CHAPTER IV

RESULT OF RESEARCH AND DISCUSSION

This chapter presents the data gotten by the researcher in several days. It will be describe systematically from the presentation of the data, data from questionnaire and test. There are three main parts of this chapter. They are presentation of data, hypothesis testing, and discussion.

A. Presentation of Data

After collecting the data that researcher needs, the next step is presentation of data that is formed and shown into result of research. The data that will be describe is data that the researcher obtained during the research process at English Teaching and Learning program of IAIN Madura. The data here related to independent and dependent variables. It involved the data presentation of the data is explained as follow:

1. Data Presentation of Questionnaire

In conducting this research at the third semester of TBI IAIN Madura, the researcher used questionnaire which is taken from the book of Bobby Deporter namely Quantum Learning which consist of 18 (fifteen) items. The researcher modified the questionnaire into yes-no question or Guttman Scale.[1] The researcher provides the questionnaire in appendix.

Based on Sugiyono's statement "skala pengukuran dengan Guttman scale menghasilkan jawaban yang tegas, yaitu 'ya-tidak'. Penelitian menggunakan Gutman Scale dilakukan bila ingin mendapatkan jawaban

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[1] Riduwan, *Dasar-Dasar Statistika*, 42.

yang tegas terhadap suatu permasalahan yang ditanyakan".[2] The Answer of sample will firmly determine whether they are left hemisphere dominance students or right one.

The questionnaire based on *Quantum Learning* book. It is transformed into numerical form. Thus, it has a value as following:

The students who answer "yes" will get score 1

The students who answer "no" will get score 0

a. **General Drawing of the Result of The Questionnaire**

From four classes of the third semester of TBI IAIN Madura; A, B, C, and D with total number of the students was 142 students. Unfortunately, in this research the researcher just could be accessed 107 students. Because some of their questionnaire is not complete or having something error and the other of them absent went this questionnaire was delivered. Based on the questionnaire from 107 students, there are 55 left hemisphere dominance students and 52 right hemisphere dominance students.

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[2] *Metode Penelitian Kuantitatif Kualitatif Dan R&D*, 92.

Precentage of Left and Right Hemisphere Dominance Students

Left Hemisphere Dominance Students   Right Hemisphere Dominance Students
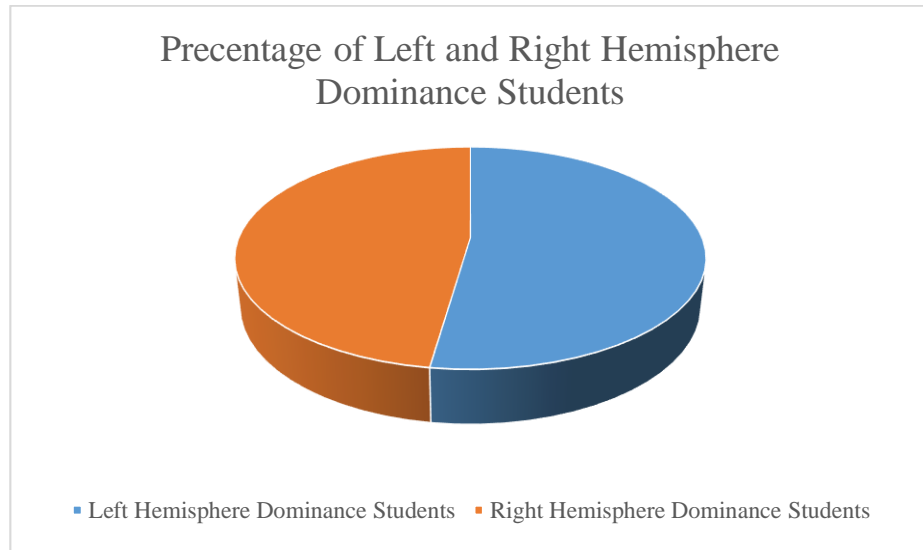
The percentage of Left Hemisphere Dominance Students and their right one is 51%-49%.

