

## **CHAPTER III**

### **RESEARCH METHOD**

In this chapter, the writer will describe about research methodology that will use in conducting the study. It is purposed to answer the problem of the study. This chapter consists of the research type, research design, and variables of the study, population and sample, instruments of the study, data collection, and data analysis.

#### **A. Research Type**

The writer used the quantitative approach in this study. It was because the writer investigated the effect of lexical simplification toward vocabulary mastery and reading comprehension. The type of this study is ex-post facto design.

#### **B. Research Design**

The design of the study was ex post facto design. Ex post facto design conduct after variation in the variable of interest has already been determined in the natural course of events. This method is sometimes called causal comparative because its purpose is to investigate cause-and-effect relationships between independent and dependent variables.<sup>42</sup>

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<sup>42</sup>*Ibid.* p. 316.

**Table 3.1**  
**Scheme exposit facto design**

Group	Pre-test	Independent Variable	Post-test
Students' Vocabulary Mastery	Y1	X	Y2
Reading Comprehension			

### C. Variables of the Study

There were two main variables of the study, namely independent and dependent variables. The independent variable is the one that we believe may “cause” the result; the dependent variable is the one we measure to see the effects the independent variable has on it.<sup>43</sup> The present study includes the following variables:

1. The independent variable (X) of this study was alexical simplification.
2. The dependent variables (Y) of this study were students' vocabulary mastery and students' reading comprehension.

### D. Population and Sample

#### 1. Population

The larger group about which the generalization is made is called population. A population is defined as all members of any well-defined class of people, events, or objects.<sup>44</sup> The population of this study was all students of

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<sup>43</sup>Alison Mackey, and Susan M. Gass, *Second Language Research Methodology and Design*, London: Lawrence Erlbaum Associates, Inc., 2005, p. 120.

<sup>44</sup>Donal Ary, Lucy Cheser Jacobs, Chir Soronce and Asqar Razavieh, *Introduction to Research in Education*, Eight Edition, New York: Wadsworth/Thomson Learning, 2010, p. 148.

eleventh grade IPA students of SMA Muhammadiyah 1 Palangka Raya. The numbers of the population were 58 students.

**Table 3.2**  
**Description of Population of the Eleventh Grade IPA Students**  
**of SMA Muhammadiyah 1 Palangka Raya**

No	Population	Number of Population
1.	Class XI IPA-1	29
2.	Class XI IPA-2	29
<b>Total</b>		<b>58</b>

## 2. Sample

sample is a portion of population.<sup>45</sup> Based on the population which is grouped into classes, the sample of this study is cluster random sampling. In this study, the samples are class XI IPA-1 and class XI IPA-2. The writer took 29 students randomly as participants. Meanwhile, the try out is conducted at the twelfth grade IPA students of SMA Muhammadiyah 1 Palangka Raya.

## E. Instruments of the study

According to Ary, et al., the instrument is a device for operationally defining a variable.<sup>46</sup> Selecting appropriate and useful measuring instruments is critical to the success of any research study. One must select or develop scales and instruments that can measure complex constructs such as intelligence,

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<sup>45</sup>*Ibid*, p. 148.

<sup>46</sup>Donal Ary, Lucy Cheser Jacobs, Chir Soronce and Asqar Razavieh, *Introduction to Research in Education*, Eight Edition, New York: Wadsworth/Thomson Learning, 2010, p. 643

achievement, personality, motivation, attitudes, aptitudes, interests and self-concept.<sup>47</sup>

There were two instruments used in this study, namely, test and documentation:

### **1. Test**

According to Heaton "Test may be constructed primarily as devices to reinforce learning and to motivate the student, or primarily as a means of as seeing the student's performance the language."<sup>48</sup>

The major data in this study was the data of the students' vocabulary mastery and reading comprehension score took from pre-test and post-test to be conducted to find out the students' vocabulary mastery and reading comprehension before the treatment given, while post-test was conducted to find out the students' vocabulary mastery and reading comprehension after the treatment given.

The test constructed in multiple choice forms which consist of 60 items. The test items were adapted from Intan Pariwara Bahasa Inggris Kelas XI Semester 1.

The following table showed the content specification of the instrument where the item distributed to the students.

