

## CHAPTER III

### RESEARCH METHOD

The purpose of this research was to investigate whether or not video podcast as media is more effective than traditional media in teaching writing to the eleventh graders. This chapter describes the research method used in this study. Those are the research design, the research variables, the population and sample, the research procedure, data collection technique, instrument of the study, and the data analysis procedure.

#### **A. Research Design**

The appropriate research design to answer the research question “*Is video Podcast as Media more Effective than Traditional Media in Teaching Writing to the Eleventh Graders at SMAN Antartika*” is quasi- experimental design. The quasi experimental design is research design which has lack randomization of groups.<sup>1</sup> Moreover, in education system, most of schools do not permit any random assignment to the students as the research subjects because it will disturb the teaching and learning process in class. The quasi- experimental research also needs two classes for being the control group and experimental group<sup>2</sup>. In this research, the first class was the experimental class taught by using video podcast and the second class was the control class taught by using the technique

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<sup>1</sup> Donald Ary, Jacobs, LC, and Razavieh, *An Introduction to Research in Education: Third Edition*. (New York: CBS college publishing, 1985), 302

<sup>2</sup> M. Adnan Latief, *Tanya Jawab Metode Pembelajaran Bahasa* (Malang:UM Press, 2010) 117-121

commonly used by teacher. Test of pre treatment was used to measure how far students' understanding in writing and whether the two groups had similar ability in writing. Then, final test was used too to measure their enhancement after the experimental group got treatment through media video podcast.

## **B. Research Variables**

Experimental study needs to put variables of the research. The variables of this research are divided into two types, the independent variable and the dependent variable.

### **1. Independent Variable**

This variable is *also called stimulus, predictor or antecedent variable. Independent variable is variable which will give effect to dependent variable.*<sup>3</sup> Furthermore, Ary adds that independent variables are known to influence the dependent variable, which will be the outcome.<sup>4</sup> Based on those theories, the independent variable of this study was the treatments. So, video podcast became the independent variable of this research.

### **2. Dependent Variable**

Dependent variable is *also called output, criteria or consequent variable which will get effect or cause from independent variable.*<sup>5</sup> In this study, the

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<sup>3</sup> Sugiyono, *Statistika Untuk Penelitian* ( Alfabeta: Bandung: 2011), P. 4

<sup>4</sup> Donald Ary, Jacobs, LC, and Razavieh, *An Introduction to Research in Education: Third Edition.* (New York: CBS college publishing, 1985), 37

<sup>5</sup> Sugiyono, *Statistika Untuk Penelitian* ( Alfabeta: Bandung: 2011), P. 4

dependent variable was the product that made by students in learning. So, the dependent variable is the students' writing in report text in English.

### **C. Population and Sample**

Ary states that the first step in sampling is the identification of the target population which wishes to generalize the results of the study.<sup>6</sup> The target population of this study was the senior high school which has some problems in English writing. Yet, it was too difficult to select all of the target population. It would be expensive and spent a lot of time to finish the research. So, defining the accessible population is needed because this research need the population of subjects which accessible to the researcher for drawing sample.<sup>7</sup> The accessible population of this research was SMAN Antartika Sidoarjo. SMA Antartika was selected because it was one of the schools which has good quality in education. If the school has great impact for educational system, it will give great contributions to the other schools. That school also has good quality which was proved by its A accreditation. Furthermore, that school often participates and wins some English competition that used to help their students in improving their English skill including writing skill.

After identifying the population, the next step is selecting the sample. The selection of the class to be used as the experimental and control group was based on the sampling. The sampling technique used in this research was cluster

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<sup>6</sup> Donald Ary, Jacobs, LC, and Razavieh, *An Introduction to Research in Education: Third Edition*. (New York: CBS college publishing, 1985), 149

<sup>7</sup> ibid

sampling. That sampling technique was considered because the research was done through a group of sample and not in form of same individual.<sup>8</sup> Arifin also states that kind of sampling will ease the researcher because it selects all of subjects in a group and it does not subjects which is choose randomly.<sup>9</sup> The sample of this study was the students of XI IPA Effective 1 and XI IPA Effective 2 based on teachers' recommendation. There were 30 students in each class and total samples were 60 students from 300 students of science class.

This research was conducted in eleventh grade because even though they have been learning English since they were students in elementary school, they still have some problem in learning English writing. It was suitable to conduct the research because students still have time to solve their writing problems and develop their skill in English writing. It was not appropriate to conduct research in tenth grade. It would be difficult because they were new comer in senior high school while in twelfth graders, they should focus on the national examination. So, the appropriate grade was eleventh graders.