The complete data of the number of left hemisphere dominance students and their right one in each class is as follow:

Table 4.1. The sum of students who answer the questionnaire

No	Class	Sum of LHD Students	Sum of RHD Students	Total
1.	A	12	12	24
2.	B	15	11	26
3.	C	13	17	30
4.	D	15	12	27
Total		55	52	107

The table above reveal that from 107 students as the population. There are 55 left hemisphere dominance students and 52 right hemisphere dominance students. Where, the numbers of Left

Hemisphere Dominance students from A Class until D Class are 12, 15, 13, 15. The other hand, the numbers of Right Hemisphere Dominance students from A Class until D Class are 12, 11, 17, 12. So the total numbers of left hemisphere dominance students and their right one in each class starting from A-D Class are 24, 26, 30, and 27.

b. **Result of Sample Taking of Left Hemisphere and Right Hemisphere Dominance Students Based on Questionnaire**

There are 107 students in the population. Due to the large number of the population, it will be less effective to measure all of the population. Therefore, the researcher has chosen sample of them that are considered would represent others. Initially, sample of this research is expected to be 40 students which counted approximately 20% of the population. The 40 students are picked randomly. The more the sample taken from population, the more valid the results of the study are expected to be. After the researcher accounts the numbers of students that are available, the researcher takes the sample from each class randomly by using lottery. Table 4.2. The sum of students as sample:

No	Class	Left Hemisphere Dominance Students	Right Hemisphere Dominance Students	Total
1.	A	5	5	10
2.	B	6	4	10
3.	C	4	7	11
4.	D	5	4	9
Total		20	20	40

From A Class the researcher takes 10 students as sample. In B Class the researcher takes 10 students, C Class is 11 students, and 9 students are chosen from D Class.

c. Validity of Questionnaire

In this research, the researcher used content validity. To ensure that the questionnaire is valid, the researcher compared and matched the item of questionnaire which is taken from *Quantum Learning* book in the section of 'characteristics of right and left hemisphere dominance students' to the other books. They are *the Accelerated Learning*, *Quantum Teaching*, *Genius Learning*, *Smart Learning Technology*, and *Introduction to Psycholinguistic*. The result is all those books share similar characteristic of both left and right hemisphere dominance students. In conclusion, the questionnaires which is used by the researcher is valid.

d. Reliability of Questionnaire

In this research, the researcher used K-R20 formula to measure the reliability of questionnaire as following:

$$r_{11} = \left(\frac{K}{K-1}\right)\left(\frac{v_t - \sum pq}{v_t}\right)$$

Note:

r_{11} = reliability of instrument

K = the sum of questionnaire items

v_t = total variance

p = subject proportion who has true answer on 1 item

$q = 1 - p$

While for variance total which is used for sample by applying the following formula:

$$v_t = \frac{\sum(xi - x)^2}{N - 1}$$

Where:

v_t = total variance

$\sum(xi - x)^2$ = the sum of score deviation which is squared

N = the number of participant

The researcher used distribution table of questionnaire answers and scores of both hemisphere dominance that have been separated in appendixes and also computed p, q, and pq of questionnaire items as it is accounted in detail below:

1) **The Computing of the Items of Questionnaire of Left Hemisphere Dominance Students**

The number of left hemisphere dominance students who get one score on each item can be seen in the table 11 in the appendix VI.

a) The first item questionnaire of left hemisphere dominance students.

p $= \frac{19}{20}$

           $= 0.95$

q $= 1 - p$

           $= 1 - 0.05$

           $= 0.85$

Pq $= 0.95 \times 0.05$

$$= 0.0475$$

b) The second item questionnaire of left hemisphere dominance students.

p	$= \dfrac{11}{20}$
	$= 0.55$
q	$= 1 - p$
	$= 1 - 0.55$
	$= 0.45$
Pq	$= 0.55 \times 0.45$
	$= 0.2475$

c) The third item questionnaire of left hemisphere dominance students.

p	$= \dfrac{16}{20}$
	$= 0.15$
q	$= 1 - p$
	$= 1 - 0.8$
	$= 0.2$
Pq	$= 0.8 \times 0.2$
	$= 0.16$

d) The fourth item questionnaire of left hemisphere dominance students.

