CHAPTER IV

RESEARCH FINDING AND DISCUSSION

This study would like to analyze the students` ability to think critically and the students` level of critical thinking in critical reading class. This chapter presented the research findings of the data collected from the test and questionnaire and the discussion of research problem.

A. Research Findings

1. The Students` ability to think critically from external perspective

To find out the students` ability to think critically, the critical thinking test was conducted. The rubric of ability to think critically was adapted from Dawn M. Zimmaro, Ph.D. *Critical thinking rubric*.[45]

In this research, the critical thinking assessment (test) sheet consisted of eight questions where seven questions were about critical thinking tools and one question was about students` thinking related to critical thinking and the further reading.

To answer the questions, the students need to demonstrate their understanding of the article thus far and support their answers with proof

[45] Dawn M. Zimmaro, Ph.D. *Critical thinking rubric*. Retrieved May 3, 2004 from Rio Salado College Online (Website: http://www.rio.maricopa.edu/distance_learning/critical_think_rubric.shtml. 2003), 10.

from the article, record and explain their thinking from this portion of the article. It is also essential to support the students` thinking with proofs (quotes) from the reading. The students can use both the article and any other notes students made while reading.

The criteria for the ability to think critically were divided into four levels. If the students get score 4, it means that they have High level excellence in evidence of critical thinking ability and performance at the college level. If the students get score 3, it means that they are demonstrable, competent, expected evidence of critical thinking ability and performance at the college level. If the students get score 2, it means that they are minimally acceptable, inconsistent evidence of critical thinking ability and performance at the college level. The last, if the students get score 1, it means that they are Poor, unacceptable evidence of critical thinking ability and performance at the college level.

The score would be given for each question in critical thinking test. There are eight questions in which each question will be given score 1 until 4. The score depend on the students` answer of the test. It analyzed using the rubric of critical thinking ability.

The maximum score would be 32. After giving score for each answer of questions, calculating the average of the score is done. If the average of the students` score is 25 till 32 (maximum score), the students` ability to think critically is high. If the average of the students` score is 18 till 25 their ability

to think critically is fair and if the average of the students` score is under 18 their ability to think critically is low.

The further result of the critical thinking test with the research subject who taught critical thinking in critical thinking class at four semester of English Teacher Education Department can be seen in the table 4.1 below.

Table 4.1
Result of the Test

No	Research Subject									∑	%
		1	2	3	4	5	6	7	Part 2		
1	x.1	3	2	2	1	2	2	3	3	18	18
2	x. 2	2	1	3	1	1	1	2	2	13	13
3	x. 3	2	1	3	1	1	1	2	2	13	13
4	x. 4	3	1	2	1	1	1	2	3	14	14
5	x. 5	2	1	2	1	1	1	2	3	13	13
6	x. 6	2	1	3	1	1	1	2	2	13	13
7	x. 7	2	2	2	1	1	1	2	2	13	13
8	x. 8	2	2	2	1	1	2	2	2	14	14
9	x.9	2	2	3	1	1	1	2	3	15	15
10	x. 10	2	3	2	1	2	1	1	2	14	14

11	x. 11	1	1	1	1	1	1	2	2	10	10
12	x. 12	3	3	2	3	3	2	2	2	20	20
13	x. 13	2	1	3	1	1	1	2	2	13	13
14	x. 14	2	1	2	1	1	1	2	2	12	12
15	x. 15	2	1	3	1	1	1	1	1	11	11
16	x. 16	2	2	2	1	1	1	3	2	14	14
17	x. 17	1	2	2	1	1	1	2	2	12	12
18	x. 18	1	1	1	1	1	1	1	1	8	8
19	x. 19	3	3	3	3	1	3	3	3	22	22
20	x. 20	1	2	2	1	1	1	1	1	10	10
21	x. 21	1	1	3	1	1	1	2	2	12	12
22	x. 22	1	1	3	1	1	1	2	2	12	12
23	x. 23	2	3	2	1	1	1	2	2	14	14
24	x. 24	2	2	3	1	1	1	2	2	14	14
25	x. 25	2	2	2	1	1	1	1	2	12	12
26	x. 26	1	1	2	1	1	1	1	2	10	10
27	x. 27	1	2	2	1	1	1	2	2	12	12
28	x. 28	1	2	2	1	1	1	2	2	12	12
29	x. 29	1	2	2	1	2	1	1	1	11	11