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<sup>47</sup>*Ibid*, p. 200.

<sup>48</sup> J.B.Heaton, *Language Testing*, 1987, p. 1.

**Table 3.3 Content Specification of Items of in Research Instruments**

Indicator	Language skill & component	Items of test	Type of test	Narrative test items
The students are able to respond the meaning narrative text, accurately, fluently, and acceptable.	Reading comprehension	30 items	Multiple choice	Short and long text, the students are required to choose the correct answer based on the test.
The students are able to understand the meaning narrative text, accurately, fluently, and acceptable.	Vocabulary	30 items	Multiple choice	The students are required to choose the correct answer based on the test.

**Table 3.4**  
**Distribution of students' score criteria of Vocabulary**

No	Category	Frequency
1	Score 80-100	3
2	Score 70-80	3
3	Score 60-70	3
4	Score 50-60	1
5	Score 0-50	10
Total		20

Based on the data above, can be seen that from twenty students' of the eleventh grade of XI IPA students at SMA Muhammadiyah Palangka Raya the value of the students is different. Based on the calculation there were three students that got score in 80-100, then three students that got score 70-80, three

students that got score 60-70, 1 student that got score 50-60, and nine students that got score 0-50.

**Table 3.5 Level of Comprehension Test Items**

No.	Level of Comprehension	Items	Percentage
1.	Literal	27 Items	55%
2.	Inferential	33 Items	45%
<b>Total</b>		<b>60 items</b>	<b>100%</b>

The reason why the test item was constructed in multiple choices form was because multiple choice is an objective test. Objective test is frequently criticized on the grounds that they are simpler to answer than subjective examinations. Item in an objective test, however, can be made just as easy or as difficult as the test constructor wishes. Besides having the strength, a test in form of multiple choices also has a weakness. Multiple choice test type encourages guessing. It can be solved by doing try out of the test items to find out the test validity and reliability.<sup>49</sup>

Because this test used 60 items test in the form of multiple choice, the writer gave to the students' result test by using the formula:

$$S = \frac{n}{N} \times 100$$

Where:

S = Students' score

n = Number of true answers

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<sup>49</sup> J.B. Heaton, *Language Testing*, 1987, p. 12.

N = Number of the test

In connection with the score of students' test, the writer used scoring rubric as seen in table 3.5 as follows:

**Table 3.6**  
**Scoring Rubric for Students' Reading Comprehension**

<b>Rubric Score</b>	<b>Category</b>
85-100	Excellent mastery level
75-84	Good mastery level
65-74	Fair mastery level
55-64	Good
0-54	Fair

The performance of the test items was obvious importance as compiling future tests. Since a great deal of time and effort are usually spent on the construction of good objective items, in this case, is multiple choice items, most teachers, and test constructors will be desirous of their using them again without further changes or else adapting them future use. It is thus useful to identify these items which were answered correctly by the most able students taking the test and badly by the less able students. The identification of certain difficult items in the test, together with a knowledge of the performance of the individual destructors in multiple choice items, can prove just a valuable in its implications for teaching for testing.<sup>50</sup>

## **2. Documentation**

The writer collects some documents from aplace of the study. In this case, the writer collects whole of related documents in order to support the data. The

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<sup>50</sup>J. B. Heaton, *Language Testing...*, p. 172

documentation will use to collect the data. Using the document would help the writer to describe the situation of the school. The data that is collected in this research are:

- 1) A number of students of eleventh grade IPA students at SMA Muhammadiyah 1 Palangka Raya.
- 2) The students' name list of eleventh grade IPA students at SMA Muhammadiyah 1 Palangka Raya.
- 3) The result of vocabulary and reading test.

#### **F. Research Instruments Try Out**

The try out of instrument was conducted in class XII IPA 1 with the number of the student was 20 students on Wednesday, 19<sup>th</sup> October 2016. The writer conducted a tryout test before it applied to the real sample of this study. Try out of the instrument was necessary to know how valid, reliable and difficult the instruments before it apply to the real sample. The writer obtained the instrument quality consists of instrument validity, reliability, index.

There were two treatments that used in this study, they were treatment 1 (instrument in the form of narrative text without lexical simplification) and treatment 2 (instrument in the form of narrative text with lexical simplification). Then, Flesh Reading Ease and Flesh-Kincaid Grade Level were used to know the level of text difficulty and the grade level of the students which could be processed by using <https://readability-score.com>.



