CHAPTER III

PRESENTATION OF THE DATA AND THE ANALYSIS

3.1. Presentation of the Data

The data used in this study are primary data collected by the writer. The data are taken from the tests given to the students of III IPA 8. There are two types of tests that are given to the class, namely: test A and test B. Test A consists of one reading text about botany which represents the scientific reading text. Test B consists of one reading text about cultural history which represents the social-scientific reading text. In each test there are ten multiple-choice questions which function to see how well the students comprehend the texts.

As the writer has given the tests to the students, score resume can be drawn and calculated. The tests have been held consecutively, each student had twenty-five minutes to finish both tests.

Here is *Table 3* which shows the scores of each student in each test:

Table 3: Score Resume

No.	Name	Score A	Score B
1	R 1	70	80
2	R 2	60	90
3	R 3	60	90
4	R 4	80	80
5	R 5	50	80
6	R 6	50	80
7	R 7	60	80
8	R 8	40	90
9	R 9	70	80
10	R 10	70	80
11	R 11	70	80
12	R 12	80	90
13	R 13	60	60
14	R 14	90	80
15	R 15	60	80
16	R 16	60	70
17	R 17	60	90
18	R 18	80	100
19	R 19	50	60
20	R 20	60	60
21	R 21	70	80
22	R 22	70	60
23	R 23	60	90
24	R 24	70	70
25	R 25	70	70
26	R 26	50	70
27	R 27	80	90
28	R 28	50	90
29	R 29	80	80
30	R 30	80	80
31	R 31	30	60
32	R 32	40	70
33	R 33	90	50
34	R 34	70	90
35	R 35	60	90
36	R 36	30	60

As we can see from *Table 3* above, the highest score in the test A is 90 and the lowest score is 30, so the range of the score in test A is 60.

While in test B, we can see that the highest score for the test is 100 and the lowest score is 50, so the range of the score in test B is 50.

From *Table 3*, we can also see that there are 7 students out of 36 students who get the same score for test A and test B.

3.2. Quantitative Analysis

Quantitative analysis method is a method of analysing data which is emphasized on using and collecting information statistically (Aslam, 1991 : 35). The data which have been collected are extended in the form of formula in order to find the answer of the question arises from the study.

In this study, the writer also uses this quantitative analysis method to analyze the data. The statistical test used in this anaiysis is *T-Test* because the writer wants to see whether there is a significant difference between the mean of test A and that of test B.

To count the *t-value*, first of all, the writer counts the difference between score A and score B. Difference here is symbolized with '*d*'.

Table 4: Difference (*d*) of Score A and B

No.	Name	Score A	Score B	*d*
1	R 1	70	80	-10
2	R 2	60	90	-30
3	R 3	60	90	-30
4	R 4	80	80	0
5	R 5	50	80	-30
6	R 6	50	80	-30
7	R 7	60	80	-20
8	R 8	40	90	-50
9	R 9	70	80	-10
10	R 10	70	80	-10
11	R 11	70	80	-10
12	R 12	80	90	-10
13	R 13	60	60	0
14	R 14	90	80	10
15	R 15	60	80	-20
16	R 16	60	70	-10
17	R 17	60	90	-30
18	R 18	80	100	-20
19	R 19	50	60	-10
20	R 20	60	60	0
21	R 21	70	80	-10
22	R 22	70	60	10
23	R 23	60	90	-30
24	R 24	70	70	0
25	R 25	70	70	0
26	R 26	50	70	-20
27	R 27	80	90	-10
28	R 28	50	90	-40
29	R 29	80	80	0
30	R 30	80	80	0
31	R 31	30	60	-30
32	R 32	40	70	-30
33	R 33	90	50	40
34	R 34	70	90	-20
35	R 35	60	90	-30
36	R 36	30	60	-30
	TOTAL (Σ)	2280	2800	-520

From the d scores in *Table 4*, the mean of difference ($\bar{d}$) could be drawn:

$$\boxed{\bar{d} = \frac{\Sigma d}{n}}$$

in which :

$\bar{d}$ = the mean of the difference (of the score A and B)

Σd = total of the difference

n = number of participants

The results is:

$$\bar{d} = \frac{\Sigma d}{n}$$

$$= \frac{-520}{36}$$

$$\boxed{\bar{d} = -14.44}$$

Then, the standard deviation of the difference (S_d) can also be drawn with the formula:

$$\boxed{S_d = \sqrt{\frac{\left[\Sigma\left(x_i^2 - \bar{d}^2\right)\right]}{n-1}}}$$

in which :

