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CHAPTER III

THE RESEARCH METHODOLOGY

A. Research Design

This research was an experimental research. According to Creswell (2012:295), the experimental research is conducted when the researcher intends the possible cause and effect between independent variable (variable X) and dependent variable (variable Y). It consists of two variables, the first was contextual guessing technique as variable X and the second was the students' reading comprehension as variable Y. Because, the population of this research was large, the researcher used the quasi-experimental design. Quasi-experimental designs had experiment group and control group. There were two kinds of test; pre-test and post-test. Pre-test was given before treatment and post-test was given in the last of treatment.

The design can be seen in the following table below (Creswell, 2012:300)

Table III.1
Research Design

Class	Pre-test	Treatment	Post test
Experiment Class	X₁	T	Y₁
Control Class	X₂	O	Y₂

Where:

X₁ = Pre-test of experimental group

X₂ = Pre-test of control group

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Y_1 = Post-test of experimental group

Y_2 = Post-Test of control group

T = Treatment

B. Location and the Time of the Research

The research was conducted at Vocational High School Multi Mekanik Masmur Pekanbaru that is located at K. H Ahmad Dahlan Street. No 96, Pekanbaru, in 2017/2018 of Academic Year. The time of this research was started from July to August 2017.

C. Subject and the Object of the Research

The subject of this study was the tenth grade students at Vocational High School Multi Mekanik Masmur Pekanbaru. The object of the research was Contextual Guessing technique on reading comprehension.

D. The Population and Sample of the Research

The population of the research was the tenth grade students at Vocational High School Multi Mekanik Masmur Pekanbaru. There were 9 classes of the tenth grade students. They were 226 students all of them. The researcher took two classes as sample in this research. The total sample was 62 students. The technique of collecting data was by using observation and test; pre-test and post-test. This research was the experimental research, so the sample of the research should have the same ability and heterogenic. The researcher took the TKR Class

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(Teknik Kendaraan Ringan) of the tenth grade students at Vocational High School Multi Mekanik Masmur Pekanbaru. Based on the information from the teacher at Vocational High School Multi Mekanik Masmur Pekanbaru, they used the same curriculum, the same syllabus, taught by the same teacher, so the researcher assumed that the students of Class have the same ability. It could be seen in the following table population below:

Table III.2
Population and Sample of the Research

No	Classes	Population	Sample
1	X TKR 1	31	Experimental Class
2	XTKR 2	32	-
3	X TKR 3	31	Control Class
4	X TSM	25	-
5	X AV	22	-
6	X RPL	23	-
7	X AK	20	-
8	X TPT	17	-
9	X TKJ	25	-
	Total	226	62

Considering that this population of the research was large. Thus, the writer took the sample of the population of the research. In this research, the writer used random sampling technique, especially cluster random sampling. According to Gay and Airasian (2010:123), random sampling is the process of selecting a sample in such way that all individuals in the defined population have an equal

and independent chance of being selected for the sample. Gay and Airasian (2010:129) continue their explanation that Cluster randomly selects the groups, not individuals. It used lottery to choose two samples in this research. The writer took two classes as the samples in this research. Class X TKR₁ and X TKR₃ were chosen. So, X TKR₁ was as experimental class and X TKR₃ was as control class. The total number of sample was 62 students; 31 students for experimental class and 31 for control class.

E. Technique of Collecting Data

Collecting data is the most crucial thing in a research. In this research, the researcher used test in collecting the data. The researcher used test as the technique of collecting data. The test was distributed to measure the students' reading comprehension. According to Brown (2007:3), test is a method of measuring of a person's ability, knowledge or performance in given domain. The type of the test was multiple choices that consisted of twenty items. It was divided into two types, pre-test and post-test. Pre-test and post-test were given to both of classes.

1. Pre-Test

The test was written test and the type was multiple choice. There were five indicators of reading comprehension; each indicator was represented by four questions, so the total number of the test was twenty items. This test

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was given to both of the class-control and experiment class-before each class was given the treatment.

2. Post-Test

The test was written test and its type was multiple choice. There were five indicators of reading comprehension; each indicator was represented by four questions, so the total number of the test was twenty items. This test was given to both of the class-control and experiment class after each class was given the treatment. For further information about the instruction of the text, the writer shows the blueprint of both tests as follows:

Table III.3
The Blueprint of the Test

No	Indicators	Number of items
1	Students are able to find factual information from the text.	1,6,11,16
2	Students are able to find the main idea from the text	2,7,12,17
3	Students are able to find the meaning of vocabulary from the text.	3,8,13,18
4	Students are able to identify reference from the text	4,9,14,19
5	Students are not able to make inference from the text.	5,10,15,20
	Total Items	20

After the students did the test, then the researcher took the total score from the result of the reading comprehension test. According to Arikunto (2009:245), the interpretation of students' score is classified as follows:

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Table III. 4
The Classification of Students' Score

The Level Score	Category
81-100	Very Good
61-80	Good
41-60	Enough
21-40	Poor
0-20	Fail

F. Validity and Reliability**1. Validity**

According to Brown (2003:3), Validity is the extent to which inferences made from assessment result are appropriate, meaningful, and useful in terms on the purpose of the assessment. A validity of the test is achieved if the test really measures the test takers' ability. Furthermore, Hughes (2005:6) stated that a test can be valid if it measures accurately whether the test is appropriate, meaningful, and useful. In this research, the writer used construct validity to know the validity of reading comprehension test. In other words, the tests were given based on the material that they have learned. In validity of instrument of the test, it can be seen from the difficulties of the test. It means the test is not too easy or not too difficult.