The try out was conducted in class XI IPS-1 which consists of 20 students.

The procedures of the try out as follows:

1. The writer found out the original narrative texts which have a similar level of difficulty for the students. There were six texts used in this study. The texts were narrative texts. Here is the example of original narrative text:

### **The Intelligent Artist**

A very long time ago, a one-eyed king ruled a country. He was fond of arts and crafts. He generously rewarded great artists, poets and craftsmen. However, he was stuck with one major habit. He never liked any person who falsely praised him! Simply, he was an honest man and wanted his people to be the same.

The king was born with one eye. He had vision with only his right eye and the space for his left eye was closed with skin! One day, he wanted a self-portrait and made an announcement. After filtering talented artists, the king asked three men to draw his face.

He told them, "If you do an impeccable job, I will reward you with more than you earn in your lifetime! If not, you will be severely punished!" All three agreed and started to sketch his face.

The first artist showed the painted picture of the king. The king felt bad as the picture showed that one of the eyes was shown to be blind, though he had drawn both eyes. The artist was sentenced to imprisonment for 10 years. The king felt that the picture was a dishonor to a ruler showing a physical disability!



The second artist showed the picture and he was imprisoned for 5 years. The picture depicted the king having vision with both eyes. The king felt he was falsely being praised only to earn the reward and it was also considered a matter of dishonoring the king's blindness!

The third artist showed the picture and was rewarded a fortune! He was very clever as he had drawn the king's face with only one eye!

*(Course: Intan Pariwara Bahasa Inggris Kelas XI Semester 1)*

2. The writer analyzed the level of difficulty of the texts by using <https://readability-score.com>. Here is the example of readability formula:

**Table 3.7 Readability Formula of Narrative Text**  
**Without Lexical Simplification**

Readability Scores  	
Readability Formula	Score
Flesch-Kincaid Reading Ease	78
Spache Score	3.9
New Dale-Chall Score	3.5

3. The writer gave the instrument to respondents. Then the writer asked them to underline the difficult words or the unknown words that contain on the texts.
4. The writer analyzed the obtained data to know the instrument validity, reliability, index difficulty.
5. The writer presented the underlined words into a tally table. Here is an example of underlined words that presented into a tally table.

**Table 3.8 Underlined Words based on Original Narrative Text**

No	Difficult Word	Tally	Sum
1	Ruled	IIII IIII II	10
2	Fond	IIII IIII IIII IIII III	19
3	Generously	IIII III	9
4	Great	IIII IIII III	11
5	Craftsmen	IIII IIII IIII I	16
6	Habit	IIII IIII IIII	12
7	Any	IIII IIII III	10
8	Stuck	IIII IIII	8
9	Honest	IIII IIII IIII III	15
10	Wanted	IIII II	6
11	Space	IIII III	7

12	Self-portrait	III II	6
13	Told	III III III II	17
14	Impeccable	III III III	12
15	Severely	III III III II	14
16	Punished	III III III	11
17	Imprisonments	III III III	11
18	Disability	III III II	10
19	Depicted	III III III	12
20	Falsely	III	4
21	Dishonoring	III III	8
22	Fortune	III III II	12
23	Rewarded	III II	6
24	Praised	III III II	10
25	Clever	III	4
<b>Total Tally</b>			<b>252</b>
<b>Total Underlined Word</b>			<b>24</b>

6. The writer determined whether the underlined words difficult or not. In this case, the writer used simple majority method ( $50\% + 1$ ). Simple majority voting is the only anonymous, neutral, and positively responsive social choice function between two alternatives. Further, this procedure is resolute when there are an odd number of voters and ties (indecision) are not allowed.<sup>51</sup> There were 20 students involved in underlining the difficult words or the unknown words. Thus,  $50\% + 1$  of 20 students were 11 students. The words were classified as difficult words if the words were underlined by at least 11 students. Then the writer replaced the difficult words or the unknown words with their synonym by following the theory of simplification stages. If not

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<sup>51</sup>May, kenneth O. *A set of independent necessary and sufficient conditions for simple majority decisions. Journal Econometrica*, Vol.20, Issu 4, p. 680-684.

possible, their definitions were given between parentheses immediately after the difficult words or unknown words. Then, the difficult words or the unknown words presented into a table.

