

Study of Critical Thinking Skills for Junior High School Students in the Era Industrial Revolution 4.0

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Abstract

The background of the research is that skills are needed in accordance with the era of the industrial revolution 4.0, especially in the 21st century, namely critical thinking skills. For this reason, research is needed to determine the description of critical thinking skills. This research is a preliminary study that aims to describe the ability of critical thinking skills in learning science physics. Descriptive research method using google form. The research subjects were 33 students of SMP Negeri 59 Palembang. The results obtained are 25% of students are able to focus questions, 30% analyze questions, 32% consider reliable sources or not, 17% observe, consider observation reports, 39% do and consider deduction results, 38% do and consider induction results, 42% make and determine the value of judgment, 25% define, consider definitions, 21% identify assumptions, 44% determine actions, and 54% interact with others. The description of the critical thinking skills of junior high school students in the 4.0 industrial revolution era Physics science material is still in the low category, judging by the percentage of student responses. Suggestions for further research on efforts that can overcome the low critical thinking skills of junior high school students on Physics Science material.

Keyword: critical thinking skills, learning science physics, industrial revolution era 4.0

INTRODUCTION

The industrial revolution 4.0 is an era that requires students to have abilities and skills. One of the important parts in the industrial revolution 4.0 era is preparing to be more innovative through a learning system and improving the competence of graduates who have 21st century skills (Redhana, 2019). So the goal of Indonesian national education is to try to shape students' personalities who have 21st century attitudes. The skills that must be possessed by students are skills known as 4Cs (Erdoğan, 2019). The 4C skills include: 1) communication; 2) collaboration; 3) creativity; and 4) critical thinking (Bedir, 2019).

One of the 21st century skills is critical thinking skills. Critical thinking is a high-level thinking ability in solving problems systematically. Critical thinking skills function in all aspects of life, therefore critical thinking

is called an essential ability in life (Prameswari et al., 2018). Critical thinking skills in students need to be trained and continuously developed (Kemendikbud, 2016). The need for developing students' critical thinking skills is one of them in science learning so that students have a deep understanding not only memorizing and passing through their minds (Rositawati, 2019; Amin et al., 2020; Husen et al., 2017; Warsah et al., 2021). Permendikbud No. 64 of 2013 explains that physics requires logical and critical thinking (Kementerian Pendidikan dan Kebudayaan, 2013).

Based on a survey conducted by Trends in Mathematics and Science Study (TIMSS) in 2015, the ability of Indonesian students in the field of science showed that Indonesia was ranked 44th out of 49 countries with an average score of 397 Indonesia (Nizam, 2016). Meanwhile, the opinion of Ramdani et al (2021) which states that the ability of students' critical thinking skills in

science learning is still low and needs to be improved. Similarly, the information provided by the teacher about students' critical thinking skills.

This study provides an overview of the critical thinking skills of junior high school students in science learning. This is important as information to follow up on appropriate future learning activities and be able to improve students' critical thinking skills.

METHOD

This type of research is descriptive research. Descriptive research is conducted to describe, describe, and explain a real situation (Sugiyono, 2013). The subjects in this study were students of class VIII-3 SMP Negeri 59 Palembang in the odd semester of the 2021/2022 academic year, totaling 33 students. To measure a situation under study using a tool called an instrument (Sugiyono, 2013).

In this study, a questionnaire instrument was used in the form of a questionnaire compiled based on indicators and sub-indicators of critical thinking skills from Ennis (1996). The research design used is to use google forms which are distributed through whatsapp groups. The data that has been obtained were analyzed using Microsoft excel. For quantitative data analysis of the description of critical thinking skills.

RESULTS AND DISCUSSION

RESULTS

The following are the results of research data analysis:

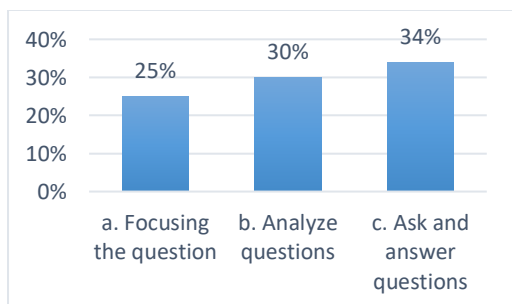


Figure 1. Indicators Giving a Simple Explanation

Figure 1 is the result of the responses given by students through the google form that has been distributed to the indicators providing a simple explanation. Shows that the sub-indicators focus on questions by 25%, analyze questions 30%, and ask and answer questions 34%.

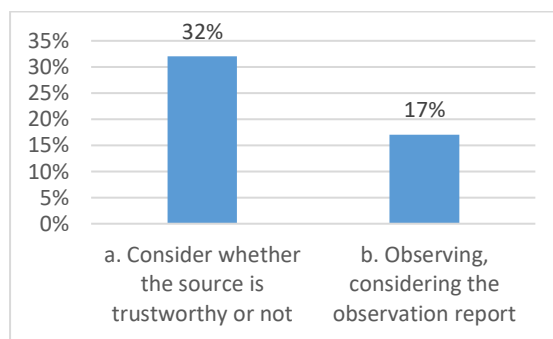


Figure 2. Indicators of building basic skills

As many as 32% of students who can consider reliable sources or not. Then 17% on observing, consider the observation report. These results can be seen in Figure 2 about indicators of building simple skills. These results were obtained from the responses from students they gave.

