

## CHAPTER III

### RESEARCH METHODOLOGY

#### III.1. Research Design

This research was a quasi-experimental research which aimed to find out the effect of Four Square Writing methods on students' writing ability and vocabulary mastery. According to Gay and Arrison (2000), an experimental research is the type of the research that can test hypotheses and to establish cause and effect relationship.

The participants of the research were the first year students of SMK Nurul Falah .A pre-test and a post-test were administered to the participants. The pre-test was carried out at a beginning in order to find out their abilities in listening comprehension. After that they were given treatments in the middle. At the end, a post-test was administered. In the research, the pre-test and post-test were compared in order to determine the effect of using Four Square Writing methods on students' writing ability and vocabulary mastery. According to Creswell (2008) the research design can be illustrated as follows:

**Table III.1**  
**Research Design**

Pre- and Post-test Design			Time →
Select Control Group	Pre-test	No treatment	Post-test
Experimental Group	Pre-test	Four Square Writing	Post-test

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## a. Procedures of collecting data for experimental group

## 1. Pre-test

The pre-test was carried out to determine the students' writing ability and vocabulary mastery with their score. The pre-test was given before teaching writing by using Four-Square Writing Method. In the pre-test, students were asked to write a descriptive text which related to the topic given entitled "My Mom" and vocabulary test in the form of multiple choices in 2x45 minutes.

After giving the pre-test, the writer did the treatment of Four-Square Writing Method to the students.

## 2. Treatment

The treatment was conducted for the experimental group by using Four Square Writing methods applied for four meetings.

**Table 3.2 Research Activities**

No.	Activities	Teacher	Students
1	Pre-teaching	<ul style="list-style-type: none"> <li>• Greets to the students.</li> <li>• Checks the attendance list.</li> <li>• Tells the students a little introduction about the topic (descriptive text).</li> </ul>	<ul style="list-style-type: none"> <li>• Reply the teacher's greeting.</li> <li>• Pay attention.</li> <li>• Give the response.</li> </ul>
2	While-teaching	<ul style="list-style-type: none"> <li>• Introduces Four-Square Writing Method in teaching for topic lesson.</li> <li>• Asks the students to write the topic in the middle of the box (the topic has been chosen).</li> <li>• Asks the students to write supporting sentences, which support the topic in box 2, 3, and 4.</li> <li>• Guides the students to add supporting details in each box (2, 3, 4).</li> </ul>	<ul style="list-style-type: none"> <li>• Pay attention and give respond.</li> <li>• Write the topic in the middle of the box.</li> <li>• Write supporting sentences in box 2, 3, and 4.</li> <li>• Add supporting details in each box (2, 3, 4).</li> </ul>

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		<ul style="list-style-type: none"> <li>• Asks the students to add the vivid language.</li> <li>• Guides the students to fill box number 5 by the conclusion of the whole essay which restates the topic sentence.</li> <li>• Finally, asks the students to add transition words for each boxes put off the essay into the paragraph form.</li> </ul>	<ul style="list-style-type: none"> <li>• Add the vivid language.</li> <li>• Fill box number 5 by the concluding sentence.</li> <li>• Add transition words for each boxes. After that, put off the essay into the paragraph form.</li> </ul>
3	Post-teaching	<ul style="list-style-type: none"> <li>• Conclusion.</li> <li>• Evaluation.</li> </ul>	<ul style="list-style-type: none"> <li>• Give respond.</li> </ul>

### 3. Post-test

After conducting the treatment, a post-test was administered and analyzed as final data of this research. The post-test given was the same test as the pre-test. The students were asked to write the text individually and multiple choice test about vocabulary in 2x45 minutes. The purpose of this test was to know the effect of the students' writing ability and vocabulary mastery after they had been taught through Four-Square Writing Method.

#### b. Procedures of collecting data for control group

##### 1. Pre-test

The control group was given a pre-test to determine their writing ability and vocabulary mastery. The test was the same as for the experimental group.

##### 2. No treatment

##### 3. Post-test

The post-test was also given to a control group and the result was analyzed and used as final data for this research. The item used in this test was writing a monolog of the descriptive text and the vocabulary test.

