

# Analysis of Critical Thinking Skill Based on The Difference of Gender at SMA Surakarta in Biology Subject

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**Abstract**— The aim of this research was to analyze critical thinking skill of students at SMA Negeri in Surakarta district based on gender. It used facione criteria including interpretation, analysis, conclusion and self-regulation, this study gave information that women were better than men in critical thinking ability. The result of the result showed that average of all value critical thinking skill of women was higher of 60.6% that average value of critical thinking skill of men of 39.4%. This study showed that gender significantly affected students' critical thinking skill. The conclusion of this research is that students' critical thinking ability is still in low category so it needs development in learning process to improve several indicators of critical thinking skill.

**Keywords**—component; Critical thinking ability, students' gender.

## I. INTRODUCTION

Critical thinking is from of thinking that needs to develop for each student to improve education quality. As explained by Gedik h (2013) [5], because critical thinking is a needed competences in 21<sup>st</sup> to students in facing many obstacle in their lives. Critical thinking enables an individual to become responsible citizen who gives contribution so society and he/she is not just consumptive.

Critical thinking is also important in learning process because it can exercise students to make a rational idea from many perspectives carefully critical thinking skill can be said Ennis (1996) [20], Sulistiyawati (2017) [15], Ratna Hidayah, Moh. Salim (2017)[13]. it is the same as Gedik [5]that a goal on education is by improving critical thinking skill. So critical thinking should become activity that must be developed and taught for each subject Cahyono (2017) [2]. Especially for natural science, it was taught critical thinking without realizing Schafersman (2008) [13]. Critical thinking is ability that had to be though.

Critical thinking skill of each students is different, even though the faced problem is the same. Many literature explained critical thinking skill based on gender. Leach dan Good (2011) showed that gender significantly affected the average of critical thinking skill [7]. Then Walsh & Hardy (1999) also assumed that women had higher score in all aspect of critical thinking than men [15]. The result of the research by

Wilder and Powel (1989) showed that women had high memory [17]. In addition, women showed superiority in verbal skill. Whereas men were better in mathematics and natural science. The findings of the research were not inline with the result of N.-Y. Liu, Hsu, Hung, Wu, & Pai( 2018) [8]. It showed that there was no difference significantly in critical thinking skill of students based on gender.

Based on the background above, it is conducted the research that aims to analyze critical thinking skill in students of SMA Negeri in Surakarta District based on gender.

## II. DATA/MATERIALS AND METHODS

This research was a descriptive study using instruments developed based on aspects of critical thinking skills according to Facione [2] which include interpretation, analysis, evaluation, explanation, conclusion, and self-regulation . The sample in this study used the XI grader students of the Natural Sciences Program and 108 high school students 8 Surakarta were selected through purposive sampling technique. The data was obtained from the analysis of student answers. Data was obtained by coding each student's answers and printing each student's answers based on the assessment rubric. Based on the rubric, the researcher can determine whether students fulfilled each indicator of critical thinking skills or not in solving the problems contained in the problem. The method for calculating the percentage value was as follows:

$$\text{Percentage Score} = \frac{\text{Obtained Score}}{\text{Maximum Score}} \times 100\%$$

The percentage value of critical thinking skills obtained from calculations was then categorized based on table 1.

**Table 1. Percentage Categories of Critical Thinking Skills**

Interpretation (%)	Category
81.25 < X ≤ 100	Very high
71.50 < X ≤ 81.25	Height
62.50 < X ≤ 71.50	Medium
43.75 < X ≤ 62.50	Low
0 < X ≤ 43.75	Very low

Karim Adaptation

**III. RESULTS AND DISCUSSION**

Based on test result analysis, it was obtained all data with average value of critical thinking skill of students in low category of 55%. whereas for average value of critical thinking skill based on gender, value of women critical thinking skill was higher about 60.6% than men critical thinking skill value of 39.4%. it was inline with the research by nur miftahul that critical thinking skill of women was better than men. It also explained that women (students) tent to get better in critical thinking skill than man.

If it was analyzed based on students' gende based on indicators of Facione (1990) in critical thinking skill as follow interpretation, analysis, evaluation, conclusion and self-regulation. So it was obtained difference in each gender as in table above.

**Table 2. Category of critical thinking skill**

No	Critical Thinking Skill		
	Indicator	Women(%)	Men(%)
1	interpretation	77,3	75,0
2	analysis	48,6	42,7
3	evaluation	49,4	52,7
4	Explanation	53,5	55,1
5	conclusion	47,5	41,7
6	Self regulation	58,2	54,7

Based on the table, it can be seen that women have high critical thinking ability in indicators of interpretation, analysis, conclusion and self-regulation than men. Whereas men are better in indicators of evaluation and explanation [3].

**Interpretation**

In interpretation indicator of women was 77.3. It was higher than men of 75. it was because women had ability to understand and express the meaning of experience, data, event, assessment, convention, belief, rule, procedure or criteria.

**Analysis**

For analysis indicator, women were higer of 48,6% than men of 42,7%. It was because women had ability to identify and reveal accepted information in detail to be studied.

**Evaluation**

For evaluation indicator, men were higher of 52,7% than women of 49,4%. it was because men in this category had ability in access credibility of question/representation and they were able to access logically the relation between question, description, question or concept.

**Explanation**

For explanation indicator, men are higher of 55,1% than women of 53,5%. it is because men had skill in drawing conclusion reasonably and they gave strong reason over the answer from data, question, principle, prove, assessment, belief, opinion, concept, description, and other form of representation than women.

**Conclusion**

For conclusion indicator, women were higher of 47,5% than men of 41,7%. It explained that women had ability in making conclusion based on elements of thinking ability logically and analytically.

**Self-regulation**

For Self-regulation indicator, women were higher of 58,2% than men of 54,7%. In this case, women tent to have ability in managing themselves such as monitoring cognitive activity in their environment and reviewed the answer.

Based on explanation above, it can be concluded that average vale of women critical thinking skill is higher of 60.6% that men of 39.4%. it shows that there is significant difference that affects critical thinking skill of women and men. Whereas for critical thinking skill average value for each indicator show that there is no significant difference between men and women [9][4]. critical thinking skill is low in indicator of evaluation, explanation, conclusion and self-regulation so it needs to develop. Interpretation indicator is categorized high. It means that students have ability in writing what is questioned correctly

**IV. CONCLUSIONS**

The result shows that average critical thinking skill gives different result in each indicator and it is still in low category. Thus, teacher is expected to do learning activity that can develop students' critical thinking skill. The interpretation indicator is categorized high. There is no significant difference between women critical thinking skill and men.

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