MAPPING CRITICAL THINKING SKILLS OF JUNIOR HIGH SCHOOL STUDENTS IN THE CITY OF A THOUSAND RIVERS BASED ON LOCAL WISDOM

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Abstract

Learning will be successful if students do not memorize the information they obtain but can criticize the information they obtain, relate their condition and the surrounding environment to this information, and use it to make changes. This research was conducted to measure the level of critical thinking of junior high school students in the city of a Thousand Rivers on natural science subject matter based on local wisdom. The research results illustrate that students' critical thinking skills still tend to be low, this requires continuous improvement to train students' critical thinking skills to achieve one of the educational goals.

Keywords: Critical Thinking Skills, Local Wisdom, Mapping, Middle School Students.
INTRODUCTION

The strategy most often used by educators to activate students is to involve students in discussions with the entire class, namely from educators to students and from students to educators. Based on the conditions of these learning activities, students are not trained to think critically. One of the long-term goals of science learning is to develop critical thinking (Fahmi et al., 2019; Norhasanah et al., 2021). As Fruner and Robinson (2004) and Fahmi (2018) say, To improve critical thinking skills in science, learning must be focused on understanding concepts with various approaches including environmental and cultural approaches rather than procedural skills.

Research linking critical thinking skills based on local wisdom has been carried out systematically and continuously (Fahmi, 2016; Aji, 2017; Fahmi, 2018; Budiarti and Airlanda, 2019; Fahmi et al., 2019; Fahmi and Irhasyuarna, 2019; Muslimahayati, 2020; Fahmi et al., 2021; Kusasi et al., 2021; Putra et al., 2021; Irhasyuarna et al., 2022; Putra et al., 2023). In general, the results of this research illustrate the importance of learning based on local wisdom to develop critical thinking abilities and skills to continue to be carried out in order to face global competition.

Pott (1994) states that there are three specific strategies for learning critical thinking skills, namely building categories, determining problems, and creating a supportive environment (physical and intellectual). Learning methods that have these characteristics include discovery learning (Af’idayani et al., 2018; Rahayu et al., 2018). This is based on the discovery learning process described by Veermans (Lakkala et al., 2003), namely orientation, formulating hypotheses, testing hypotheses, making conclusions, and evaluating (controlling). The series of activities in the discovery learning process are critical thinking activities. In this way, the process of learning science through discovery can stimulate students to think critically (Irhasyuarna et al., 2022).

Improvement efforts to improve critical thinking skills with discovery learning are focused on providing students with opportunities to build knowledge actively, meaning knowledge is discovered, formed, and developed by students both individually and in groups using cooperative learning (Fahmi et al., 2021). This is because education is a social process that cannot occur without interaction between students (Lie, 2004; Miranti et al., 2022). Cooperative learning and working activities in small groups can accommodate the development of science critical thinking skills (Noor et al., 2023).

Critical thinking contains mental activities in terms of solving problems, analyzing assumptions, providing rationale, evaluating, conducting investigations, and making decisions. In the decision-making process, the ability to search, analyze, and evaluate information is very important. People who think critically will search, analyze, and evaluate information, make conclusions based on facts, and then make decisions (Putri et al., 2021). The characteristics of people who think critically will always look for and explain the relationship between the problem being discussed and other relevant problems or experiences (Irhasyuarna et al., 2022). Critical thinking is also an organized process in solving problems that involves mental activity which includes the ability to: formulate problems, provide arguments, carry out deduction and induction, carry out evaluations, and make decisions (Fahmi, 2018).

According to Huitt (1998), critical thinking must always refer to and be based on a standard called universal intellectual standard. Universal intellectual standards are standardization that must be applied in thinking which is used to check the quality of thinking in formulating certain problems, issues, or situations. Universal intellectual standards include clarity, accuracy, thoroughness, thoroughness, precision, relevance, relatedness, and depth.
The ability to think critically will provide more precise direction in thinking, and working, and help more accurately determine the relationship between things and others. Therefore, critical thinking skills are very necessary in solving problems or finding solutions. Developing critical thinking skills is an integration of various components of ability development, such as observation, analysis, reasoning, assessment, decision-making, and persuasion. The better developed these abilities are, the better they will be at overcoming problems.

Critical thinking skills can be developed through science learning at school or higher education, which focuses on systems, structures, concepts, and principles, as well as tight links between one element and other elements (Maulana, 2008). Furthermore, Ruggiero (Johnson, 2007) stated that critical thinking is a life skill, not a hobby in the academic field. Then Johnson (2007) added that critical thinking is a thinking hobby that can be developed by everyone, so this hobby must be taught in elementary, middle, and high schools. Realizing the importance of developing students' critical thinking skills since elementary school, it is necessary to have science learning that involves students more actively in the learning process itself.

METHODS

Types of Research

The type used in this research is quantitative-qualitative research, with a research design in the form of a descriptive survey study, namely research conducted to determine the specific characteristics of a group (Fraenkel et al., 2012). Then, the sample is given a written test, the responses are tabulated and reported in percentage form.

Research Subject

The population in this study were all students of class VII State Middle Schools in the city of Banjarmasin in the 2022/2023 academic year. Subjects were selected using a purposive sampling technique based on consideration of the interest tendencies of school students in the city of Banjarmasin. The author considers that by looking at this, it can provide a fairly accurate data presentation and provide a general picture of the actual level of students' critical thinking skills in science lessons in particular.

