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Profile of Students' Critical Thinking Skills in Junior High Schools in Surakarta

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Abstract: Critical thinking is an important skill for student in 21st century. They this skills to solve problems and make good reasonable decisions in learning process and in their daily activities. This research aimed to analyze the profile of critical thinking skills of junior high school students and was conducted by a descriptive research method. The subject of this research was 50 students from grade VIII of Junior High School in Surakarta. The data of this research was collected using an essay test based on 6 indicators of critical thinking skills authorized by Facione. The result showed that the average of percentage of student's critical thinking skill achievements is 46.87%. This result indicate that the critical thinking skills of students are categorized in low level, therefore it must be improve in learning process and apply it in their daily activities.

Keywords: *Students' critical thinking skills, junior high school*

INTRODUCTION

Critical thinking skills are one of the life skills in the 21st century so that students must have this skills to learn contextually. It means that students also need to have this skills because they need to be prepared for global challenges. Students' critical thinking skills can be developed through a quality education process, namely the educational process that trains problem solving skills and critical and creative thinking skills (Anjarsari, 2014). Critical thinking skills are skeptical, open, analytical and evaluative thinking skills (Facione, 2015). Critical thinking is also a reflective thinking process for making decisions accompanied by critical analysis based on evidence and reasons that are relevant and accountable. These skills are important for students not only to understand learning material, but also to recognize problems, find solutions to those problems, and find ways to solve problems in everyday life. Facione (2015) formulated 6 indicators of critical thinking skills as follows:

1) Interpretation, namely students' skills to make interpretations or interpret an experience, event, data, or criteria.
2) Analysis, namely the skills of students to conduct investigations related to the causal relationship of a statement / event.
3) Inference, namely the skills of students to draw conclusions from a data / statement / event based on evidence and relevant reasons.
4) Evaluation, namely the skills of students to make judgments about the credibility of an information using inductive or deductive reasoning.
5) Explanation, namely the skills of students to make detailed explanations of an event or problem based on concepts, methods, and strong considerations.
6) Self Regulation, namely students' skills to ensure or convince themselves that they have understood a statement or event.

Students need critical thinking skills to determine what to do after listening to an explanation from the teacher or obtaining information from the textbook they are studying. Students who are

accustomed to using critical thinking skills will not remain silent after getting information from the teacher, he will try to dig up the information more deeply, one way is to ask. Students who ask a lot during the learning process do not always mean that the student is difficult to understand the learning material, on the contrary it shows that he managed to find problems or obstacles to understand the learning material and try to find answers to these problems. Of course this is not merely indicated by his courage to ask, but also the quality of the questions put forward. This can lead to higher order thinking skills by time.

The type of question that indicates that the student uses his skills in critical thinking usually begins with a sentence asking why or how. The question sentence "why" shows that the student wants to find a causal relationship from the information he receives, while the question sentence "how" shows that the student wants a more detailed, broad, and in-depth explanation of an event or event. Type of question to identify of students' critical thinking skills is needed so that teachers can maintain the development of students' learning process.

For example, after the teacher has finished explaining learning material about the types of substances, students who are critical will explore more information about the types of these substances. For example, by asking the question "why do different types of substances?", "Why flour is classified as solid, even though when we put flour in a glass, it looks like a glass, when we pour it into a bowl the shape turns into a bowl?". Such questions indicate that students are critical and able to find connections from the material being studied with events that they observe in their daily lives.

Practicing students' critical thinking skills can be started as early as possible. Based on Piaget's cognitive development theory (1927-1980), junior high school students whose average age is 11-13 years are included in the concrete operational cognitive stage. The point is that children at that age have been able to use their skills in thinking to identify things that are concrete, but have not been able to identify things that are abstract (Ibda, 2015). Therefore, practicing critical thinking skills can be started when students enter high school (SMP). This paper will discuss and analyze the profile of critical thinking skills of junior high school students to find out the level.

METHOD

The research method used is descriptive qualitative, which is a method used to obtain information about the profile / characteristics of critical thinking skills of junior high school students in Surakarta from several samples to be generalized. This step was done to identify the pattern of students' critical thinking skills. The study was conducted in one of the junior high schools in Surakarta, which consisted of 50 students as research subjects. The data collection technique was done by a written test using 12 test questions of critical thinking skills in the form of a description that was compiled based on indicators of critical thinking skills formulated by Facione (2015). The type of data obtained in the form of ordinal data in the form of scores of students' critical thinking skills. The maximum score for each question is 4 and the minimum score is 1. The data is then analyzed using quantitative descriptive analysis techniques. First, calculate the average score of students' critical thinking skills with the formula:

$$Mean = \frac{TotalScoreofIndicators}{TotalStudents}$$

Second, determine the percentage of the average score obtained by the formula:

$$\% = \frac{MeanScore}{MaximumScore} x100\%$$

The percentage score of students' critical thinking skills is then converted into qualitative values (categories) based on the following categories:

Table 1. Category of students' critical thinking skills level

No.	Percentage (%)	Category
1	>80	Very High
2	>60 – 80	High
3	>40 – 60	Medium
4	>20 – 40	Low
5	<20	Very Low

(Sumber: Widoyoko, 2009)

RESULTS AND DISCUSSION

Results

Based on the results of tests to identify students' critical thinking skills, the mean score of students' critical thinking skills in junior high school in Surakarta on each indicator / aspect of critical thinking skills can be seen in Table 2.