30	x. 30	2	2	3	1	1	1	2	2	14	14
∑ FX		54	51	69	34	35	35	56	61	395	395
Mean		1,8	1,7	2,3	1,13	1,17	1,17	1,87	2,03	13,17	13,2

The average of students' score $= \frac{the\ total\ of\ \ st_{x}dents'\ score}{the\ number\ of\ students}$

$= \frac{395}{30}$

= 13, 17

The average percentage of students' score:

$= \frac{the\ total\ of\ percentage}{the\ number\ of\ students}$

$= \frac{395\%}{30}$

= 13, 2%

Based on the finding after conducting the test, the students` ability to think critically was categorized as "low". From the table above, researcher got that the average of students' score was 13, 17 which means low. It means that the students` ability to think critically was low.

2. The students` ability to think critically from internal perspective

To find out the students` ability to think critically from internal perspective, the questionnaire was distributed. This questionnaire was as

reflective of the students after the test given and as self assesses their critical thinking ability. Actually, this questionnaire was self assessment for the students` ability to think critically. The researcher gave the students 5 items which have to be answered. The questions were related to critical thinking. Each question has four choices in which each choice has different value. The further result of the research through questionnaire was presented below.

a. Tabulating data of the questionnaire

1) **Finding the Mean**

The formula used for computing the mean was as follows:

$M = \frac{\sum X}{N}$

Explanation:

M = Mean

$\sum X$ = the sum of the item scores

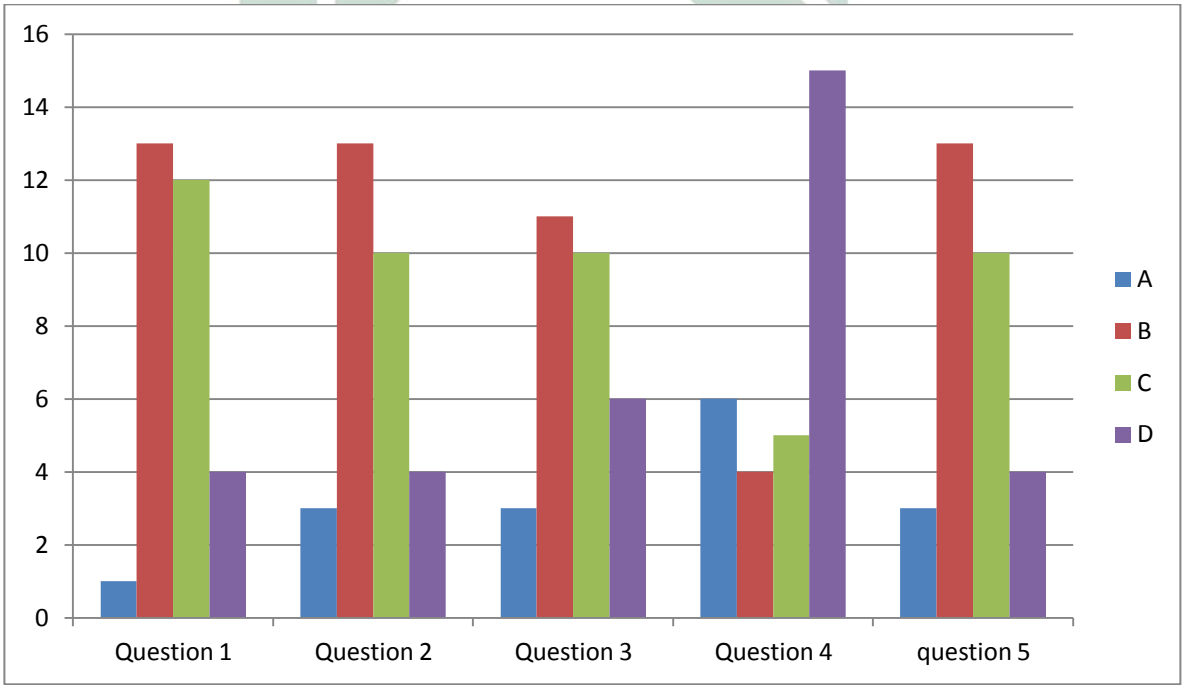
N = the number of the students

Table 4.2
Result of Questionnaire

No	Research Subject	Score Per Item					Total Score	Mean
		1	2	3	4	5		
1	x.1	3	4	3	4	4	18	3,6
2	x. 2	2	3	4	4	2	15	3
3	x. 3	2	3	4	4	2	15	3
4	x. 4	2	2	2	2	2	10	2
5	x. 5	3	3	2	4	3	15	3
6	x. 6	2	1	2	1	3	9	1,8
7	x. 7	2	1	3	4	3	13	2,6
8	x. 8	1	2	1	4	2	10	2
9	x.9	3	4	3	4	4	18	3,6
10	x. 10	2	3	4	4	3	16	3,2
11	x. 11	3	2	1	1	2	9	1,8
12	x. 12	2	3	2	2	1	10	2
13	x. 13	2	2	3	3	4	14	2,8
14	x. 14	2	2	3	3	1	11	2,2
15	x. 15	3	2	3	1	2	11	2,2
16	x. 16	3	4	2	4	2	15	3
17	x. 17	4	3	3	4	4	18	3,6
18	x. 18	3	2	4	4	2	15	3
19	x. 19	3	2	4	2	3	14	2,8
20	x. 20	4	3	4	4	3	18	3,6
21	x. 21	4	2	3	3	3	15	3
22	x. 22	4	2	2	3	3	14	2,8
23	x. 23	3	3	3	4	3	16	3,2
24	x. 24	3	4	2	1	2	12	2,4
25	x. 25	2	2	2	1	2	9	1,8

26	x. 26	2	1	1	2	1	7	1,4
27	x. 27	2	2	2	4	2	12	2,4
28	x. 28	2	2	2	4	2	12	2,4
29	x. 29	3	3	3	3	3	15	3
30	x. 30	3	3	2	1	2	11	2,2
∑		79	75	79	89	75		
Mean		2,7	2,5	2,3	2,9	2,5		

Bellow is the diagram of students' response of questionnaire.



2) **Matching the Mean to Criteria**

In the questionnaire, to get some additional information about the students' level in critical thinking, the mean of each number was matched to criteria.

Table 4.3
Criteria of the Questionnaire

Category	Choices	Mean item	Consideration
When students analyze information, data (facts and figures) or ideas, either at work or in class	A	0.03	Developing
	B	0.43	
	C	0.4	
	D	0.13	
When students try to apply formulas, procedures, principles, or themes to a new problem, assignment, or situation	A	0.1	Developing
	B	0.4	
	C	0.33	
	D	0.13	
When students try to think about a subject, problem, or situation from more than one point of view	A	0.1	Developing
	B	0.37	
	C	0.33	
	D	0.2	
When students try to come to a conclusion about something	A	0.2	Accomplished
	B	0.13	

I am thinking	C	0.17	
	D	0.5	
When students try to pull ideas together to get the big picture	A	0.1	Developing
	B	0.43	
	C	0.33	
	D	0.13	

b. Concluding the questionnaire result

Based on the finding after distributing the questionnaire, the students` ability to think critically from internal perspective was on `developing` level. It can be said that:

1) When the students analyze information, data (facts and figures) or ideas, either at work or in class, generally they can report what they have read or heard with only a few mistakes.
2) When the students try to apply formulas, procedures, principles, or themes to a new problem, assignment, or situation, usually they can think of the right formula or concept, but they often have trouble using it correctly.

3) When the students try to think about a subject, problem, or situation from more than one point of view, they can see two sides of any issue, but tend to think one of them is right.
4) When the students try to come to a conclusion about something they are thinking, they can create a conclusion that is logical and that reflects their ideas, too.
5) When students try to pull ideas together to get the big picture, they can arrange most ideas into a pattern, if it's not too complicated.