p	$= \dfrac{20}{20}$
	$= 1$
q	$= 1 - p$
	$= 1 - 1$

$$= 0$$

$$Pq \quad = 1 \times 0$$

$$= 0$$

e) The fifth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{16}{20}$$

$$= 0.8$$

$$q \quad = 1 - p$$

$$= 1 - 0.8$$

$$= 0.2$$

$$Pq \quad = 0.8 \times 0.2$$

$$= 0.16$$

f) The sixth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{7}{20}$$

$$= 0.35$$

$$q \quad = 1 - p$$

$$= 1 - 0.35$$

$$= 0.65$$

$$Pq \quad = 0.35 \times 0.65$$

$$= 0.2275$$

g) The seventh item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{20}{20}$$

$$= 1$$

$$q \quad = 1 - p$$

$$= 1 - 1$$

$$= 0$$

$$Pq \quad = 1 \times 0$$

$$= 0$$

h) The eighth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{19}{20}$$

$$= 0.95$$

$$q \quad = 1 - p$$

$$= 1 - 0.95$$

$$= 0.05$$

$$Pq \quad = 0.95 \times 0.05$$

$$= 0.0475$$

i) The ninth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{16}{20}$$

$$= 0.8$$

$$q \quad = 1 - p$$

$$= 1 - 0.8$$

$$= 0.2$$

$$Pq \quad = 0.8 \times 0.2$$

$$= 0.16$$

j) The tenth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{14}{20}$$

$$= 0.7$$

$$q \quad = 1 - p$$

$$= 1 - 0.7$$

$$= 0.3$$

$$Pq \quad = 0.7 \times 0.3$$

$$= 0.21$$

k) The eleventh item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{3}{20}$$

$$= 0.15$$

$$q \quad = 1 - p$$

$$= 1 - 0.15$$

$$= 0.85$$

$$Pq \quad = 0.15 \times 0.85$$

$$= 0.1275$$

l) The twelfth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{5}{20}$$

$$= 0.25$$

$$q \quad = 1 - p$$

$$= 1 - 0.25$$

$$= 0.75$$

Pq $= 0.25 \times 0.75$

        $= 0.1875$

m) The thirteenth item questionnaire of left hemisphere dominance students.

p $= \dfrac{0}{20}$

        $= 0$

q $= 1 - p$

        $= 1 - 0$

        $= 1$

Pq $= 0 \times 1$

        $= 0$

n) The fourteenth item questionnaire of left hemisphere dominance students.

p $= \dfrac{15}{20}$

        $= 0.75$

q $= 1 - p$

        $= 1 - 0.75$

        $= 0.25$

Pq $= 0.75 \times 0.25$

        $= 0.1875$

o) The fifteenth item questionnaire of left hemisphere dominance students.

p $= \dfrac{7}{20}$

$$= 0.35$$

$$q \quad = 1 - p$$

$$= 1 - 0.35$$

$$= 0.65$$

$$Pq \quad = 0.35 \times 0.65$$

$$= 0.2275$$

p) The sixteenth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{2}{20}$$

$$= 0.1$$

$$q \quad = 1 - p$$

$$= 1 - 0.1$$

$$= 0.9$$

$$Pq \quad = 0.1 \times 0.9$$

$$= 0.09$$

q) The seventeenth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{5}{20}$$

$$= 0.25$$

$$q \quad = 1 - p$$

$$= 1 - 0.25$$

$$= 0.75$$

$$Pq \quad = 0.25 \times 0.75$$

$$= 0.1875$$

r) The eighteenth item questionnaire of left hemisphere dominance students.

$$p \quad = \frac{20}{20}$$

$$= 1$$

$$q \quad = 1 - p$$

$$= 1 - 1$$

$$= 0$$

$$Pq \quad = 1 \times 0$$

$$= 0$$

s) Variance off total values of questionnaire of left hemisphere dominance students.

$$Vt \quad = \frac{\sum (xi - x)^2}{N - 1}$$

$$= \frac{80.55}{20 - 1}$$

$$= \frac{80.55}{19}$$

$$= 4.23947$$

2) **The Analysis of Reliability of Left Hemisphere Dominance Students' Questionnaire**

Based on calculation above, the researcher found some data namely p, q, and pq of each item of left hemisphere dominance students' questionnaire. The following table present the score of pq.

Table 4.3. The result of pq of each item in group 1

Each Number Item of Questionnaire	The Result
1st	0.0475
2nd	0.2475
3rd	0.16
4th	0
5th	0.16
6th	0.2275
7th	0
8th	0.0475
9th	0.16
10th	0.21
11th	0.1275
12th	0.1875
13th	0
14th	0.1875
15th	0.2275
16th	0.09
17th	0.1875
18th	0
$\sum$pq	2.2675

The total score of pq ($\sum$pq) is 2.2675. While the variance of total score of questionnaire items is 4.23947. Then, the researcher inserts those results to the K-R20 formula to get the reliability of right hemisphere dominance students' questionnaire.