Table 2. Mean score of students' critical thinking skills

No.	Indicator of critical thinking skills	Mean	Percentage (%)
1	Interpretation	1.40	35.12
2	Analysis	2.43	60.77
3	Inference	1.43	35.99
4	Evaluation	1.91	47.84
5	Explanation	2.18	54.74
6	Self Regulation	1.87	46.76
	Total Mean Score	1.88	46.87

Table 2 shows that the average test results of students' critical thinking skills profile in junior high school in Surakarta are included in the sufficient category with a score of 46.87%. This shows that overall the critical thinking skills of junior high school students in Surakarta still need to be improved. Meanwhile, based on the average score of each aspect / indicator of critical thinking that is measured, the highest score is indicated by the aspect of analysis, while the lowest score is indicated by aspects of interpretation. The data in Table 2 can also be visualized in the form of a histogram in Figure 1 below.

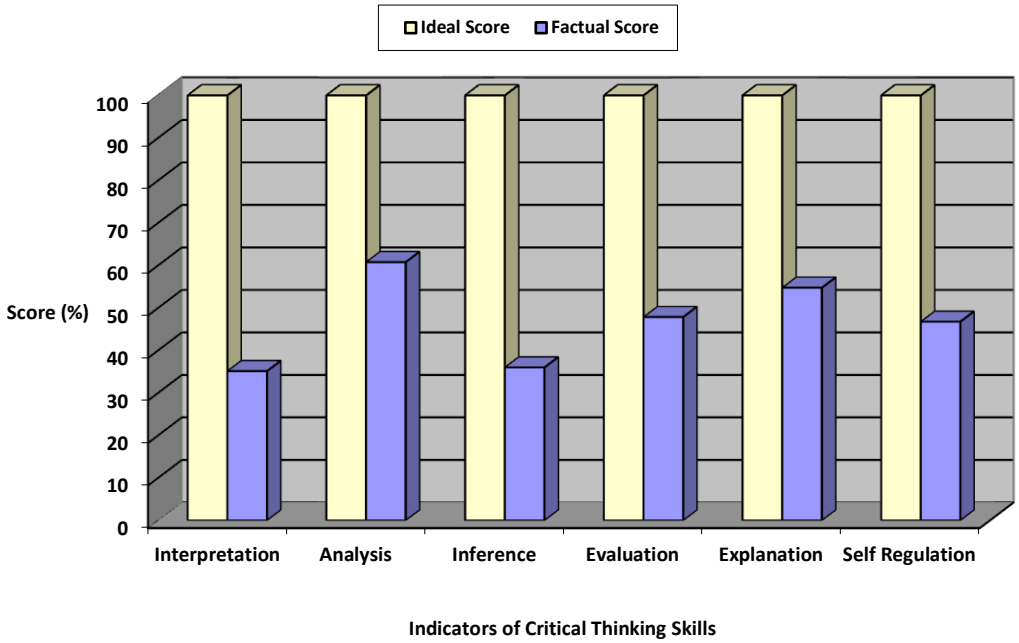

Figure 1. Mean score of students' critical thinking skills in Surakarta

Discussion

The results showed that the critical thinking skills of junior high school students in Surakarta as a whole were still in a fairly low category, which amounted to 46.87%. These results are in line with the research conducted by Nuryanti, et al. (2018) and Utami, et al. (2018) which states that critical thinking skills of junior high school students in Central Java are still in the low category. Of the six critical thinking indicators, the inference and interpretation indicators get the lowest average score, which is less than 40%.

Interpretation is the ability of students to express and understand the meaning of a statement, situation, data, or event that is characterized by its ability to categorize, understand or make symbols, and to clarify the meaning of things, while inference skills or conclusions are students' ability to identify the core of a problem (Facione, 2015). Both of these abilities are important abilities that students should have in order to understand learning material well and obtain meaningful information or core knowledge. The question of critical thinking skills that have been mastered by students quite well is a question with an indicator of analysis, namely with an average score of 60.77%. According to Facione (2015), students' ability to analyze is shown by students' ability to examine ideas / ideas, identify a statement, and investigate the causal relationship of an event or statement.

The low critical thinking skills of students cause students to be more difficult to master the learning material holistically. Students' knowledge and skills are limited to information conveyed by the teacher or written in the textbook. Learning material becomes less meaningful, because students only master the material shortly after being taught. The expected learning can take place interactively with the presence of further discussion in the class does not occur. In addition, the low critical thinking skills of students not only make it difficult for students to solve problems related to the material (exam questions), but also the difficulty to solve problems in daily life. Furthermore Aizikovitsh-Udi & Cheng (2015) explained that low critical thinking skills can influence students' ability to choose the right profession in the future.