S_d = standard deviation of the difference

x_i = difference of score A and score B

$\bar{d}$ = the mean of the difference (of the score A and B)

n = number of students

The result is:

$$S_d = \sqrt{\frac{\left[\Sigma\left(x_i^2 - \bar{d}^2\right)\right]}{n-1}}$$

$$S_d = \sqrt{\frac{10288.96}{36-1}}$$

$$S_d = \sqrt{293.97}$$

$$\boxed{S_d = 17.15}$$

The next step, the writer will use the formula by which the writer can find the t value, that is:

$$\boxed{t = \frac{\bar{d}}{S_d/\sqrt{n}}}$$

in which :

t = correlation value

$\bar{d}$ = the mean of the difference (of the score A and B)

S_d = standard deviation of the difference

n = number of students

Each value of $\bar{d}$ and S_d can be inserted into the formula, and the result is:

$$t = \frac{\bar{d}}{S_d / \sqrt{n}}$$

$$t = \frac{\bar{d} \cdot \sqrt{n}}{S_d}$$

$$t = \frac{-14.44 \times \sqrt{36}}{17.15}$$

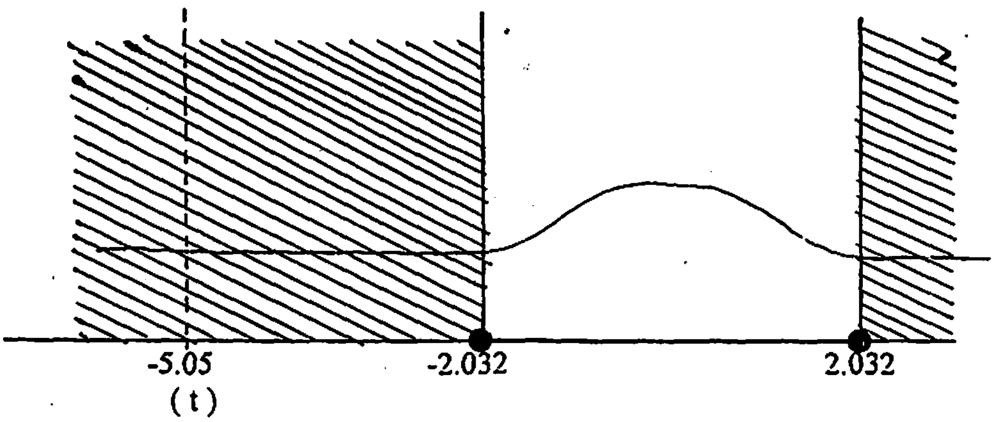
$$t = \frac{-86.64}{17.15}$$

$$\boxed{t = -5.05}$$

To find whether there is a significant difference between score A and score B, the writer needs to use the t-test diagram. In this case, the writer has to find the $|t|$ value of the table. The writer decides the degree of confidence 95% ($\alpha = 0.05$). The $|t|_{n-1;\frac{\alpha}{2}}$ will be found in the t distribution table.

$$\boxed{|t|_{35;0.025} = 2.032}$$

The diagram is as follows:



in which:

H_0 = Schemata do not affect the students' reading comprehension

H_1 = Schemata affect the students' reading comprehension

From the diagram above, it can be seen that the t value is outside the $|t|$ range. This means that the null hypothesis (H_0) is rejected. The resume of the analysis is that H_1 is accepted, which means that schemata affect the students' reading comprehension. In other words, there is a significant difference between the students' scores of test A and test B. In this case, the scores of test B are higher than those of test A.

3.3. Interpretation of the Result

In general, reading comprehension has a close relationship with the schemata activating since the essential point in reading comprehension is to make sense of the reading text itself. Making sense of a reading text can be defined closely to activating schemata. Schemata theory also says that as one tries to comprehend a text, he or she at the same time activates his or her schemata to fit in with the situated conditions in the reading text.

In this study, the writer tries to find out if schemata still take a part in the third grade high school students' reading comprehension. From the quantitative analysis above, the writer can interpret from the data that schemata still have a role in the third grade high school students' reading comprehension. The T-test results show that there is a significant difference between the scores of test A and test B. In this case, the scores of test B are higher than those of test A. Therefore the students can answer and comprehend test B better than test A.

Nevertheless, when we see the passage given to them, we might be confused of these results. It is because the students are from science class, while the better scores are for the test B, which contains non-science passage.

As can be seen from *Table 3*, 26 students (72.22 %) get better scores in test B than in test A, and only 3 students (8.33 %) get better scores in test A than in test B, and the rest 7 students get the same score in both test A and test B.