$$r_{11} = \left(\frac{k}{k-1}\right)\left(\frac{V_t - \sum pq}{V_t}\right)$$

$$= \left(\frac{18}{18-1}\right)\left(\frac{4.23947 - 2.2675}{4.23947}\right)$$

$$= (1.05882)\left(\frac{1.97947}{4.23947}\right)$$

$$= (1.05882)(0.46691)$$

$$= 0.4943784071$$

$$= 0.494$$

3) The computing of the Items of Questionnaire of Right Hemisphere Dominance Students

The number of right hemisphere dominance students who get one score on each item can be seen in the table 11 in the appendix VI.

a) The first item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{3}{20}$$

$$= 0.15$$

$$q \quad = 1 - p$$

$$= 1 - 0.15$$

$$= 0.85$$

$$Pq \quad = 0.15 \times 0.85$$

$$= 0.1275$$

b) The second item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{7}{20}$$

$$= 0.35$$

$$q \quad = 1 - p$$

$$= 1 - 0.35$$

$$= 0.65$$

$$Pq \quad = 0.35 \times 0.65$$

$$= 0.2275$$

c) The third item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{1}{20}$$

$$= 0.05$$

$$q \quad = 1 - p$$

$$= 1 - 0.05$$

$$= 0.95$$

$$Pq \quad = 0.05 \times 0.95$$

$$= 0.0475$$

d) The fourth item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{0}{20}$$

$$= 0$$

$$q \quad = 1 - p$$

$$= 1 - 0$$

$$= 1$$

$$Pq \quad = 0 \times 1$$

$$= 0$$

e) The fifth item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{6}{20}$$

$$= 0.3$$

$$q \quad = 1 - p$$

$$= 1 - 0.3$$

$$= 0.7$$

$$Pq \quad = 0.3 \times 0.7$$

$$= 0.21$$

f) The sixth item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{12}{20}$$

$$= 0.6$$

$$q \quad = 1 - p$$

$$= 1 - 0.6$$

$$= 0.4$$

$$Pq \quad = 0.6 \times 0.4$$

$$= 0.24$$

g) The seventh item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{13}{20}$$

$$= 0.65$$

$$q \quad = 1 - p$$

$$= 1 - 0.65$$

$$= 0.35$$

$$Pq \quad = 0.65 \times 0.35$$

$$= 0.2275$$

h) The eighth item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{6}{20}$$

$$= 0.3$$

$$q \qquad = 1 - p$$

$$= 1 - 0.3$$

$$= 0.7$$

$$Pq \qquad = 0.3 \times 0.7$$

$$= 0.21$$

i) The ninth item questionnaire of right hemisphere dominance students.

$$p \qquad = \frac{17}{20}$$

$$= 0.85$$

$$q \qquad = 1 - p$$

$$= 1 - 0.85$$

$$= 0.15$$

$$Pq \qquad = 0.85 \times 0.15$$

$$= 0.1275$$

j) The tenth item questionnaire of right hemisphere dominance students.

$$p \qquad = \frac{20}{20}$$

$$= 1$$

$$q \qquad = 1 - p$$

$$= 1 - 1$$

$$= 0$$

$$Pq \qquad = 1 \times 0$$

$$= 0$$

k) The eleventh item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{18}{20}$$

$$= 0.9$$

$$q \quad = 1 - p$$

$$= 1 - 0.9$$

$$= 0.1$$

$$Pq \quad = 0.9 \times 0.1$$

$$= 0.09$$

l) The twelfth item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{16}{20}$$

$$= 0.8$$

$$q \quad = 1 - p$$

$$= 1 - 0.8$$

$$= 0.2$$

$$Pq \quad = 0.8 \times 0.2$$

$$= 0.16$$

m) The thirteenth item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{17}{20}$$

$$= 0.85$$

$$q \quad = 1 - p$$

$$= 1 - 0.85$$

$$= 0.15$$

$$Pq \quad = 0.85 \times 0.15$$

$$= 0.1275$$

n) The fourteenth item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{20}{20}$$

$$= 1$$

$$q \quad = 1 - p$$

$$= 1 - 1$$

$$= 0$$

$$Pq \quad = 1 \times 0$$

$$= 0$$

o) The fifteenth item questionnaire of right hemisphere dominance students.