High critical thinking skills can help increase students' curiosity and guard to improve their abilities in the academic field such as: facing challenges in learning, discovering new things, and finding solutions to good problems that are often faced in everyday life and problems that have never been encountered (Zetriuslita, et al., 2016). Another benefit of critical thinking skills for students is to make students more independent, confident, and able to solve problems wisely both in daily and contextual way (Adi & Junining, 2013).

The low critical thinking skills of junior high school students in Surakarta can be caused by several factors, both internal and external factors. Internal factors are factors that come from students themselves such as students' age, gender, motivation, and intellectual level (IQ). The external factors that can influence students' critical thinking skills, for example, come from the learning process in school, including: the model / method / approach to learning used, teacher competency, as well as facilities and infrastructure in the school.

Judging from the age factor, the average junior high school student is 11-14 years old who has entered the operational-concrete intellectual stage. Ideally, the age of students is directly proportional to the ability of critical thinking skills. The more age, the better the skills in critical thinking, because they have more experience dealing with problems that require critical thinking. However, age as factor affecting is not enough. Female students who were found to be more diligent in classroom learning did not show a higher level of critical thinking than male students who looked ignorant, meaning that the average critical thinking skills of male and female students were the same or no significant difference (Zetriuslita, et al., 2016). Meanwhile, based on research conducted by Adi & Junining (2013), the results show that students' intellectual level (IQ) has a correlation with students' critical thinking skills. So that students with a higher IQ tend to have higher critical thinking skills as well.

In addition to the internal factors previously explained, external factors also have a significant influence on the level of students' critical thinking skills, especially those related to the learning process. As suggested by the government of the Republic of Indonesia as contained in the Attachment to Minister of Education and Culture No. 20 of 2016 concerning Competency Standards for Primary and Secondary Education Graduates, which states that SD / MI / SDLB / Package A, SMP / MTs / SMPLB / Package B, and SMA / MA / SMALB / Package B graduates are expected to have competence in the dimensions of skills in think and act creatively, critically, productively, collaboratively, collaboratively, and independently. To achieve this competency, the learning process should use learning models that invite students to use their skills in critical thinking, such as PBL, PjBL, inquiry, and CTL (Sadia, 2008).

CONCLUSION

Critical thinking skills are one of the life skills students should have so that students are not only able to understand the subject matter well, but also as a provision for students to deal with and solve problems in daily life through contextual phenomena. Based on the results of the study, the average score of students' critical thinking skills is still in a fairly low category (46.87%). This is caused by several factors both from within the student (internal factor) and from the learning process (external factor).

REFERENCES

Adi, S. S., & Junining, E. (2013). Kemampuan Berpikir Kritis dalam Membaca serta Kesesuaiannya dengan Intelegensi Mahasiswa Program Studi Sastra Inggris. *ERUDIO Vol. 2, No.1*, 59-64.

Aizikovitsh-Udi, & Cheng. (2015). Deveoping Critical Thinking Skills from Dispositions to Abilities: Mathematics Education from Early Childhood to High School. *Creative Education (6)*, 455-462.

Anjarsari, P. (2014). *Pentingnya Melatih Keterampilan Berpikir (Thinking Skills) dalam Pembelajaran IPA SMP.* Yogyakarta: Program Studi Pendidikan IPA, FMIPA, UNY.

Facione, P. A. (2015). *Critical Thinking: What It Is and Why It Counts.* USA: Measured Reasons LLC.

Ibda, F. (2015). Perkembangan Kognitif: Teori Jean Piaget. *INTELEKTUALITA Vol. 3, No. 1, Januari-Juni 2015*, 27-38.

Johnson, E. B. (2007). *Contextual Teaching and Learning: Exciting Make Teaching and Learning Activities and Meaningful.* Bandung: Mizan Learning Center.

Nuryanti, L., Diantoro, M., & Zubaidah, S. (2018). Analisis Kemampuan Berpikir Kritis Siswa SMP. *Jurnal Pendidikan, Vol. 3, No. 2, Bln Februari, Thn 2018*, 155-158.

Sadia, I. W. (2008). Model Pembelajaran yang Efektif untuk Meningkatkan Keteramplan Berpikir Kritis (SUatu Persepsi Guru). *Jurnal Pendidikan dan Pengajaran UNDIKSHA No. 2 ISSN 0215-8250*, 219-238.

Utami, B., R.M., P., Ashadi, Masykuri, M., & Sutanto, A. (2018). Students Critical Thinking Skills Profile: Constructing Best Strategy in Teaching Chemistry. *International Journal of Pedagogy and Teacher Education (IJPTE) Vol. 2* , 71-75.

Widoyoko, E. P. (2009). *Evaluasi Program Pembelajaran.* Yogyakarta: Pustaka Pelajar.

Zetriuslita, Ariawan, R., & Nufus, H. (2016). Students' Critical Thinking Ablility: Description Based on Academic Level and Gender. *Journal of Education and Practice Vol. 7 No. 12*, 154-164.