**Table 3.9 Difficult Words based on Tally Table**

No	Difficult Word	Sum	Synonym or Definition
1	Fond (v)	19	Loved
2	Great (adj)	11	Good
3	Craftsman (n)	16	Artisan
4	Habit (n)	12	Custom
5	Honest (Adj)	15	Truthful
6	Told (v)	17	Said
7	Impeccable (Adj)	12	Perfect
8	Severely (Adv)	14	Seriously
9	Punished (v)	11	Penalized
10	Imprisonments (n)	11	Punishments
11	Depicted (v)	12	Pictured
12	Praised (v)	10	Congratulation
13	Fortune (n)	12	Luck

7. The writer rearranged the texts after replacing the difficult words or the unknown words with their synonym or definition in order to make them coherent. Here is example of narrative text with lexical simplification:

### **The Intelligent Artist**

A very a long time ago, a one-eyed king ruled (government) a country. He loved of arts and crafts. He generously rewarded good artists, poets, and artisan. However, he was stuck with one major custom. He never liked any person who falsely praised him! Simply, he was a truthful man and wanted his people to be the same.

The king was born with one eye. He had avision with only his right eye and the

space for his left eye was closed with skin! One day, he wanted a self-portrait (self-picture) and made an announcement (declaration). After filtering talented artist, the king asked three men to draw his face.

He said them, "If you do a perfect job, I will reward you with more than you earn in your lifetime! If not, you will be seriously penalized! "All three agreed and started to sketch his face.

The first artist showed the painted picture of the king. The king felt bad as the picture showed that one of the eyes was shown to be blind, though he had drawn both eyes. The artist was sentenced to punishments for 10 years. The king felt that the picture was a dishonor to a ruler showing a physical disability! The second artist showed the picture and he were imprisoned for 5 years. The picture pictured the king having a vision with both eyes. The king felt he was falsely being congratulation only to earn the reward and it was also considered a matter of dishonoring the king's blindness! The third artist showed the picture and was rewarded a luck! He was very clever as he had drawn the king's face with only one eye!

*(Course: Intan Pariwara Bahasa Inggris Kelas XI Semester 1)*

## **G. Research Instruments Reliability**

The good instrument in a study is not only the instrument valid but also reliable to measure what supposed to be measured. Reliability is a necessary characteristic of any good test for being valid at all, a test must first be reliable as a measuring instrument.<sup>52</sup> Reliability is of primary importance in the use of both public achievement and proficiency test and classroom test.

The writer will examine the reliability of the item by using Spearman-Brown formula:

$$r_{11} = \left( \frac{k}{k-1} \right) \times \left( 1 - \frac{M(k-M)}{k.Vt} \right)$$

Note :

$r_{11}$  : reliability instrument

$k$  : total numbers of items

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<sup>52</sup>J.B. Heaton. *Language Testing*. 1987. p. 155

$M$  : the mean score on the test for all the testers

$V_t$  : the standard deviation of all the testers' score

The steps in tabulated of tests scores.

- a. Made tabulated of tests scores.
- b. Measured the mean of the testees' scores with the formula:  $M = \frac{\sum Y}{N}$
- c. Measured the total variants with the formula:

$$V_t = \frac{\sum y^2 - \frac{(\sum Y)^2}{N}}{N}$$

Where:

$V_t$  : the total variants

$\sum Y$  : the total of score

$\sum Y^2$  : the square of score total

$N$  : the number of testes

- d. Calculated the instrument reliability using KR-21.
- e. The last decision was compared the value of  $\Gamma_{11}$  and  $\Gamma_t$

$\Gamma_{11} > \Gamma_{table} = \text{Reliable}$
$\Gamma_{11} < \Gamma_{table} = \text{Nor Reliable}$

- f. To know the level of reliability of instrument, the value of  $\Gamma_{11}$  was interpreted based on the qualification of reliability as follows:

0.800 – 1.000: Very high Reliability

0.600 – 0.799: High Reliability

0.400 – 0.599: Fair Reliability

0.200 – 0.399: Poor Reliability

0.000 – 0.199: Very Poor Reliability

From the measurement of instrument try out reliability know that the numbers of test items were reliable or not.