$$p \quad = \frac{19}{20}$$

$$= 0.95$$

$$q \quad = 1 - p$$

$$= 1 - 0.95$$

$$= 0.05$$

$$Pq \quad = 0.95 \times 0.05$$

$$= 0.0475$$

p) The sixteenth item questionnaire of right hemisphere dominance students.

$$p = \frac{18}{20}$$

$$= 0.9$$

$$q = 1 - p$$

$$= 1 - 0.9$$

$$= 0.1$$

$$Pq = 0.9 \times 0.1$$

$$= 0.09$$

q) The seventeenth item questionnaire of right hemisphere dominance students.

$$p = \frac{15}{20}$$

$$= 0.75$$

$$q = 1 - p$$

$$= 1 - 0.75$$

$$= 0.25$$

$$Pq = 0.75 \times 0.25$$

$$= 0.1875$$

r) The eighteenth item questionnaire of right hemisphere dominance students.

$$p = \frac{20}{20}$$

$$= 1$$

$$q = 1 - p$$

$$= 1 - 1$$

$$= 0$$

$$Pq \quad = 1 \times 0$$

$$= 0$$

s) Variance off total values of questionnaire of right hemisphere dominance students.

$$Vt \quad = \frac{\sum (xi - x)^2}{N - 1}$$

$$= \frac{70.55}{20 - 1}$$

$$= \frac{70.55}{19}$$

$$= 3.71315$$

4) The Analysis of Reliability of Right Hemisphere Dominance Students' Questionnaire

Based on calculation above, the researcher found some data namely p, q, and pq of each item of right hemisphere dominance students' questionnaire. The following table present the score of pq.

Table.4.4. The result of pq of each item in group 2

Each Number Item of Questionnaire	The Result
1st	0.1275
2nd	0.2275
3rd	0.0475
4th	0
5th	0.21
6th	0.24
7th	0.2275
8th	0.21
9th	0.1275
10th	0
11th	0.09
12th	0.16

13th	0.1275
14th	0
15th	0.0475
16th	0.09
17th	0.1875
18th	0
∑pq	**2.12**

The total score of pq (∑pq) is 2.12. While the variance of total score of questionnaire items is 3.71315. Then, the researcher inserts those results to the K-R20 formula to get the reliability of right hemisphere dominance students' questionnaire.

$$r_{11} = \left(\frac{k}{k-1}\right)\left(\frac{V_t - \sum pq}{V_t}\right)$$

$$= \left(\frac{18}{18-1}\right)\left(\frac{3.71315 - 2.12}{3.71315}\right)$$

$$= (1.05882)\left(\frac{1.59315}{3.71315}\right)$$

$$= (1.05882)(0.42905)$$

$$= 0.454286721$$

$$= 0.454$$

After computing r_{11} of the questionnaire of both groups, it has gotten the reliability of questionnaire which is used for left hemisphere dominance students and right one are 0.494 and 0.454.

Consulting the value of r11 to r table product moment correlation is needed based on Arikunto's statement6. The value of r table with the 20 participants is 0.444 in significant level 95%. It can be seen in appendix that the r_{11} value of both hemisphere dominance students is higher than r table as following:

• Significant level 95% = (r_{11} left hemisphere dominance student and right one > r table)

$$= (0.494 \text{ and } 0.454 > 0.444)$$

` From those short and simple explanation, it can be inferred that the questionnaire which is used for identifying brain dominance of both left hemisphere dominance students and right one is reliable.

2. **Data Presentation of Test**

After identifying the dominant hemisphere of students based on questionnaire, the researcher takes the results of the test on students' speaking skill. Firstly, she makes a table of students list complete with the five criteria of the test to be guideline, they are grammar, pronunciation, vocabulary, fluency, and comprehension. The researcher just gives the score by writing it in that table. Then, those data will be analyzed by using independents *t-test.*

In giving the speaking score, the researcher use the rating scale which can be seen in appendix. This scale is taken from Harris's book.[3] In each speaking components, there are numerical values a range of 1 to 5 points each followed by a short behavioral statements. To make easier in giving score, the range itself is then transform into some grading (holistic grading) that would be guideline in scoring the test. The highest score of each component is 100.

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[3] Harris, *Testing English as A Second Language*, (New York: McGraw-Hill Book Company, 1959), 84.