#### **D. Research procedure**

The research procedure was done into three steps: conducting pre treatment test, giving treatments and administering final test. The pre treatment test was conducted in test to measure if both of control group and experimental group had same capability in English writing. In the treatments, the experimental group was

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<sup>8</sup> Sugiyono, *Statistika Untuk Penelitian* ( Alfabeta: Bandung: 2011), P. 22

<sup>9</sup> Zainal Arifin, *penelitian pendidikan*, 2011, PT. Remaja Rosdakarya: Bandung, p 86

taught by video podcast while the control group was taught by traditional teaching way. These conducted twice. Nevertheless, those groups were taught in the same topics of well- known city in Java Island. The final test was used to investigate whether the video podcast is effective as media in teaching writing. These procedures were followed through based on the schedule as presented in Table 3.1 below.

**Table 3.1**  
**Research Schedule**

NO.	EXPERIMENTAL GROUP		CONTROL GROUP	
	DATE	Activity	DATE	Activity
1	July 22 <sup>nd</sup> 2013	Pre treatment test	July 22 <sup>nd</sup> 2013	Pre treatment test
2	July 24 <sup>th</sup> 2013	1 <sup>st</sup> treatment: Explanation of report text and teaching using video podcast with the topic “Bali island”	July 23 <sup>rd</sup> 2013	Explanation of report text and teaching using traditional media with the topic “Bali island”
3	July 29 <sup>th</sup> 2013	2 <sup>nd</sup> treatment: Explanation of report text and teaching using video podcast with the topic “Yogyakarta, Central Java”	July 29 <sup>th</sup> 2013	Explanation of report text and teaching using traditional media with the topic “Yogyakarta, Central Java”
4	July 31 <sup>st</sup> 2013	Final test	July 30 <sup>th</sup> 2013	Final test

## 1. Pre- treatment test

Pre-treatment test was conducted on July 22<sup>nd</sup> 2013 through test. It was done to both the control group and the experimental group. The purpose is to know the students' capability before getting treatments. The test was conducted in 45 minutes and the students should write a report text with the topic of "Amazing Places in Surabaya". This research selected topic of Surabaya because has a lot of interesting places than Sidoarjo and most of teenagers spent their time to visit Surabaya. Furthermore, the location of Surabaya is strategic from Sidoarjo. So, students had a lot of idea of Surabaya that they can pour in the writing test.

## 2. Treatments

The treatments were conducted in two meeting in the experimental group. While the experimental group was given treatment, the control group was taught as usual by using traditional technique. The first meeting discussed about "Bali Island" and the second treatment was about "Yogyakarta, Central Java".

### a.Experimental Group

The member of the experimental group were the students of XI IPA Effective 1. The treatments in the experimental group were given in two meetings, each in 60 minutes. The treatments were conducted using video podcast. The first treatment was conducted on July 24<sup>th</sup>

2013 using topic “Bali Island”. In addition, the researcher acted as an English teacher in teaching experimental group.

In the introduction of treatment, the teacher first greeted the student and elicited the students through some pictures related with Bali and the report text in power point presentation. Then, she asked the students what the pictures mean and related with what kind of the text it is. After that, she continued to the next section. She explained about report text at a glance. Then, the teacher asked the students to watch video podcast and write necessary information they got while watching video podcast. This section was done for about 6 minutes. When the students found some difficult or unfamiliar words, they were allowed to ask the teacher.

Afterwards, the students wrote main idea based on the information they have collected. They were also allowed to work with their seatmate. Those main ideas were used for helping them in organizing their idea into report text. In the last section, the teacher let the students to write simple paragraphs by their own words with topic “Bali Island”. It was used for training the students in English writing. The students should submit their writing task in the next meeting.

The second treatment was conducted on July 29<sup>th</sup> 2013. The students were taught by video podcast with the topic “Yogyakarta, Central Java”. In this treatment, the teacher did not use the

introduction but she directly played the video podcast with the topic “Yogyakarta, Central Java”. The duration of the video podcast was 6 minutes. After that, the teacher asked the students to write information they got from video podcast. The next section, the teacher did a simple game. She had a lucky paper ball and the students should give it to their next friend continuously until the teacher stopped the music. When the music was stop, the student who held the ball should come forward to write everything she/ he got while listening to the video podcast in a form of brainstorming. It was conducted in 3 minutes.