The formula for item difficulty is as follows (Heaton, 1998:178):

$$FV = \frac{R}{N}$$

Where :

FV = Facility value (difficulty level)

R = The number of correct answer

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N = The number of the students

The formula above was used to find out whether each item of the test is easy. The items that did not reach the standard level of difficulty were revised and they were edited or changed with the new items that were appropriate.

According to Arikunto (2008:208), the standard level of difficulty used is $\square 0.30$ and $\square 0.70$. 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 below 0.30 (the item is too difficult) and over 0.70 (the item is too easy). Then, the proportion correct was represented by "P", whereas the proportion incorrect was represented by "Q", it can be seen in the following tables:

Table III.5
The Students' ability to find out factual information from the text

Variable	Finding factual information from the text				N
Item no	1	6	11	16	32
Correct	16	19	14	19	
P	0.5	0.59	0.44	0.59	
Q	0.5	0.41	0.56	0.41	

Based on the table III.5, the proportion of correct answer for item number 1 was 0.5, item number 6 obtained 0.59, item number 11 obtained 0.44, item number 16 obtained 0.59. Based on the standard level of difficulty "p" >0.30 and <0.70 , it is pointed out that item difficulty level of each item number for finding out factual information is accepted.

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Table III.6
The Students' Ability to find out the main idea from the text

Variable	Finding main idea from the text				N 32
Item no	2	7	12	17	
Correct	21	15	15	19	
P	0.66	0.47	0.47	0.59	
Q	0.34	0.53	0.53	0.41	

Based on the table III.6, the proportion of correct answer for item number 2 was 0.66, item number 7 gained 0.47, item number 12 gained 0.47, and item number 17 gained 0.59. Based on the standard level of difficulty “p” >0.30 and <0.70 , it is pointed out that item difficulty level of each item number for finding main ideas is accepted.

Table III.7
The Students' Ability to find out the meaning of vocabulary from the text

Variable	Finding the meaning of vocabulary from the text				N 32
Item no	3	8	13	18	
Correct	20	20	19	19	
P	0.63	0.63	0.59	0.59	
Q	0.38	0.38	0.41	0.41	

Based on the table III.7, the proportion of correct answer for item number 3 was 0.63, item number 8 got 0.63, item number 13 got 0.59, item number 18 got 0.59. Based on the standard level of difficulty “p” >0.30 and <0.70 , it is pointed out that item difficulty level of each item number for finding the meaning of vocabulary is accepted.



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**Table III.8
The Students' Ability to identify reference from the text**

Variable	Identifying reference from the text				N
Item no	4	9	14	19	32
Correct	18	16	20	15	
P	0.56	0.5	0.63	0.47	
Q	0.44	0.5	0.38	0.53	

Based on the table III.8, the proportion of correct answer for item number 4 was 0.56, item number 9 obtained 0.5, item number 14 obtained 0.63, and item number 19 obtained 0.47. Based on the standard level of difficulty “p” >0.30 and <0.70 , it is pointed out that item difficulty level of each item number for identifying reference is accepted.

**Table III.9
The Students' Ability to make inference from the text**

Variable	Making inference from the text				N
Item no	5	10	15	20	32
Correct	15	18	16	18	
P	0.47	0.56	0.5	0.56	
Q	0.53	0.44	0.5	0.44	

Based on the table III.9, the proportion of correct answer for item number 5 was 0.47, item number 10 gained 0.56, item number 15 gained 0.5, item number 20 gained 0.56. Based on the standard level of difficulty “p” >0.30 and <0.70 , it is pointed out that item difficulty level of each item number for making inference is accepted.

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2. Reliability

According to H. Douglas Brown (2003:19), reliability has to do with accuracy of measurement. This kind of accuracy was reflected in obtaining similar results when measurement was repeated on different occasions or with different instruments or by different persons. The characteristic of reliability was sometimes termed consistency. Briefly, the test was reliable when an examinee's results were consistent on repeated measurement.