### III.2. Time and Location of the Research

This research was conducted at SMK Nurul Falah Pekanbaru which is located at Mesjid Raya Street No 8, Kampung. Dalam, Senapelan Pekanbaru. The duration of the research was two months starting from April up to May 2017.

### III.3. Population and Sample of the Research

Table III.2

No	Class	Number of Students
1	X Accounting 1	29
2	X Accounting 2	31
3	X Mechanical Computer Network	31
4	X Hospitality Accomodation	29
5	X Bussiness Management	19
6	X Administrative Office 1	32
7	X Administrative Office 2	32
Total		204

The total of the population was 204 students. The population was large to be taken as the sample of the research. Based on the limitation of the research, only two classes were taken by using cluster sampling technique. Gay (2000:12) states cluster sampling randomly selects groups, not individual. The researcher used cluster sampling because all the members of selected groups have similar characteristics. One class was a treatment class or experimental class and the other one was a control class. The writer names cards based on every first year class in SMK Nurul Falah Pekanbaru, X Accounting 1, X Accounting 2, X Mechanical Computer, Network, X



Hospitality Accommodation, X Business Management, X Administrative Office 1 and X Administrative Office 2. After getting the interview result, the writer chose the cluster sampling. It was class X Accounting 1 for the experimental class and X Hospitality Accommodation for the control class.

The spesification of the research sample can be seen on the table below:

**Table III.3**

No	Class	Male	Female	Total Number of Student
1	X Accounting 1	10	19	29
2	X Hospitality Accommodation	16	13	29
	Total	26	32	58

#### III.4. Data Collection Technique

In order to get the data, tests and teacher's observation sheets were used to find out the effect of using Four Square Writing on students' writing ability and vocabulary mastery at the first year students of SMK Nurul Falah Pekanbaru. The test was done in two stages. The first was the pre-test which was done before doing the treatment. In the pre-test, students were asked to write a descriptive text which related to the topic given entitled "My Mom" and vocabulary test in the form of multiple choices in 2x45 minutes. The second was the post-test which was administered after treatment.

The post-test given was the same test as the pre-test. The students were asked to write the text individually and multiple choice test about vocabulary in 2x45 minutes. The tests were administered after they had been taught through Four-Square Writing Method for the experimental group. Both tests were about

writing descriptive texts. The classification of the students' scores for writing tests is shown below:

**Table III.4**  
**Classification of Students' Score of Writing Ability**

Number	Score	Classification
1	81 – 100	Excellent
2	61 – 80	Good
3	41 – 60	Mediocre
4	21 – 40	Poor
5	0 – 20	Very Poor

(Harris, 1986)

### III.5. Reliability and Validity of Instrument Test

To obtain the data from the respondents, the writer made the try out the questionnaire to determine the validity and reliability of the instruments, then, analyzing the reliability and validity was used SPSS 20.

#### III.5.1. Reliability

Brown (2003) says that the reliability has to do with accuracy of measurement. This kind of accuracy was reflected in obtaining similar results when the measurement was repeated on different occasion or with different instruments or by different persons. Brown (2003) states that the characteristic of

reliability is sometimes termed consistency. The following table is the level of internal consistency of Cronbach Alpha.

**Table III.5**  
**A commonly accepted rule of thumb for describing internal consistency by using cronbach alpha**

Cronbach Alpha	Internal Consistency
$\alpha \geq .9$	Excellent
$.9 > \alpha \geq .8$	Good
$.8 > \alpha \geq .7$	Acceptable
$.7 > \alpha \geq .6$	Questionable
$.6 > \alpha \geq .5$	Poor
$.5 > \alpha$	Unacceptable

To obtain the reliability of the test given, SPSS 20 program was used to find out whether or not the test was reliable.

**Table III.6**

**Reliability Statistics**

Cronbach's Alpha	N of Items
,921	33

From the table above, it can be seen that the value of Cronbach Alpha is that 0.921 by highest reliability. It means that the items are reliable.