Then, the teacher asked students to use that brainstorm to help them in writing good paragraph of report text again. They also should submit their homework writing of “Bali Island” and their writing of “Yogyakarta, Central Java” in this last section. The teacher would score those writing tasks but the scores here were not used to answer the research question of this research. It was just used to see the differences of their writing in first treatment and second treatment.

#### b. Control Group

The member of control group were the students of XI IPA Effective 2. The teaching process in control group were conducted twice too. Each teaching process was conducted in 60 minutes. The teaching way was using traditional technique using textbook which is



usually used by the English teacher in SMA Antartika. The researcher acted as English teacher which used that traditional teaching way.

The first process was done on July 23<sup>rd</sup> 2013. In the first activity, the teacher greeted the students. Then, she wrote the explanation about report text in a white board. Afterwards, she explained her writing to the students. She explained the purpose and generic structure of report text. Then, the researcher let the students to read a report text entitled “Bali Island”. The researcher allowed the students to ask the difficult words in the text. Then, the students should define the generic structure of each paragraph. To make sure that the students understand that text well, the researcher asked some question related to the topic.

Then, the researcher let students to write simple paragraphs by their own words with topic “Bali Island”. When the students cannot finish their task, they were allowed to do those writing as homework and collect their task in the next meeting.

The second process were given on July 29<sup>th</sup> 2013. The activities in the second treatment are similar with the first treatment. The difference was on the topic in each treatment. The topic in second treatment was “Yogyakarta, Central Java”. Students also should submit their homework writing of “Bali Island” and their writing of

“Yogyakarta, Central Java”. These tasks were used to see students writing in the first and second treatments.

### 3. Final Test

The final test of experimental group was conducted on July 31<sup>st</sup> 2013 while control group was conducted on July 30<sup>th</sup> 2013. The final test was conducted to investigate the result of students’ achievement in writing after they got treatments using video podcast.

In final test students chose one of topics; the exotic of “Bali Island” or “The Cultural Sides of Yogyakarta, Central Java”. Then, they wrote a report text based on topic they have chosen. This test was conducted in 30 minutes for each group.

## **E. Data Collection Technique**

There were some steps utilized for collecting data of this research. First was giving try-out to measure validity and reliability of the instrument in one class that did not include in pre- treatment. The students of XI IPA 1 were selected to conduct this try- out. When the try out was valid and reliable, that try-out was used as test in pre treatment to the control group and the experimental group. This test was also conducted to find students’ capability in writing before they get treatment.

The next step was conducting the treatments in two meetings. The experimental group was taught by video podcast while the control

group was taught by similar teacher's way. The last step was giving final test to the experimental group and control group to investigate the significant differences of their enhancement in English writing after they got the treatments. For scoring the result of final test, writing scoring rubric adapted from Jacob et, al was chosen.<sup>10</sup> Students' writing in final test was scored in five criteria: content, organization, vocabulary, language use and mechanic.

#### **F. Instrument of The Study**

The instrument was necessitated for collecting data of this research. The appropriate instrument in this research was writing test. In this test, the students of experimental group and control group should write report text. Afterwards, students' writing was assessed by writing rubric ranging from content, organization, vocabulary, language use, and mechanics which is adapted from rubric of writing composition by Jacob et, al. Before the test was given to the student, the test should be valid and reliable. To define if the test was valid or not, the validity of the research should be conducted at first. Then, to measure the test was reliable or not, the reliability of the research should be conducted too after the measuring validity.

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<sup>10</sup> Arthur Hughes, *Testing For Language Teacher* (United Kingdom: Cambridge University Press, 2003) 100

## 1. Validity of the Research

Validity is the most necessary consideration in measuring instruments.<sup>11</sup>

According to Ary, et al, validity is the specification of instruments that should be measured. He also adds that the focus of the validity is not only from the instrument, but also in the relationship of explanation and meaning of the scores toward the instrument.<sup>12</sup>

This research utilized content validity. The content validity was analysed from comparing the content of instrument with the exact planning whether those are related or not.<sup>13</sup> It indicates that the instrument should be related to the planning that is available in the curriculum of education for eleventh grade. The instrument was the writing of report text was already available in standard competency and basic competency for eleventh graders in the first semester.<sup>14</sup> To strengthen the validity of the instrument, the validation also took advices from the English teacher at SMA Antartika and an English expert lecturer of English writing of English Education Department. These validations can be seen in Appendix 6.