B. The Calculation of T-test

After giving test and questionnaire, the researcher calculated meaning of the test and questionnaire. Then, calculating was done to know standard deviation and analyzed the result by using statistical of t-test formula. The result of the calculation was presented as below:

Table 4.4
Standard Deviation (SD)

	N	**Mean**	**Standard Deviation**
Students` ability to think critically	30	13. 17	2.829

Then the researcher calculates the t-table by using this formula

μ_o = 70% x 30

= 21

$$t = \frac{\bar{x} - \mu_o}{s/\sqrt{n}}$$

$$= \frac{13.17 - 21}{2.829 / \sqrt{30}}$$

$$= \frac{- 7.83}{1.065}$$

= - 7.352

Table 4.5
T-test and t-table

	N	t-value	t-table
Students` ability to think critically	30	- 7.352	1.699

The researcher has to calculate the degrees of freedom (Df) first. The formula is:

Df = N – 1

= 30 -1

= 29

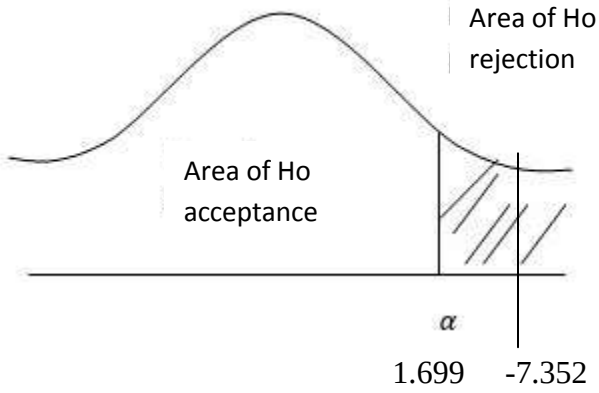
Table 4.6
One sample statistics

	N	Mean	Standard Deviation (SD)
Value	30	13.17	2.829

Table 4.7
One sample t-test

	Test Value = 100		
	T	Df	Sig. (1 tailed)
Value	-7.352	29	0,05

From the calculation above, it can be drawn as below:



C. Hypothesis Testing

After knowing the calculation above, it can be concluded that t-value is lower than t-table (t-value < t-table). It means that Ha rejected and Ho accepted. It means that less than 70% students on critical reading class of English Teacher Education Department of Faculty Of Education And Teacher Training Of State Islamic University Sunan Ampel Surabaya have high ability to think critically.

D. Discussion

In this section the researcher discussed the research findings and divided into two matters, namely the discussion of the discussion of the results of students` test, and the discussion of the students` ability .

1. **The discussion of the result of the students' ability to think critically from external perspective toward the test**

   Critical thinking ability is the skill which needs to be taught whether in a school or in a collage. When answering the critical thinking test, the students need to deliberate their opinion and connect it with the text. As Cohen says that "critical thinking as careful, deliberate, outcome-focused (results oriented) thinking that is mastered for a context."[46]

[46] Shelley Cohen. *Critical Thinking in the Emergency Department: Skills to Assess, Analyze, and Act*. (HCPro, Inc. 2006), 3.

In this research, the average of the students` score of critical thinking test is 13.17. The average percentage of the students` score was 13,2 %. It can be said that students' ability to think critically is low. Only 13,2% of the students who have high ability to think critically. The students` score was low because they were not answer the question clearly. There are only some students who provided deductive or inductive reasoning, examples or inferences. Some of the students also answer the questions with the sentences which contain ambiguity. Most of the students could analyze critical thinking tools on the article, but they were not give evidence or example when answering the questions.

Answering the critical thinking test, the students need to understand the critical thinking tools in order to make them easy to do the test. in the previous chapter has been explained that there are seven tools of critical thinking that needs much attention. That are purpose of reading, ideas and information to support the answer of questions based on the text, providing supporting details, make sure are there any assumptions and biases made by the author, understand the conclusions, implications, and consequences of the text, understand the point of view, and analysis the text.