Table III.7

## The Analysis of Try out Vocabulary Mastery

## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Result
Q1	19,4667	66,257	,770	,915	Reliable
Q2	19,3667	68,378	,539	,918	Reliable
Q3	19,5333	68,326	,497	,919	Reliable
Q4	19,4000	68,731	,477	,919	Reliable
Q5	19,5000	67,983	,544	,918	Reliable
Q6	19,6000	69,007	,414	,920	Reliable
Q7	19,6667	68,023	,545	,918	Reliable
Q8	19,3667	68,378	,539	,918	Reliable
Q9	19,3333	69,057	,467	,919	Reliable
Q10	19,4667	67,706	,585	,918	Reliable
Q11	19,4333	68,599	,482	,919	Reliable
Q12	19,4667	67,223	,647	,917	Reliable
Q13	19,5000	68,121	,526	,918	Reliable
Q14	19,2667	69,444	,464	,919	Reliable
Q15	19,7000	66,355	,771	,915	Reliable
Q16	19,4000	68,248	,540	,918	Reliable
Q17	19,2667	69,444	,464	,919	Reliable
Q18	19,3667	68,447	,530	,918	Reliable
Q19	19,3667	67,826	,614	,917	Reliable
Q20	19,3667	69,482	,393	,920	Reliable
Q21	19,5000	68,741	,450	,919	Reliable
Q22	19,5000	67,086	,656	,917	Reliable

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Q23	19,5333	68,533	,472	,919	Reliable
Q24	19,4333	68,944	,439	,920	Reliable
Q25	19,5000	68,879	,433	,920	Reliable
Q26	19,6333	67,068	,658	,917	Reliable
Q27	19,6000	67,972	,541	,918	Reliable
Q28	19,4333	69,013	,430	,920	Reliable
Q29	19,4667	67,430	,620	,917	Reliable
Q30	19,5000	70,328	,257	,922	Reliable
Q31	19,4667	72,051	,054	,925	Reliable
Q32	19,3000	71,183	,191	,922	Reliable
Q33	19,4333	70,875	,199	,923	Reliable

### III.5.2. Validity

Creswell (2008) states that validity is the individual's scores from an instrument make sense, meaningful, enable you, as the researcher, to draw good conclusions from the sample you are studying to the population (Creswell, 2008). It means that validity is the extent to which inferences made from assessment results are appropriate, meaningful, and useful in terms of the purpose of the assessment.

To analyze the validity of data, the writer analyzed by inter item validity used SPSS 20 program. The following table was the criteria of items validity.

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**Table III. 9**  
**The criteria of items validity**

<b>R</b>	<b>Interpretation</b>
$0,80 < r \leq 1,00$	Very High
$0,60 < r \leq 0,79$	High
$0,40 < r \leq 0,59$	Average
$0,20 < r \leq 0,39$	Low
$0,00 < r \leq 0,19$	Very Low

**Table III. 10**  
**Item-Total Validity Statistics**

Number of Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation (Validity)
Q1	0,770	0,361	Valid
Q2	0,539	0,361	Valid
Q3	0,497	0,361	Valid
Q4	0,477	0,361	Valid
Q5	0,544	0,361	Valid
Q6	0,414	0,361	Valid
Q7	0,545	0,361	Valid
Q8	0,539	0,361	Valid
Q9	0,467	0,361	Valid
Q10	0,585	0,361	Valid
Q11	0,482	0,361	Valid
Q12	0,647	0,361	Valid
Q13	0,526	0,361	Valid
Q14	0,464	0,361	Valid

Q15	0,771	0,361	Valid
Q16	0,540	0,361	Valid
Q17	0,464	0,361	Valid
Q18	0,530	0,361	Valid
Q19	0,614	0,361	Valid
Q20	0,393	0,361	Valid
Q21	0,450	0,361	Valid
Q22	0,656	0,361	Valid
Q23	0,472	0,361	Valid
Q24	0,439	0,361	Valid
Q25	0,433	0,361	Valid
Q26	0,658	0,361	Valid
Q27	0,541	0,361	Valid
Q28	0,430	0,361	Valid

### III.6. Data Analysis Technique

To find out whether there was a significant effect of Four Square Writing methods on students' writing ability and vocabulary mastery at the first year students of SMK Nurul Falah Pekanbaru. SPSS is used for the simple regression.