## 2. Reliability of The Research

Reliability describes the consistency of instrument score from one measurement to another. In measuring whether the test is reliable or not, the

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<sup>11</sup> Donald Ary, Jacobs, LC, and Razavieh, *An Introduction to Research in Education: Third Edition*. (New York: CBS college publishing, 1985),225

<sup>12</sup>Ibid

<sup>13</sup> Sugiyono, *Statistika Untuk Penelitian* ( Alfabeta: Bandung: 2011), P. 353

<sup>14</sup> Perangkat pembelajaran :Standar Kompetensi dan Kompetensi Dasar. Bahasa Inggris SMA. KTSP, P 12

researcher used the test-retest reliability. Test-retest was the technique in measuring the reliability of instrument which were tested twice.<sup>15</sup> Based on Sugiyono, test retest is conducted in the same instrument and subjects, but did in different time.<sup>16</sup>

The members of try-out test were the students from different class which were not included in experimental group or control group. The members of try-out test were thirty students of XI-IPA 1. The first try-out test was conducted on July 15<sup>th</sup> and second try-out test was 18<sup>th</sup> 2013.

The first step was put the scores in the table. X was the score in the first test and Y was the score in the second test. Table 3.2 shown below presents the result of the try out score.

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<sup>15</sup> Sugiyono, *Statistika Untuk Penelitian* ( Alfabeta: Bandung: 2011), P. 354

<sup>16</sup> Ibid

**Table 3.2**  
**Try-out scores**

<b>Subject</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>X.Y</b>
1	78	80	6084	6400	6240
2	75	77	5625	5929	5775
3	80	82	6400	6724	6560
4	75	77	5625	5929	5775
5	78	80	6084	6400	6240
6	78	80	6084	6400	6240
7	75	76	5625	5776	5700
8	70	76	4900	5776	5320
9	75	76	5625	5776	5700
10	75	75	5625	5625	5625
11	79	79	6241	6241	6241
12	70	73	4900	5329	5110
13	72	76	5184	5776	5472
14	73	79	5329	6241	5767
15	71	74	5041	5476	5254
16	75	80	5625	6400	6000
17	73	75	5329	5625	5475
18	74	75	5476	5625	5550
19	70	75	4900	5625	5250
20	75	80	5625	6400	6000
21	71	76	5041	5776	5396
22	76	80	5776	6400	6080
23	75	80	5625	6400	6000
24	70	74	4900	5476	5180
25	71	75	5041	5625	5325
26	75	77	5625	5929	5775
27	70	75	4900	5625	5250
28	74	79	5476	6241	5846
29	75	80	5625	6400	6000
30	74	76	5476	5776	5624
<b>Total</b>	<b>2222</b>	<b>2317</b>	<b>164812</b>	<b>179121</b>	<b>171770</b>

The next step was calculating the reliability with the product moment formula:<sup>17</sup>

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

Explanation:

$r_i$  : The coefficient of correlation between variable X and Y.

X : Test score of first try out.

Y : Test score of second try out.

N : The number of the students.

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

$$r_i = \frac{30(171770) - (2222)(2317)}{\sqrt{[30(164812) - (2222)^2][30(179121) - (2317)^2]}}$$

$$r_i = \frac{5153100 - 5148374}{\sqrt{[7076][5141]}}$$

$$r_i = \frac{4726}{\sqrt{36377716}}$$

$$r_i = \frac{4726}{6031.394}$$

$$r_i = 0.78$$

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<sup>17</sup> Ibid 356

The last step was comparing the result with the table of reliability of the test to know the instrument include in what kind of level of reliability. Based on Brown cited from Sugiarti, the criteria to interpret the result is as follows:<sup>18</sup>

**Table 3.3**

**Level Reliability of the Test**

Scale	Level of Reliability
0.00-0.20	Not reliable
0.20-0.40	Less Reliable
0.40-0.60	Reliable enough
0.60-0.80	Reliable
0.80-1.00	Very Reliable

Based on calculation above, the result was 0.78. It means that the result included in scale 0.60-0.80 which means the level of reliability is reliable to be used. So this instrument is appropriate to be used as the instrument of this research.

**G. Data Analysis Procedure**

In this research, the data were collected from test. The procedures are scoring, comparing mean and t-test.