There are some points of critical thinking which needs to be done when starting to read a text. The first point, that is the purpose of reading. When reading a text, the reader should understand first what the purposes of their reading are. It means understanding the question first before starting to

read. It was also to make the time more effective because reading the text for many times was not needed. In this research, most of the students recognized what their purpose of their reading are. So, they could answer the critical thinking test although some of them only put the word yes or no in the answer sheet.

The second point, providing ideas and information to support the answer. Combining own ideas and the information given in the text is essential to be done. In this research, some students answered the questions using the information of the text only or using their own ideas only. For example, when they were asking to answer the question about "what is the purpose of this piece of writing?", the students answered "give information about some sites. It only used their own argument without including the information of the text.

The third point, using facts, providing examples and providing details for the answer. When answering the critical thinking test, providing examples and providing details are essential. Without including those points to the answer, the argument may not convenience enough. In this research, there were only some of the students who provided examples or details and used fact to support their answer.

To solve this problem, collaborative learning concept is offered by Anuradha A. Gokhale to enhance critical thinking ability. She states that "Proponents of collaborative learning claim that the active exchange of ideas

within small groups not only increases interest among the participants but also promotes critical thinking."[47] She has conducted a research about this strategy whether this strategy is effective or not to enhance critical thinking ability. The result of her research showed that collaborative learning is effective because it provides students with opportunities to analyze, synthesize, and evaluate ideas cooperatively.

2. **The discussion of the result of the students' ability to think critically from internal perspective**

The questionnaire was given after conducting the critical thinking test. In the same place, the students were asked to fill in the questionnaire based on their own ability. This questionnaire was a self assess of their ability in critical thinking and a reflective of the test given,

According to the questionnaire, the student's level is on developing. It takes from the average of each choice of each number of questions. The most frequent response for each question heads for developing level.

Most of the students chose the second choices of each question. It means that they can report what they have read with only a few mistakes, can

[47] Anuradha A. Gokhale. Published article. *Collaborative Learning Enhances Critical Thinking***.** (http://scholar.lib.vt.edu/ejournals/JTE/v7n1/gokhale.jte-v7n1.html?ref=Sawos.Org accessed on 16th June 2015)

see two sides of any issue, but tend to think one of them is right, and can arrange most ideas into a pattern, if it's not too complicated.

3. The relationship between the students` ability to think critically from external and internal perspective

Assessments could be used to check whether learners have acquired and could apply much-valued higher-order thinking processes. Assessment of thought processes depended heavily on the similarity between assessment tasks and learners' learning experiences.[48] Assessment from external and internal perspective was used in this research. Those two perspectives were used to assess the students` ability to make sure whether the score which was gotten from the test is appropriate with the students learning experiences or not. External assessment was taken from the critical thinking test which was conducted by the researcher. Internal assessment was taken from questionnaire which was given to the students.

External assessments however, tend to suffer from repetition and over-exposure. Assessment for Learning places more emphasis on understanding of assessment tasks in relation to the standards, to thought processes and content (to provide feedback), and to the learners' needs. It is certainly not looking for exemplar external assessment tasks that can be copied, used, and

[48] *Internal Assessment, External Assessment, and Assessment for Learning — a think piece for those involved in developing assessments.* (Research Report Paper 14, SQA, 2007), 3.

used repeatedly in the classroom.[49] The internal authentication process establishes and preserves the quality of assessment for internally assessed, externally accredited learning programs. The process provides the link between internal and external assessment and plays a key role in the Quality Improvement process.[50]

From the external assessment result, it could be concluded that the students` ability to think critically was low. It was the same with the internal assessment result that the students` ability to think critically was on developing level. So, the external assessment result is appropriate with the internal assessment result.

[49] *Internal Assessment, External Assessment, and Assessment for Learning — a think piece for those involved in developing assessments*. (Research Report Paper 14, SQA, 2007), 4.
[50] *Policy and Procedures for Assessment and Internal Verification*. (Hampshire Learning, 2012), 6.