It seems that there is a reversed in the theory of schemata. According to the theory, students of the science class should have better scores in test A than in test B. Yet, they have better scores in test B than in test A. This seems to be an objection to the theory of schemata. If we only consider their position as science students, we may come to a conclusion that their background knowledge counteracts their level of comprehension. In other words, it may be concluded that the more they know about the topic, the lower their comprehension level. This conclusion seems to have a flaw; therefore, the writer tries to see through the problem more deeply.

To explain this problem further, the writer takes into account three points as follows: the first is the students' scores in the third trimester of their second year, the second is their duration of study in the science class prior to taking the tests, and the third is the passages they study in the English lesson.

In accordance to the first point, the writer collects some secondary data from the students' marks when they were at the second grade, precisely at the third trimester. By this, it is expected that the writer could find a possibility to be noticed whether the students' background knowledge is actually not science but social-science. The attempt is also supported by the facts that they have just been studying at the third grade not more than a trimester when they took the tests and they read the common English reading texts as the social-science class does.

The secondary data chosen here are the report of the students' scores when they were at the third trimester of the second grade. The writer decides to take the marks of biology and history since each represents the reading texts' theme. Text A is about botany and text B is about the way of life of American Indian tribes in early North America.

Table 5 below shows the marks:

Table 5: Marks of Biology and History at the Third Trimester of Second Grade

No.	Name	Biology	History
1	R 1	7	7
2	R 2	6	7
3	R 3	7	7
4	R 4	7	7
5	R 5	6	7
6	R 6	6	7
7	R 7	6	6
8	R 8	6	8
9	R 9	7	7
10	R 10	7	7
11	R 11	6	7
12	R 12	8	7
13	R 13	6	6
14	R 14	7	7
15	R 15	7	7
16	R 16	6	6
17	R 17	6	8
18	R 18	7	7
19	R 19	7	7
20	R 20	6	8
21	R 21	6	7
22	R 22	7	6
23	R 23	7	6
24	R 24	8	7
25	R 25	7	8
26	R 26	6	7
27	R 27	7	7
28	R 28	6	8
29	R 29	7	7
30	R 30	7	7
31	R 31	6	6
32	R 32	7	7
33	R 33	7	6
34	R 34	7	7
35	R 35	6	7
36	R 36	6	7
	TOTAL (Σ)	238	250

From *Table 5*, it can be seen that 13 students (36.1 %) get better marks in history than in biology, 4 students (11.11 %) get better marks in biology than in history, and the rest 19 students (52.77 %) get the same marks in both subjects. By this, it is proved that they have better level of knowledge in history than in biology. Yet, to make it more actual, the writer tries to calculate the mean of each marks of the subjects with the formula:

$$\boxed{\bar{x} = \frac{\sum x}{n}}$$

in which:

$\bar{x}$ = mean of the subject

$\sum x$ = total marks

n = number of students

The results are:

$$\bar{x}_{\text{biology}} = \frac{\sum x}{n}$$

$$= \frac{238}{36}$$

$$\boxed{\bar{x}_{\text{biology}} = 6.611}$$

$$\bar{x}_{\text{history}} = \frac{\sum x}{n}$$

$$= \frac{250}{36}$$

$$\boxed{\bar{x}_{\text{history}} = 6.944}$$

From the calculation above, we can see that the mean of the history's marks is bigger than the mean of biology's marks. Yet, in order to prove whether the marks of history are significantly different from the marks of biology, the writer does the T-test once again with the hypothesis as follows:

- Null Hypothesis (H_0):

  The average mark of biology is the same as the average mark of history.

- Alternate Hypothesis (H_1):

  The average mark of biology is different from the average mark of history.

To do the T-test, the writer has to count the t-value and to do this, first the writer has to count the difference between the marks of biology and the marks of history.

Table 6: Difference (*d*) of the Marks of Biology and the Marks of History

No.	Name	Biology	History	*d*
1	R 1	7	7	0
2	R 2	6	7	-1
3	R 3	7	7	0
4	R 4	7	7	0
5	R 5	6	7	-1
6	R 6	6	7	-1
7	R 7	6	6	0
8	R 8	6	8	-2
9	R 9	7	7	0
10	R 10	7	7	0
11	R 11	6	7	-1
12	R 12	8	7	1
13	R 13	6	6	0
14	R 14	7	7	0
15	R 15	7	7	0
16	R 16	6	6	0
17	R 17	6	8	-2
18	R 18	7	7	0
19	R 19	7	7	0
20	R 20	6	8	-2
21	R 21	6	7	-1
22	R 22	7	6	1
23	R 23	7	6	1
24	R 24	8	7	1
25	R 25	7	8	-1
26	R 26	6	7	-1
27	R 27	7	7	0
28	R 28	6	8	-2
29	R 29	7	7	0
30	R 30	7	7	0
31	R 31	6	6	0
32	R 32	7	7	0
33	R 33	7	6	1
34	R 34	7	7	0
35	R 35	6	7	-1
36	R 36	6	7	-1
	TOTAL (Σ)	238	250	-13