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<sup>18</sup> Dwi Wahyu Sugiarti, *The Effectiveness of Clustering Technique in Teaching Writing at MTs Raudlatul Ulum*, (Surabaya, State Institute for Islamic Studies Sunan Ampel Surabaya, 2012). 26



## 1. Scoring

The pre treatment test and final test were scored using writing' scoring rubric adapted from Jacob et, al. The components for scoring were divided into five criteria. Those are content, organization, vocabulary, language use and mechanic.

In scoring the content, the score was starting from excellent to very good until very poor. The level of excellent to very good was 30-27 with the criteria the content was relevant to assigned topic. The level of Good to average was 26- 22 with criteria the content was mostly relevant to assigned topic but it lacks detail. The level of Fair to poor was 21-17 with criteria the content was inadequate development of the topic. Then, the level of Very poor was 16-13 with criteria the content of the composition was not relevant to the topic.

In scoring the organization of the text, the score was ranging from excellent to very good until very poor. The level of Excellent to very good was 20-18 with criteria: the ideas were clearly stated/ supported, the organization of text was well organized by on the generic structure and the text was cohesive. Then, the level of Fair to poor is 17-14 with criteria: the ideas were confusing and disconnected, the organization of text was lack logical sequencing and development. The level of Good to average was 13-10 with criteria: the ideas were loosely organize but the main ideas stand out, the ideas are limited support and the structure is logical but it was in incomplete

sequencing. The last was level of Very poor was 9-7 with criteria: the ideas were not clearly stated and there was no organization and not enough to evaluate.

The third, in scoring the vocabulary was similar with previous scoring. The level of Excellent to very good was 20-18 with the criteria the chosen words/ idiom were effective and appropriate in usage. The level of Good to average was 17-14 with the criteria there were some occasional errors of words/ idiom in usage but meaning was not obscured. The level of Fair to poor was 13-10 with the criteria there are some frequent errors of words/ idiom in usage but meaning was obscured or confusing. The level of Very poor was 9-7 with the criteria there was little knowledge of English words/ idiom or not enough to evaluate.

The fourth was scoring the language use. The level of Excellent to very good was 25-22 the construction was effective complex with criteria a few errors of agreement, tense, number, word order/function, articles, pronouns and prepositions. The level of Good to average was 21-18 with criteria the construction was effective but simple, several errors of agreement, tense, number, word order/function, articles, pronouns, prepositions but meaning seldom obscured. The level of Fair to poor was 17-11 with criteria major problem in simple/ complex construction, frequent errors of agreement, tense, number, word order/function, articles, pronouns, prepositions but meaning was confusing or obscured. The level of Very poor was 10-5 with criteria

dominated by errors and the language use did not communicate or not enough to evaluate.

The last was scoring mechanic. The level of Excellent to very good was 5 with criteria demonstrate mastery in convention and few errors of spelling, punctuation, capitalization and paragraphing. The level of Good to average was 4 with the criteria occasional errors of spelling, punctuation, capitalization, paragraphing but meaning not obscured. The level of Fair to poor was 3 with criteria frequent errors of spelling, punctuation, capitalization, paragraphing but meaning was confusing or obscured. The level of very poor was 2 with criteria no mastery of convention and dominated by errors of spelling, punctuation, capitalization, paragraphing and handwriting illegible.

So, the amount of the whole score is 100. It is taken from maximum score in each level; content 30, organization 20, vocabulary 20, language use 25, mechanic 5.

## 2. Comparing Mean

In order to answer the research question of the study, it needed to compare the mean result both experimental and control group. Mean was calculated by dividing the total of the score with the amount of students in each group. The use of Ms.Excel was needed to calculate the mean of experimental and control group. After that, the mean of experimental and control group was compared to know which group has higher score.

### 3. T-test

T-test was utilized to “..assesses whether the means of two groups are statistically different from each other.”<sup>19</sup> It means that t-test is used to know the mean of the final test both of the control group and the experimental group was significantly different or not. The terms of use the t-test are normal distribution and homogeneous variants. So that, before analyzed using t-test, it should be necessary to test the normality of the data. After that calculate the homogeneity of variance test required to determine the subjects which taken were homogeneous or not.