Total score of students' speaking skill is gained by summing the score of each component, and final score is *mean* score of total score. Such as Fitriyah, a left hemisphere dominance student, she scores her 92 in pronunciation (P), 95 in grammar (G), 90 in vocabulary (V), 95 in fluency (F), and 95 in comprehension (C). Therefore, total score of her speaking skill is (92+95+90+95+95) = 467, while, final score of her speaking is (467/5) = 93, it becomes the score of her speaking skill.

a. **The score of speaking skill in independent variable group 1 (Left Hemisphere Dominance Students)**

Based on the calculation, from 20 left hemisphere dominance students, it is obtained that sum of final score of their speaking skill is 1678. The highest score in group 1 is 67 and the lowest score is 95.

b. **The score of speaking skill in independent variable group 2 (Right Hemisphere Dominance Students)**

From 20 right hemisphere dominance students, the researcher obtains sum of final speaking scores of group 2 is 1524. The maximum score is 95 and the minimum score is 60.

c. **Validity of the Test**

After the test is conducted, the researcher states that the test has construct validity since the tests match with the purpose of the test. The test used to measure students' speaking skill, so the students are tested to perform their English speaking skill in a way they answer some questions from the researcher. The test also indicate the content validity since the test have been explained by the teacher, it is signed that all of students

have preparation before joining the test. Besides, the contents of the test above adequately represent and cover each aspect of students speaking skill that involve five components of speaking skill.

d. Reliability of The Test

1) The Reliability of the English Speaking Skill Test Result in Group 1 (Left Hemisphere Dominance Students)

To calculate, the first step is determining variance of each speaking component (S_i^2). Then, determine sum of variance of 5 components of speaking to get $\sum S_i^2$ and then add these variances across variance of all speaking components to get S_x^2. From the calculation by Microsoft Excel, the researcher obtains:

Variance of Pronunciation Score/S_i^2 (P) in group 1 = 131,98947

Variance of Pronunciation Score/S_i^2 (G) in group 1 = 116, 88989

Variance of Pronunciation Score/S_i^2 (V) in group 1 = 103,56842

Variance of Pronunciation Score/S_i^2 (F) in group 1 = 130,58947

Variance of Pronunciation Score/S_i^2 (C) in group 1 = 54,19736

Variance of Total Score (S_x^2) in group 1 = 1924,04210

Sum of Variance of Each Components ($\sum S_i^2$) = 537, 23461

So, the reliability of the test result in group 1 is:

$$a = \left[\frac{n}{n-1}\right]\left[1 - \frac{\sum S_i^2}{S_x^2}\right]$$

$$a = \left[\frac{5}{5-1}\right]\left[1 - \frac{537,23461}{1924,04210}\right]$$

$$a = \left[\frac{5}{4}\right][1 - 0{,}27922]$$

$$a = [1{,}25][0{,}72078]$$

$$a = 0{,}90975 = 0{,}909$$

Where:

a	= Reliability Cronbach Alpha
$\sum S_i^2$	= Sum of Variance of Each Speaking Components
S_x^2	= Variance of total Score of Speaking
n	= Total Number of Speaking Components

2) **The Reliability of the English Speaking Skill Test Result in Group 2 (Right Hemisphere Dominance Students)**

The procedures are totally same as the previous. First, determining variance of each speaking component (S_i^2), summing all of variance of 5 components of speaking to get ($\sum S_i^2$) and add these variances across of all speaking components (S_x^2). After the researcher computes them by using Ms Excel, she finds:

Variance of Pronunciation Score/S_i^2 (P) in group 2 = 409,77894

Variance of Pronunciation Score/S_i^2 (G) in group 2 = 97,84210

Variance of Pronunciation Score/S_i^2 (V) in group 2 = 127,50526

Variance of Pronunciation Score/S_i^2 (F) in group 2 = 152,16842

Variance of Pronunciation Score/S_i^2 (C) in group 2 = 94,83157

Variance of Total Score (S_x^2) in group 2 = 2503,72631

Sum of Variance of Each Components ($\sum S_i^2$) = 882,12539

So, its reliability of the test result in group 2 is as follow:

$$a = \left[\frac{n}{n-1}\right]\left[1 - \frac{\sum S_i^2}{S_x^2}\right]$$

$$a = \left[\frac{5}{5-1}\right]\left[1 - \frac{882,12539}{2503,72631}\right]$$

$$a = \left[\frac{5}{4}\right][1 - 0,35232]$$

$$a = [1,25][0,64768]$$

$$a = 0,8096 = 0,809$$

e. **Interpretation of Reliability Coefficients of the Test**

From the two outputs above, the group 1 (Left Hemisphere Dominance Students) obtains $a = 0,909$, meanwhile group 2 (Right Hemisphere Dominance Students) has coefficient $a = 0,809$. The interpretation of these reliability coefficients is done by consulting the coefficients alpha to r-table.