## **H. Research Instrument Validity**

The validity of a test is the extent to which it measures what is supposed to measure and nothing else.<sup>53</sup> The test can be said valid if it is able to measure what it is supposed to be measure.

### **a. Content Validity**

Content validity is concerned with what goes into the test. A test will have high content validity if the items are representative of the population of the possible task. The content of a test should be decided by considering the purpose of the assessment and then drawn up as a list known as a content specification.<sup>54</sup>

The instrument must be valid in content. It means that the items in the instrument are equal and proportional in their distribution as the indicators of the test. From the measurement of validity, it was known that were 65 items (92, 85%) valid and 5 items (7,142%) invalid. (See Appendix 2)

### **b. Construct Validity**

According to Heaton construct validity assumes the existence of certain learning theories and constructs underlying the acquisition of abilities and skills.

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<sup>53</sup>*Ibid*, p. 153

<sup>54</sup>Wimar Tinambunan, *Education of Students's Achievement*, Jakarta: Depdikbud, 1998. p. 12.

If a test has constructed, it is capable of measuring certain specific characteristics in accordance with a theory of language.<sup>55</sup>

The validities did in order to know the degree of the validity of the test items based on the coefficient correlation. To measure the validity of the instrument, the writer will use the formulation of Product Moment by Pearson as follows<sup>56</sup>:

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

$r_{xy}$  : total coefficient of correlation

$\sum X$ : total value of score X

$\sum Y$ : total value of score Y

$\sum XY$  : Multiplication Result between score X and score Y

N : Number of students

Furthermore, it was calculated using Test-t calculation below:

$$t_{observed} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

Where:

t = The value of  $t_{observed}$

r = The coefficient of correlation of the result of  $r_{observed}$

n = Number of students

The distribution of  $t_{table}$  at alpha 5% and the degree of freedom (n-2) with the measurement of validity using these criteria:

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<sup>55</sup>J.B. Heaton. *Language Testing*. p. 154.

<sup>56</sup>Riduwan, *Metode dan Teknik Menyusun Thesis*, Bandung: Alfabeta, 2007, p. 110.



$t_{\text{observed}} > t_{\text{table}} = \text{Valid}$  $t_{\text{observed}} < t_{\text{table}} = \text{Invalid}$
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To know the validity level of the instrument, the result of the test will be interpreted to the criteria or the correlation index as follows:

0.800 – 1.000 = Very High Validity

0.600 – 0.799 = High Validity

0.400 – 0.599 = Fair Validity

0.200 – 0.399 = Poor Validity

0.000 – 0.199 = Very Poor Validity<sup>57</sup>

In the measurement of validity, the criteria are:

- If the value of  $t_{\text{observed}}$  is greater than  $t_{\text{table}}$ , the instrument is valid.
- If the value of  $t_{\text{observed}}$  is lower than  $t_{\text{table}}$ , the instrument is invalid.
- The value of  $t_{\text{table}}$  can be seen at  $\alpha = 5\%$

## I. Index of Difficulties and Discrimination Power

### 1. Index Difficulties

The index of difficulty (or the facility value) of an item simply shows how easy or difficult the particular item proved in the test.<sup>58</sup> The index of difficulty

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<sup>57</sup>*Ibid*,

<sup>58</sup>J.B. Heaton. *Language Testing*...p. 172

(F.V.) is generally expressed as the fraction (or percentage) of the students who answered the item correctly. It is calculated by using the formula<sup>59</sup>:

$$F.V = \frac{R}{N}$$

Notes:

F.V : Facility Value

R : Represent the number of correct answers

N : The total students

Then the result of the formula above is related to the value F.V as the following classification<sup>60</sup>:

F.V 0.00-0.30 : difficult

F.V 0.30-0.70 : fair

F.V 0.70-1.00 : easy

From the measurement index of difficulties, it was known that there were 54 items (77, 14%) fair and 16 items (22,85%) difficult. (See Appendix 2).