To obtain the reliability of the test given, the writer used the K-R 21 formula as follows:

$$rii = \left\{ \frac{k}{k-1} \right\} \left\{ 1 - \frac{X(k-X)}{k.Vt} \right\}$$

Where:

rii : Reliability of the instrument

k : total of questions

Vt : total variance

X : the mean score

Firstly, the writer calculated the total variance:

$$Vt = \sum \frac{(x_1 - X)^2}{n-1}$$

Where:

X₁ : total of score

X : mean score

n : total of respondents

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$$V_t = \sum \frac{(x_i - \bar{x})}{n-1}$$

$$V_t = \frac{(352-11)}{32-1}$$

$$V_t = 11$$

Total variance was 11, and then the writer calculated the reliability.

$$r_{11} = \left\{ \frac{k}{k-1} \right\} \left\{ 1 - \frac{\sum (x_i - \bar{x})^2}{k \cdot V_t} \right\}$$

$$r_{11} = \left\{ \frac{20}{20-1} \right\} \left\{ 1 - \frac{11(20-11)}{20(11)} \right\}$$

$$r_{11} = (1.05) 1 - (0.45)$$

$$r_{11} = 0.57$$

To find out whether the test is reliable or not, the value of r_{11} should be compared with r product moment. The value of r_{11} must be higher than r table. From the calculation above, the value of r_{11} was 0.57. Then, the r_t at 5% level of significance was 0.349, while r_t at 1% level of significance was 0.449. So, it can be concluded that $0.349 < 0.486 > 0.449$. In other words, the instrument was reliable because the value of r_{11} was higher than r_t .

Moreover, the standard reliability was considered as follows (Heaton, 1980:159):

$0.00 - 0.20 = \text{Reliability is low}$

$0.21 - 0.40 = \text{Reliability is sufficient}$

$0.41 - 0.70 = \text{Reliability is high}$

$0.70 = \text{Reliability is very high}$

In sum, the reliability of the test as calculated above (0.57) was categorized in to high level.



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G. The Normality and Homogeneity Test

1. The Normality of the Test

In order to know whether the data have normal distribution or not, the researcher used Kolmogorof-Smirnov method as the formula to analyze the data. In this research, the researcher analyzed the data by using SPSS (Statistical Product and Service Solutions) 23 version program. The SPSS result for Kolmogorov-Smirnov Z test would be interpreted as follows:

p-value (Sig.) > 0.05 = the data are in normal distribution

p-value (Sig.) < 0.05 = the data are not in normal distribution

The result of normality of post test score in experiment and control class was computed by using SPSS version 23.0. It is presented in the following table:

Table III.10
Tests of Normality
Tests of Normality

	Group	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Score	Experiment	.151	31	.070	.919	31	.022
	Control	.147	31	.085	.961	31	.313

a. Lilliefors Significance Correction

Based on the data above, at significance kolmogorof-smirnov is 0.70 and 0.85. The probability was higher than 0.05. It means that the population has normal distribution or H_0 was accepted.

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2. The Homogeneity of the test

The homogeneity test was used to measure whether the data are correlated from true population or not. Data homogeneity of variance test was calculated by using SPSS version 23.0. The SPSS result for Levene test was interpreted as follows:

p -value (Sig.) > 0.05 = the data are homogeneous

p -value (Sig.) < 0.05 = the data are not homogeneous

The result of homogeneity test of post-test data or Levene test which was computed by using SPSS version 23 presented in the following table:

Table III.11
Test of Homogeneity of Variances

Test of Homogeneity of Variances

Score			
Levene Statistic	df1	df2	Sig.
.900	1	60	.346

To find out the homogeneity of the test, the writer used SPSS 23.

Referring to the table above, it could be seen that sig was $0.346 > 0.05$ (5%).

In conclusion, the data of test are homogenous.

H. The Technique of Analyzing Data

The technique of analyzing the data of this research used SPSS for windows version 23, it was involved in analyzing test of data normality, homogeneity and linearity. These analyses were used to see whether the data are

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normally distributed or not. This was done for pre-statistical analysis in order to go to parametric and non-parametric statistic.

If in fact, the data were normally distributed and independent sample t-test was employed. If the data were normally distributed and chi-square analysis was employed in order to see the degree of students' reading comprehension whether they are: higher, medium, low.

In order to find out whether there is a significant difference between teaching English using and without using contextual guessing technique on reading comprehension of the tenth grade students at Vocational High School Multi Mekanik Masmur Pekanbaru, the data were analyzed by using SPSS software version 23. Then, the effect size of Teaching English was analyzed by using the formula below (Pallant, 2001:184):

$$\text{Eta Square} = \frac{t^2}{t^2 + (N_1 + N_2) - 2}$$

Where:

t : value of t table

N1: number of students of first group

N2: number of students of second group

Statistically, the hypothesis are formulated as:

$$H_o = t_o \geq Pv$$

$$H_a = t_o \leq Pv$$

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Note :

H_o = Hypotheses Null

H_a = Hypothesis Accepted

t_o = The value of t-obtained

P_v = Probability value

1. H_o is accepted if $t_o \geq$ probability value or it can be said that there is no significant difference of using contextual guessing technique on reading comprehension of tenth grade students at Vocational High School Multi Mekanik Masmur Pekanbaru.
2. H_a is accepted if $t_o \leq$ probability value or it can be said that there is a significant difference of using contextual guessing technique on reading comprehension of tenth grade students at Vocational High School Multi Mekanik Masmur Pekanbaru.