From the *d* scores in *Table 6*, the mean of difference ($\bar{d}$) could be drawn:

$$\bar{d} = \frac{\sum d}{n}$$

$$= \frac{-13}{36}$$

$$\boxed{\bar{d} = -0.361}$$

Then, the standard deviation of the difference (S_d) can also be drawn with the formula:

$$S_d = \sqrt{\frac{\left[\sum\left(x_i^2 - \bar{d}^2\right)\right]}{n-1}}$$

$$= \sqrt{\frac{25.32}{36-1}}$$

$$= \sqrt{0.723}$$

$$\boxed{S_d = 0.85}$$

The next step, the writer will use the formula by which the writer can find the t-value, that is:

$$\boxed{t = \frac{\bar{d}}{S_d / \sqrt{n}}}$$

Each value of $\bar{d}$ and S_d can be inserted into the formula, and the result is:

$$t = \frac{\bar{d}}{S_d / \sqrt{n}}$$

$$t = \frac{\bar{d} \cdot \sqrt{n}}{S_d}$$

$$t = \frac{-0.361 \times \sqrt{36}}{0.85}$$

$$t = \frac{-2.166}{0.85}$$

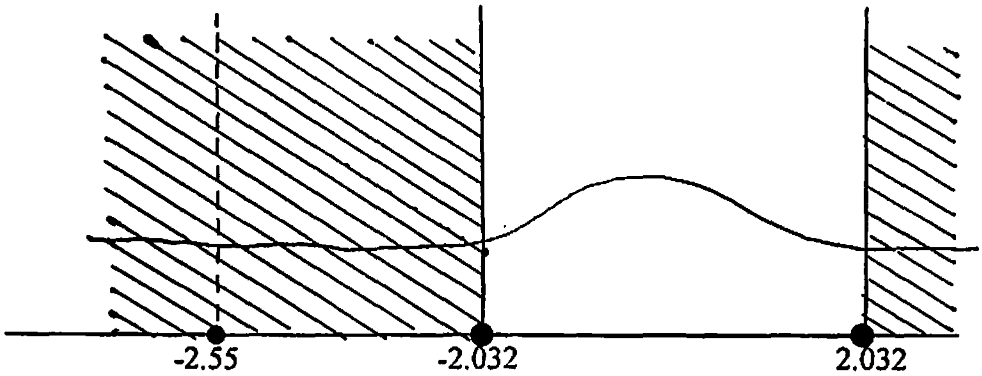
$$\boxed{t = -2.55}$$

To find whether there is a significant difference between the average mark of biology and the average mark of history, the writer needs to use the t-test diagram. In this case, the writer has to find the $|t|$ value of the table.

The writer decides the degree of confidence 95% ($\alpha = 0.05$). The $|t|_{n-1;\frac{\alpha}{2}}$ will be found in the t distribution table.

$$\boxed{|t|_{35;0,025} = 2.032}$$

The diagram is as follows:



From the diagram above, it can be seen that the t value is outside the $|t|$ range. This means that the null hypothesis (H_0) is rejected. The resume of the analysis is that H_1 is accepted, which means that the average mark of biology is different from the average mark of history. In other words, there is a significant difference between the marks of biology and the marks of history. In this case, the marks of history are higher than those of biology.

Then, it is not a surprise if they get better scores in test B than in test A. Their schemata of social-science affect their reading comprehension although they do not belong to the social-science class. This statement of interpretation suggests an unusual interpretation: *a class of science is affected by social-science background knowledge in its reading comprehension.*

Related to the second point, the results of the tests are also supported by the facts that they have just been studying at the third grade. Their duration of study in the third grade when they took the tests was only few weeks, so they were not well exposed to reading texts in science. Their focus was still about general reading texts.

The third point to be the cause of the results is the passages the students study in the English lessons. High school students have the same subjects such as science and social-science at the first and second grade. They share the same general studies for two year time. This may cause the results. For two years they have the same reading texts and lessons to study, and automatically they have the same background knowledge. They are divided into two majors: science class and social-science class only at the third grade.

According to Mrs. Clara, the third grade English teacher of SMU Negeri V, the third grade students still have the same English texts although they are divided into two majors. When the students of science class are given the scientific reading text, the students of social-science class are also given the same text and vice-versa. It goes like this since the English teachers are ordered to teach from the same book to both class.

Based on the facts above, it is not a surprise that the science students can answer test B better than test A.

CHAPTER IV

CONCLUSION