## **2. Discrimination Power**

The method of extreme groups can be applied to compute a very simple measure of the discriminating power of a test item. If a test is given to a large group of people, the discriminating power of an item can be measured by comparing the number of people with high test scores who answered that item correctly with the number of people with low scores who answered the same item

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<sup>59</sup>*Ibid*,

<sup>60</sup>Anas Sudjiono, *Pengantar Evaluasi Pendidikan*, Jakarta: PT. Rajagrafindo Persada, 2007, p. 372.

correctly. If a particular item is doing a good job of discriminating between those who score high and those who score low, more people in the top-scoring group will have answered the item correctly.

The item index of an item indicates the extent to which the item discriminates between the tests, separating the more able tests from the less able. The index discrimination tells us whether those who performed well on the whole test tended to do well or badly on each item in the test.<sup>61</sup>

There are various methods of obtaining the index of discrimination; all involve a comparison of those students who performed well on the whole test and who performed poorly on the whole test. It is calculated by using the formula.

$$D = \frac{\text{Correct } U - \text{Correct } L}{n}$$

Where : D = Discrimination Index

U = Correct answer Upper half

L = Correct answer lower half

N = The number of students

The writer most carefully distinguishes between n and N.

N = The number in the whole group.

n = The number of candidates in either the U or L group.

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<sup>61</sup>J. B. Heaton, *Language Testing*, p. 173.

### 1. Distribution of Try out Scores of the X class

The test scores were presented in the following table.

**Table 3.10 score try out class XII IPA 1 (vocabulary score)**

No	Code	Score
1.	A1	34,28
2.	A2	80
3.	A3	20
4.	A4	77,14
5.	A5	25,71
6.	A6	74,28
7.	A7	74,28
8.	A8	82,85
9.	A9	68,57
10.	A10	28,57
11.	A11	17,14
12.	A12	17,14
13.	A13	60
14.	A14	11,42
15.	A15	11,42
16.	A16	17,14
17.	A17	48,57
18.	A18	11,42
19.	A19	31,42
20.	A20	28,57

Based on the data above, it can be seen that the students' highest score was 82, 85 and the students' lowest score was 11,42. To determine the discriminating power using formula as follows:

$$D = \frac{U - L}{n}$$

$$\text{Example: } D = \frac{13-1}{20} = \frac{12}{20} = 0,6$$

**Table 3.11 Index Difficulty and Discrimination Power**

<b>Index</b>	<b>Difficulty</b>	<b>Discrimination</b>	<b>Values Item</b>
0.86 Above	Very Easy	To Be Discarded	0
0.71-0.85	Easy	To Be Revised	5
0.30-0.70	Moderate	Very Good Items	7
0.15-0.29	Difficult	To Be Revised	7
0.14- Below	Very Difficult	To Be Discarded	3

Based on the data from the discrimination power (see appendix 2), it can be seen that students' get very good items was 7 and to be revised 12 then to be discarded is 3 items.

## **J. Data Collection**

To collect the accurate data in this study, the writer will use the instruments that appropriate to the problem statement:

### **1. Test**

The test is a set of questions or exercises and other tools which are used to measure skill, intelligence, knowledge, and ability those are had by individual or group.<sup>62</sup> This method is used to get data about ascore of the pre-test and post-test that was given for both of groups. The test in this study is a test for students' vocabulary mastery and reading comprehension.

For collecting the data, the writer will use some steps in the procedure as follows:

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<sup>62</sup>M.Soenardi Djiwandono, *Tes Bahasa dalam Pengajaran*, Indeks, Jakarta. Cetakan pertama, 2008, p.150.

1. The writer observed the class.
2. The writer did try out in the tryout class.
3. The writer ask students to underlined the unknown word or difficult words in text.
4. The writer will analyze the result of the tryout, so the data gain from the test are valid and reliable.
5. The writer gives treatment to the text based on student's underlined by using lexical simplification and without lexical simplification.
6. The writer gave a score to data.
7. The writer analyzed the data that have been obtained from pre-test and post-test.
8. The writer interpreted the analysis result.
9. The writer concluded the activity of the study whether the effect of lexical simplification toward vocabulary mastery and reading comprehension, based on the obtained.