#### a. Normality test

The normality test is used to check whether the final test score of experimental group and control group were normally distribution or not, the following steps are:<sup>20</sup>

- 1) deciding the number of intervals class using Chi Square test, the number of interval is 6,
- 2) determining the limitation of interval class, the formula is:

$$\begin{aligned} \text{The long interval class} &= \frac{\text{biggest data} - \text{smallest data}}{6 \text{ (the number of interval)}} \\ &= \frac{95 - 70}{6} \\ &= 4.16 \end{aligned}$$

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<sup>19</sup> William M. K. Trochim, *The Research Methods Knowledge Base, 2<sup>nd</sup> edition*, (Ithaca, N. Y.: Cornell University: 1999)

<sup>20</sup> sugiyono, *Statistika Untuk Penelitian* ( Alfabeta: Bandung: 2011), p.75

$$= 4$$

Based on the calculation above, the smallest data both of group was 70 and the biggest data was 95. The long interval class in each interval was 4 with the number of interval was 6.

3) Calculating the data. There were some steps to calculate the data:

a) Calculating  $f_h$  (the frequency of the expected) based on the percentage area of each field in normal curve multiplied by 60 (the number of individuals in the sample). Number of individuals in the sample).

- The first line : 2.7 % x 60 = 1.62 is rounded to 2
- The second line : 13.53 % x 60 = 8.118 is rounded to 8
- The third line : 34.13 % x 60 = 20.478 is rounded to 20
- The fourth line : 34.13 % x 60 = 20.478 is rounded to 20
- The fifth line: 13.53 % x 60 = 8.118 is rounded to 8
- The sixth line: 2.7 % x 60 = 1.62 is rounded to 2

b) Taking the value of  $f_0$  to the table columns  $f_h$  , and then calculating the value

of  $(f_0 - f_h)^2$  and  $\frac{(f_0 - f_h)^2}{f_h}$

Explanation:

$f_0$ = Frequency of data from the result of final test

$f_h$ = Frequency of the expected (percentage area of each field multiplied by  $n$ )

$f_0 - f_h =$  The differences between  $f_0$  dan  $f_h$

- 4) Arranging the data into a frequency distribution table.

**Table 3.4**  
**Table of Frequency Distribution**

INTERVAL	$f_0$	$f_h$	$f_0 - f_h$	$(f_0 - f_h)^2$	$\frac{(f_0 - f_h)^2}{f_h}$
70-74	5	2	3	9	4,5
75-79	11	8	3	9	1.125
80-84	15	20	-5	25	1.25
85-89	15	20	-5	25	1.25
90-94	10	8	2	4	0.5
95-99	4	2	2	4	2
	60	60	0	76	10.625

Based on calculation above, the Chi square quantification was 10.625. Then, defining the  $df$  which was calculated from the amount of interval - 1 or  $6-1=5$ . The alpha that used in this research was 5% because that percentage was the appropriate percentage in education research. After that, based on  $df$  5 and alpha 5%, the value of Chi square table can be known. The value of Chi square table was 11.070.<sup>21</sup> Afterwards, it needs for comparing the Chi square quantification and the value of Chi square table. It was found that the Chi square quantification (10.625) was smaller than the value of Chi square table (11.070). It indicates that the data from the final test of experimental and control group were normally distributed.

<sup>21</sup> Sugiyono, *Statistika Untuk Penelitian* ( Alfabeta: Bandung: 2011), p 376

b. Homogeneity test

The homogeneity test was used to check whether the final test score of experimental and control group have same variance or not. The following steps of homogeneity test as followed:

- 1) Finding the biggest variant score and the smallest variant score, the formula is:

$$F_{score} = \frac{S_1^2}{S_2^2}$$

Explanation:

$S_1^2$  = the larger of variance

$S_2^2$  = the smaller of variance

$$F_{score} = \frac{S_1^2}{S_2^2}$$

$$= \frac{43.98161}{43.52759}$$

$$= 1.010431$$

- 2) Finding the  $F_{table}$

$$df \text{ numerator} : 30-1 = 29$$

$df$  denominator :  $30-1=29$

Alpha= 5%

$F_{table} = 1.85$

From the calculation above,  $F_{score}$  was 1.010431 and the  $F_{table}$  was 1,85.  $F_{table}$  was found from distribution table of  $F$ .<sup>22</sup> It indicated that  $F_{score}$  was smaller than the  $F_{table}$ . It means that the scores of the test in both group were homogenous. After calculating normality and homogeneity, the next step was calculating t- test. The t-test was used to test that the result was not obtained by chance. This calculation of t-test is presented in Chapter IV page 56-59.

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<sup>22</sup> Sugiyono, *Statistika Untuk Penelitian* ( Alfabeta: Bandung: 2011), p 385