The numbers of the students in each group is 20, it means N=20. On the level of significances 5%, the critical value in r-table is 0.444, while in level of significances 1% is 0.561. The comparison with r-table (r-t) is in the following:

In group 1: (r-t 5% $< a >$ r-t 1%), (0.444 $< 0.909 >$ 0.561)

In group 2: (r-t 5% $< a >$ r-t 1%), (0.444 $< 0.809 >$ 0.561)

Because coefficients Alpha that are gotten from the calculation above (they are 0.909 and 0.809) are significantly higher than r-table whether it is in the level of significance of 5% and 1%, so, the researcher

states that the data in the test that are resulted from English speaking skill have been reliable.

B. Analyzing the Data

After the final scores of both group have been calculated, the next step is counting the mean of final score in group 1 (Left Hemisphere Dominance Students) and mean of group 2 (Right Hemisphere Dominance Students). Then, it is compared by using formula of independent *t-test*. It is used to determine the existence of score differences between students left dominance hemisphere as variable X_1 and students right dominance hemisphere as variable X_2.

The calculation of mean deviation score of group 1 (X_1) and group 2 (X_2) can be seen in the following table: Table 4.5. The speaking score of two groups

No.	X_1	X_2	$X_1(X_1-M_1)$	$X_2(X_2-M_2)$	X_1^2	X_2^2
1	93	88	9,1	11,8	82,81	139,24
2	95	69	11,1	-7,2	123,21	51,84
3	81	70	-2,9	-6,2	8,41	38,44
4	82	86	-1,9	9,8	3,61	96,04
5	93	73	9,1	-3,2	82,81	10,24
6	68	78	-15,9	1,8	252,81	3,24
7	83	80	-0,9	3,8	0,81	14,44
8	87	60	3,1	-16,2	9,61	262,44
9	69	93	-14,9	16,8	222,01	282,24
10	90	88	6,1	11,8	37,21	139,24
11	83	76	-0,9	-0,2	0,81	0,04
12	67	82	-16,9	5,8	285,61	33,64
13	93	65	9,1	-11,2	82,81	125,44
14	94	69	10,1	-7,2	102,01	51,84
15	82	95	-1,9	18,8	3,61	353,44
16	81	63	-2,9	-13,2	8,41	174,24
17	79	72	-4,9	-4,2	24,01	17,64
18	82	74	-1,9	-2,2	3,61	4,84
19	91	83	7,1	6,8	50,41	46,24
20	85	60	1,1	-16,2	1,21	262,44
Sum	**1678**	**1524**	**0**	**0**	**1385,8**	**2107,2**

From the table above, the computation formula of the independent *t-test* is administered as follow:

1. Determining the mean score in group 1 (Left Hemisphere Dominance Students) by formula:

$$M_1 = \frac{\Sigma X_1}{N_1}$$

$$M_1 = \frac{1678}{20}$$

$$M_1 = 83, 9$$

2. Determining the mean score in group 1 (Left Hemisphere Dominance Students) by formula:

$$M_2 = \frac{\Sigma X_2}{N_2}$$

$$M_2 = \frac{1524}{20}$$

$$M_2 = 76, 2$$

3. Determining standard deviation score in group 1 by formula:

$$SD_1 = \sqrt{\frac{\Sigma X_1^2}{N_1}}$$

$$SD_1 = \sqrt{\frac{1385,8}{20}}$$

$$SD_1 = \sqrt{69,29}$$

$$SD_1 = 8, 32406$$

4. Determining standard deviation score in group 2 by formula:

$$SD_2 = \sqrt{\frac{\Sigma X_2^2}{N_2}}$$

$$SD_2 = \sqrt{\frac{2107,2}{20}}$$

$$SD_2 = \sqrt{105,36}$$

$$SD_2 = 10, 2645$$

5. Determining standard error in group 1 by formula:

$$SE_{M1} = \frac{SD_1}{\sqrt{N-1}}$$

$$SE_{M1} = \frac{8,32406}{\sqrt{20-1}}$$

$$SE_{M1} = \frac{8,32406}{\sqrt{19}}$$

$$SE_{M1} = \frac{8,32406}{4,3589}$$

$$SE_{M1} = 1, 90965$$

6. Determining standard error in group 2 by formula:

$$SE_{M2} = \frac{SD_2}{\sqrt{N-1}}$$

$$SE_{M2} = \frac{10,2645}{\sqrt{20-1}}$$

$$SE_{M2} = \frac{10,2645}{\sqrt{19}}$$

$$SE_{M2} = \frac{10,2645}{4,3589}$$

$$SE_{M2} = 2, 3545$$

7. Determining standard error difference between mean score in group 1 and group 2 by formula:

$$SE_{M1-M2} = \sqrt{SE_{M1}{}^2 + SE_{M2}{}^2}$$

$$SE_{M1-M2} = \sqrt{(1,9096)^2 + (2,3545)^2}$$

$$SE_{M1-M2} = \sqrt{3,64657 + 5,54367}$$

$$SE_{M1-M2} = \sqrt{9,19024}$$

$$SE_{M1-M2} = 3,0315408623$$

$$SE_{M1-M2} = 3,03154$$

8. Determining the *t-value* by using formula:

$$t = \frac{M_1 - M_2}{SE_{M1-M2}}$$

$$t = \frac{83,9 - 76,2}{3,03154}$$

$$t = 2,539963187$$

$$t = 2,539$$

Here, the researcher has t-value that is 2,539. Is it large enough to reject the null hypothesis? The answer will be found by comparing *t-value* and *t-table* in the next section through the process of hypothesis testing.

C. Hypothesis Testing

From the result of analysis of data above, it shows that the result of t-value is 2,539. It reflect that there is difference between two *mean* scores that is resulted from two different groups. To further examine whether *t-value* significant difference or not, it must be consulted with critical value that is performed in *t-table*.

By using level of significant 5%, the null hypothesis can be received or rejected if:

t-value > t-table: Null Hypothesis (Ho) is rejected and Alternative Hypothesis (Ha) is accepted.

t-value < t-table: Null Hypothesis (Ho) is accepted and Alternative Hypothesis (Ha) is rejected.

To know the critical value in t-table, the researcher firstly determines the degree of freedom (*df*) of the sample size. The degree of freedom of independent t-test can be calculated by using formula, $df = (N_1+N_2)-2$, so, *df* in this study is:

$df = (N_1+N_2)-2$

$df = (20+20)-2$

$df = (40)-2$

$df = 38$

Based on t-table, there is no 38 *df*. Therefore, the researcher chooses the closest one, it is 40 *df*. In the row 40 *df*, it is found that the critical value of t-table with level of significance 5%is 2.02.

After it is compared, t-value that is resulted from data analysis is significantly higher than t-table in level of significance 5%, t-value > t-table (2.53 > 2.02). So, null hypothesis is rejected and alternative hypothesis is received.

Finally, from that result, it can be inferred that alternative hypothesis states that speaking skill of students left dominance hemisphere at the third semester of English Teaching Learning Program of IAIN Madura than their right one is accepted.

D. Discussion

In this section, the researcher will present the discussion of finding based on the result of research to answer the research problem. The researcher formulates two problems of the study that are expected to be discussed as follow:

1. Do speaking skill of left hemisphere dominance students at the third semester of TBI IAIN Madura is better than their right one?

2. Is there statistically significant difference between left hemisphere dominance students and their right one at the third semester of TBI IAIN Madura in speaking skill?

Based on statistical analysis, the answers are:

1. Speaking skill of left hemisphere dominance students at the third semester of TBI IAIN Madura is better than their right one.

   It is proven by the result of statistical analysis that shows *mean* score of left hemisphere dominance students is 83,9, while *mean* score of right hemisphere dominance students is 76,2. It reveals left hemisphere dominance student scores higher than right hemisphere dominance students on English speaking skill (83,9 > 76,2)

2. Independent t-test is run to answer the research problem number 2. And the result shows there is significant difference between left hemisphere dominance students and right hemisphere dominance students at the third semester of TBI IAIN Madura on their English speaking skill. It means that null hypothesis (H_O) is rejected and alternative hypothesis (H_a) is received. This conclusion is taken from the result of data analysis that t-value is higher than t-table. The t-value = 2.53, while t-table = 2.02 (level of significance =

0,05/5%, df = 40); (2.53 > 2.02). by looking at the differences that is 0.51, this number shows that the difference on English speaking skill between two groups is significant.