## 2. Documentation

Based on Daymone and Holloway state that documentation is that data consisted of speech and pictured recorded. The document can be available in thescript, activity report, sound, pictures, and digital data.<sup>63</sup>

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<sup>63</sup>Cristine Daymone and Immy Holloway, *Metode-Metode Riset Kualitatif dalam Public Relation and Marketing Communication*, translated by Cahya Wiratama, Yogyakarta: Bentang, 2008. P. 344.

In this study, documentation is used to get the data that related to the object of research such as students' reading comprehension, the number of students, and the result of vocabulary and reading test.

## **K. Data Analysis**

In this study, the writer used ANOVA for analysis the data. Simple or one-way analysis of variance (ANOVA) is a statistical procedure used to analyze the data from a study with more than two groups. The data of this study is a score of students pre-test and post-test. Therefore, the data are in quantitative data. The data will be analyzed by means of inferential statistics. This statistical analysis is suitable to answer the research problem. In this case, the writer will apply one-way ANOVA to examine the students' vocabulary mastery and reading comprehension use that lexical simplification and the students' vocabulary mastery and reading comprehension use that not lexical simplification.

### **1. Techniques of Data Analysis**

Before analyzing data using ANOVA Test, the writer should fulfill the requirements of ANOVA Test. They are Normality test, Homogeneity test, and Hypothesis test.

#### **a. Normality Test**

It is used to know the normality of the data that is going to analyze whether both groups have normal distribution or not. In this study to test the normality, the writer will apply SPSS 18.0 program using Kolmogorov-Smirnov with the level of significance = 5%. The calculation result of asymptotic

significance is higher than  $\alpha$  (5%) so the distribution data was normal. In the contrary, if the result of an asymptotic significance is lower than  $\alpha$  (5%), it meant the data was not anormal distribution.

### **b. Homogeneity Test**

Homogeneity is used to know whether experimental group and control group that are decided, come from apopulation that has arelatively same variant or not. To calculate homogeneity testing, the writer applied SPSS 18.0 program used Levene's testing with thelevel of significance  $\alpha$  (5%). If calculation result was higher than 5% degree of significance, so  $H_a$  was accepted, it means both groups hadthe same variant and homogeneous.

### **c. Testing Hypothesis**

The writerapplied the one-way ANOVA statistical to test thehypothesis with thelevel of significance 5% one-way ANOVA could be applied to test a difference mean or more. The steps are as follows:

- 1). Find out the grand mean (X) each group:  $\Sigma X_t^2 = \Sigma X^2 - (\frac{\Sigma X^2}{N})$
- 2). Find out the sum of square among group:

$$SS_t = \Sigma X^2 - \frac{(\Sigma X_t)^2}{N}$$

Where:

$SS_t$  = sum of square total

$\Sigma X^2$  = each score squared, then summed

$(\Sigma X_t)^2$  = all the scores summed first, then this sum squared

$N$  = number of scores

- 3). The sum of squares between groups



$$SS_b = \frac{(\sum X_1)^2}{n_1} + \frac{(\sum X_2)^2}{n_2} - \frac{(\sum X_2)^2}{N}$$

4).The sum of squares within groups

$$SS_w = SS_t - SS_b$$

5).Find out degree of freedom between group:

$$Df_b = G - 1$$

6).Calculate the between-groups mean square ( $MS_b$ ):

$$MS_b = \frac{SS_b}{df_b}$$

7).Find out the degree of freedom within group:

$$Df_w = N - 1$$

8).Calculate within group mean score ( $MS_w$ ):

$$MS_w = \frac{SS_w}{df_w}$$

9).Find the F ratio

$$F = \frac{MS_b}{MS_w}$$

10).Determine the level of significant of  $F_{\text{observed}}$  by comparing the  $F_{\text{observed}}$  with the  $F_{\text{table}}$ .

## 2. Data Analysis Procedures

The writer did some steps in data analysis procedure, they are as follows:

- a. Collected the students' vocabulary and reading.
- b. Arranged the obtained score into the distribution of frequency of score table.
- c. Calculated mean, median, modus, standard deviation and standard error of students' score.

- d. Measured the normality and homogeneity.
- e. Analyzed the data by using one-way analysis of variance to answer the problem of the study. In addition, the SPSS program is applied.
- f. Interpreted the result of analyzing data.
- g. Make discussion clarify the research finding.
- h. Drawn conclusion.
- i. Summary