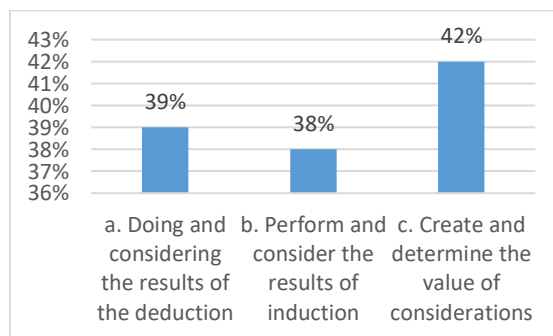


Figure 3. Conclusion Indicator

In the conclusion indicator, which is translated into three sub-indicators, it is presented in Figure 3. Namely, in the sub-indicator of doing and considering the results of the deduction, the percentage is 39%. Then do and consider the induction yield is 38%. While the sub-indicator to make and determine the value of consideration is 42%.

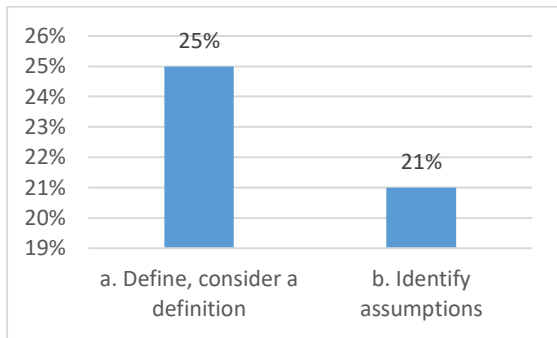


Figure 4. Indicators Provide Further Explanation

Defining, considering a definition and identifying assumptions are sub-indicators of the critical thinking indicator about providing further explanation. The percentages are 25% and 21%, respectively. Which is shown in figure 4.

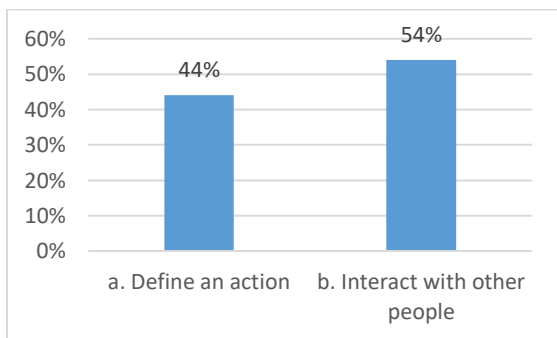


Figure 5. Indicators for Setting Strategy and Tactics

The indicator for managing strategies and tactics with its two sub-indicators is shown in Figure 5. It shows that the students' ability to determine an action is around 44% and interacting with other people is 54%.

From the results of the responses given by students. Based on the pictures above, it shows that the percentage of students is still low for each critical thinking indicator and sub-indicator. This is because each of the indicators described in the sub-indicators of student responses to critical thinking skills is still below 50%. Although there is one sub-indicator which is 54%, the others are still below 50%.

DISCUSSION

This study aims to determine the

description of students' critical thinking skills in learning science physics. Based on the results of research on the indicator provides a simple explanation which has 3 sub-indicators. The first focuses on the question, the second analyzes the question. And the third asked and answered questions. That the first sub-indicator is 25%, then the second sub-indicator is 30%, and the third sub-indicator is 34%. These results were obtained based on students giving their responses to the questionnaire given.

Furthermore, on the indicator of building basic skills with 2 sub-indicators, namely, considering whether the source can be trusted or not and observing, considering the observation report. The results were 32% and 17%, respectively. The results show that students provide information that they have a low level of building basic skills.

Then the indicator concludes, while the sub-indicators consist of doing and considering the results of the deduction, carrying out and considering the results of the induction, and making and determining the value of the consideration. In order, the response scores of students were 39%, 38%, and 42%.

For indicators, provide further explanation on defining sub-indicators, consider a definition and identify assumptions for the percentage of student responses, namely: 25% and 21%.

While the indicators set strategies and tactics with sub-indicators determining an action and interacting with other people, the percentage values obtained from student responses are 44% and 54%, respectively.

In the research results that have been obtained, it turns out that the percentage of students' critical thinking is still low based on the results of the responses given by students. The results of this study are in line with Nuryanti et al, (2018) that in science material the critical thinking ability of junior high school students is still low so efforts are needed to improve students' critical thinking skills.

In another study, information was obtained that students' critical thinking skills on science material were still in the low category

(Saputa et al., 2016). The low critical thinking ability of students so that it still needs to be improved on science material (Jamaluddin et al., 2019; Marlina. L et al., 2018; Marlina. L & Sriyanti. I, 2020; Marlina. L et al., 2021; Marlina L et al., 2019). In this study, information about students' critical thinking skills still needs further research considering that this research is a preliminary study. Therefore, further research should discuss how to plan, design, and increase knowledge through critical thinking skills training so that it can help improve students' critical thinking skills.

CONCLUSION

Based on the results of the research that has been carried out, the following conclusions can be drawn: 25% of students are able to focus questions, 30% analyze questions, 32% consider whether the source is reliable or not, 17% observe, consider observation reports, 39% carry out and consider the results deduction, 38% perform and consider the results of induction, 42% make and determine the value of judgment, 25% define, consider a definition, 21% identify assumptions, 44% determine an action, and 54% interact with other people. So that the results of this study indicate that the description of the critical thinking skills of junior high school students in the industrial revolution 4.0 era of Physics Science material is still in the low category, judging by the percentage of student responses. Suggestions for further research on efforts that can overcome the low critical thinking skills of junior high school students in science physics material.

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