
The students are able to find the synonym or antonym of the words

variable	Finding the synonym or antonym					N
Item No.	5	9	15	17	25	29
Correct	16	20	19	18	15	
P	0.55	0.69	0.66	0.62	0.52	
Q	0.45	0.31	0.34	0.38	0.48	

From the table above, the proportion of students vocabulary comprehension of finding the synonym or antonym was the same as the table before; it was still in the average level. It was found that the proportion of

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correct answer of finding the synonym or antonym test item number 5 was 0.55, the proportion of correct answer for test item number 9 was 0.69, the proportion of correct answer for test item number 15 was 0.66, the proportion of correct answer for test item number 17 was 0.62, the proportion of correct answer for test item number 25 was 0.52. Then, based on the standard level of difficulty “p” is ≥ 0.30 and ≤ 0.70 . so, the items of finding the synonym or antonym were accepted.

Table III.12
The students are able to find the word formation of word (noun, verb, adverb and adjective)

variable	Finding the word formation of word (noun, verb, adverb and adjective)					N
Item No.	4	10	13	20	24	29
Correct	20	15	20	17	20	
P	0.69	0.52	0.69	0.59	0.69	
Q	0.31	0.48	0.31	0.41	0.31	

Based on the table, it was found that the proportion of students' vocabulary comprehension of finding the word formation of word (noun, verb, adverb and adjective) was in average level. The table shows that the proportion of correct answer of finding the word formation of word (noun, verb, adverb and adjective) test item number 4 was 0.69, the proportion of correct answer for test item number 10 was 0.52, the proportion of correct answer for test item number 13 was 0.69, the proportion of correct answer for test item number 20 was 0.59, the proportion of correct answer for test item number 24 was 0.69. Then, based on the standard level of difficulty “p” is ≥ 0.30 and ≤ 0.70 . so, the items of finding the word formation of word (noun, verb, adverb and adjective) were accepted.

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3. Reliability of the Test

According to Brown (2003: 21), a reliable test is consistent and dependable. It means that a reliable test will stay giving unchangeable results in a few test conducted to the same group of people. Reliability is a necessary characteristic of any good test.

The reliability coefficients for good classroom comprehension test were expected 0.00 and closed 1.0. Arikunto (2012: 232) stated, the reliability of the test is considered as follows:

0.00-0.20	= reliability is low
0.21-0.40	= reliability is sufficient
0.41-0.70	= reliability is high
0.71-1.0	= reliability is very high

To obtain the reliability of the test given, the researcher used kr-20 formula as follows: (Sugiyono, 2012: 359).

$$KR\ 20: ri = \frac{k}{(k-1)} \left\{ \frac{st^2 - \sum pq}{st^2} \right\}$$

Where:

k	: number of items in the instrument
P	: proportion of students who answered the item correctly
Q	: proportion of students who answered the item wrong (1-pi)
$\sum pq$: the multiplication result between p and q
St^2	: total variance

Firstly, the researcher calculated the total variance:

$$st^2 = \frac{x^2}{n}$$

Where:

n	: number of respondents
$\sum xt^2$: quadrate total
$(\sum xt)^2$: correct answer

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$$\begin{aligned}x^2 &= \sum xt^2 - \frac{(\sum xt)^2}{n} \\&= 6748 - \frac{(408)^2}{29} \\&= 6748 - \frac{166464}{29} \\&= 6748 - 5740.13 \\&= 1007.87\end{aligned}$$

$$\begin{aligned}st^2 &= \frac{x^2}{n} \\&= \frac{1007.87}{29} \\&= 34.75\end{aligned}$$

$$\begin{aligned}ri &= \frac{k}{(k-1)} \left\{ \frac{st^2 - \sum pq}{st^2} \right\} \\ri &= \frac{29}{(29-1)} \left\{ \frac{34.75 - 5.7255}{34.75} \right\}\end{aligned}$$

$$\begin{aligned}ri &= \frac{29}{(28)} \left\{ \frac{29.02}{34.75} \right\} \\ri &= 1.03 \times 0.83 \\ri &= 0.85\end{aligned}$$

Based on the result above, it can also be stated that the reliability was **very high**.

4. Normality of the Data

Before analyzing the data by using t-test formula, the researcher had to find out the normality test of the data. According to Priyatno (2012:33), the normality of the data test can be analyzed by using lilliefors and One Sample Kolmogrov Smirnov. The normality of the test was analyzed by using Kolmogrov-Smirnov technique with SPSS 17 version.

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Analysis:

H_a population with normal distribution
 H_0 population with not normal distribution
 If the probability > 0.05 H_a was accepted
 If the probability < 0.05 H_0 was rejected

(Priyatno, 2012:36)

5. Homogeneity of the Data

According to Siregar (2013:167) cited in Evi (2016:53), the purpose of homogeneity test is to know whether the object of the research has the same variance or not. The method used in this test was comparing the biggest variance with the smallest one.

F. Technique of Data Analysis

In analyzing the data, the researcher used students' post-test score in experimental and control classes.

This score was analyzed statistically. In this research the researcher used these formulas:

1. Independent sample t-test

Hartono (2009: 208) said that to find out whether or not there is a significant difference between two or more variables can be analyzed by using independent sample t-test. In addition, Gay (484) said that the t-test for independent sample is used to determine whether or not there is probably a significant difference between the means of two independent samples. Independent sample t-test was used to know whether there is a significant difference between students' vocabulary comprehension taught by using and without using Board Word Games.

In this research, the data were analyzed by using SPSS 17.0 Version.

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The T-table was employed to see whether or not there is a significant effect on the mean scores of both experimental and control class. The statistical hypothesis:

- $H_0 = t_0 \leq t\text{-table}$; H_0 is accepted if the t_0 is lower than the t-table.
- $H_a = t_0 \geq t\text{-table}$; H_a is accepted if the t_0 is higher than the t-table.

The researcher used t-test formula (Hartono, 2009: 208), the formula is as follows:

$$t_o = \frac{Mx - My}{\sqrt{\left\{\frac{SDx}{N-1}\right\}^2 + \left\{\frac{SDy}{N-1}\right\}^2}}$$

Where:

- t_o = the value of t-obtained
- Mx = mean score of experimental group
- My = mean score of control group
- SDx = the standard deviation of experimental group
- SDy = the standard deviation of control group
- N = number of the students

2. Effect size

According to Pallant (2001: 175), effect size is a set of statistics which indicates the relative magnitude of the differences between means. Or in other words, it describes the 'amount of the total variance in the dependent variable that is predictable from knowledge of the levels of the independent variable. The formula is as follows:

$$\eta^2 = \frac{t^2}{t^2 + (N_1 + N_2 - 2)}$$

Where :

- η^2 = eta squared
- $t^2 = t_o$
- N_1 = Number of students