The scoring guide was chosen as the criteria of scoring representing the basic aspects of the writing and the vocabulary. In analyzing the data, the researcher used scores of pre-test and post-test of experimental and control groups. These scores were analyzed statistically for both descriptive and inferential statistics. In this research, the researcher used these following formula:

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## 1. Independent sample T-test

To find out whether there is a significant difference or there is no significant difference between two or more variables which can be analyzed by using an Independent Sample t test. Gay (2000) adds that the t-test for independent sample is used to determine whether there is probably a significant difference between the means of two independent samples. Independent sample t-test was used to find out the results of the first and second hypotheses. They are as follows:

- a. To find out whether there is significant difference of students writing ability and vocabulary mastery before giving the treatment by using Four Square Writing method for experimental class and non treatment for control class.
- b. To find out whether there is a significant difference of writing ability and vocabulary mastery after giving the treatment by using Four Square Writing method for experimental class and non treatment for control class.
- c. To analyze the final-test scores of an experimental group and a control group, the following formula is used:

$$t = \frac{M_X - M_Y}{\sqrt{\frac{(SD_X)^2}{N_1 - 1} + \frac{(SD_Y)^2}{N_2 - 1}}}$$

Where:

t = The value of comparing two means

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$M_X$  = Mean of the score in pre-test

$M_Y$  = Mean of the score in post-test

$SD_X$  = Standard deviation of experimental group

$SD_Y$  = Standard deviation of control group

$N_1$  = Number of the sample in pre-test

$N_2$  = Number of the sample in post-test

1 = the constant number

The t-table has the function to see if there is a significant difference between the mean of the score of both experimental and control groups. The t-obtained value is consult with the value of t-table at the degree of freedom (df) =  $(N_1+N_2)-2$  which is hypothesized

$H_a$ :  $t_o > t$ -table

$H_o$ :  $t_o < t$ -table

$H_a$  is accept if  $t_o > t$ -table or there is effect after giving the treatment

Four Square Writing method on students' writing ability and vocabulary mastery.

## 2 Paired Sample t-Test

Paired Sample t-Test is known also as Non-independent sample t-test. Gay (2000) states that t-test for non independent samples is used to compare groups that are formed by some type of matching or to compare a single group's performance on a pre- and post-test or on two different treatments. At this time, the writer used to find out whether there is a significant effect before and after

using Four Square Writing methods toward students' writing ability and vocabulary mastery in the pre-test and post-test score of experimental class. They are as follows:

1. To find out whether there is a significant difference of students' writing ability and vocabulary mastery before giving the treatment by using Four Square Writing method.
2. To find out whether there is a significant difference of students' writing ability and vocabulary mastery after giving the treatment by using Four Square Writing method.
3. To analyze the final test-scores of the experimental group and the control group, the following formula of paired-sample t-test:

$$t = \frac{\bar{D}}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}$$

$D$ : Gain Score ( $D=X_2-X_1$ )

The t-table has the function to see if there is a significant difference between the mean of the score of both pre-test and post-test. The t-obtained value is consulted with the value of t-table at the degree of freedom (df) $N-1$  which is statistically hypotheses:

$H_0$ :  $t_o < t\text{-table}$

$H_a$ :  $t_o > t\text{-table}$

$H_0$  is accepted if  $t_o < t\text{-table}$  or there is no significant effect after using Four Square Writing method on students' writing ability and vocabulary mastery.

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$H_a$  is accepted if  $t > t$ -table or there is significant effect after using Four Square Writing method on students' writing ability and vocabulary mastery.

Afterward, it is better to find the coefficient effect of T-test by following formula<sup>1</sup>:

$$r^2 = \frac{t^2}{t^2 + n - 1}$$

$$kp = r^2 \times 100\%$$

Where:

$Kp$  : Coefficient effect  
 $r^2$  : Coefficient

Afterward, it is better to find the effect size of T-test by following formula<sup>2</sup>:

$$\tilde{\eta}^2 = \frac{t^2}{t^2 + n - 1}$$

$$eta\ squared = \tilde{\eta}^2 \times 100\%$$

Where:

*eta squared* : Coefficient effect  
 $\tilde{\eta}^2$  : Coefficient