Data Collection Technique

The data collection techniques used in this research are test and non-test techniques. The test technique is carried out by giving students a series of questions in the form of multiple choices with closed reasons. Non-test techniques are carried out through interviews with students and teachers. Interviews were given to samples that could represent the least, medium, and most error scores on the critical thinking skills test results. Documentation is used to support the implementation of research in the form of photos during research.

Data Analysis Technique

Data on the percentage (%) of critical thinking is obtained by calculating the results of giving a critical thinking test using the formula:

\[ P = \frac{F}{N} \times 100\% \]

Information:

- \( P \) = Percentage of students' answers who think critically
- \( F \) = The frequency or number of students in the group is correct
- \( N \) = Number of test takers

(Fakhruddin et al., 2012)
Data about students' critical thinking is interpreted from descriptors and rubrics provided by researchers.

**RESULTS AND DISCUSSION**

Data on students' critical thinking skills was obtained from research instruments in the form of detection instruments to detect the level of students' critical thinking skills. This instrument was adapted from an instrument for practicing critical thinking skills created by Watson & Glaser.

Data on critical thinking skills is shown in Figure 1 below.

![Figure 1. Critical thinking level of junior high school students](image)

After analyzing the data obtained using critical thinking skills questions, several findings were obtained which showed the level of students' critical thinking skills. The critical thinking skills questions used were 5 questions. In general, this question is created based on 3 (three) critical thinking skill competencies where each competency must contain scientific knowledge (content, procedural, and epistemic) in 3 critical thinking categories (Watson and Galser, 2012).

**Inference**

Inference is a conclusion drawn from observed facts or supposed facts. For example, if someone presses a light switch but the light doesn't come on, they might conclude that the filament has burned out. But the inference may or may not be true. For example, in this case, the bulb could be lost, or the fuse burned.

Questions in this part of the test will begin with a statement/paragraph of facts that must be considered true. After reading the statement/paragraph, you will find possible conclusions that can be drawn from the facts in the statement. Analyze each conclusion separately and decide the degree of truth. For each conclusion, you will be given 5 possible answers: True, Probably True, More Information Needed, Probably False, and False.

- Select True if you are sure the conclusion is correct, that is, the conclusion follows the content of the statement/paragraph correctly without any doubt.
- Probably True, if based on existing facts, you think the conclusion is probably true; that it is more likely to be true than false, but not true beyond a reasonable doubt.
- Need Further Information, if you decide that there is not enough data to make a decision based on the facts provided (or lack of facts).
- Probably Wrong, if based on the facts presented, you think the conclusion might be wrong; i.e. it is more likely to be false than it is, but there is not enough evidence to show that it is false.
- Wrong, if you think the conclusion must be wrong; this conclusion is wrong because it misrepresents the facts given or contradicts the facts given in the statement.
Theoretically, students are directed to assess the conclusions given with 5 assessment options, namely correct, possibly correct, need further information, possibly incorrect, and wrong based on the facts they observe. An important point in this process is that the conclusions given may deviate from the information obtained by students so the role of groups and the intensity of teacher guidance on this indicator is very important.

In terms of inference indicators, 1 out of 6 people in the research sample tends to remain the same or even experience a decline. Based on the data obtained, students tend to be mistaken in choosing conclusions because the characteristics mentioned are still general and their initial knowledge is lacking. This is in line with Lodge et al. (2018) regarding the tendency of students to like detailed examples in understanding a learning concept. This changes the direction of student learning from specific to global (D'Mello et al., 2014).

**Recognize Assumptions**

An assumption is something that is required or taken for granted. When someone says "I will see you tomorrow", he will certainly do it tomorrow, and he has nothing planned that can prevent him from seeing you tomorrow.

In this section, you will be given several statements. Each statement will be followed by a series of proposed assumptions. You must decide which assumptions are logically justified based on the evidence in the statement. If you think that the assumption is taken for granted in the statement, and is logically correct, select Assumption True. If you think that the assumption is not taken for granted in the statement, and is not logically justified, select Assumption Not True. Remember to assess each question separately and base your responses on the statements provided.

The results of research on the assumed recognition indicator show that students do not experience difficulties in making choices, as shown in the data trend which tends to increase for almost all people in the research sample for this indicator. Students tend to make choices easily even though they are sometimes in a hurry because of the framework of thinking they built previously (Sellars et al., 2018). This tendency makes them sometimes ignore the impact of these choices, even though the impact still tends to be in a positive direction if carried out in the learning aspect in the classroom (McPeck, 2016).

**Evaluate Arguments**

When making important decisions, it is important to distinguish between strong arguments and weak arguments. A strong argument is important and directly related to the question. Weak arguments are not directly related to the question or are of little importance. A weak argument may also be related to trivial aspects of the question, or confusing cause-and-effect relationships (mistakenly assuming that because two things are related, they mutually cause each other).

The questions are followed by a series of arguments in this section. You must consider every argument as correct, regardless of whether it is weak or strong. If you are considering a strong argument, select Strong Argument, or if you are considering a weak argument, select Weak Argument. Assess each question and its respective arguments. Try not to consider individual opinions or general knowledge as every argument is considered correct.

The emphasis on this indicator is that students must consider the information presented in the paragraph to be correct, and not refer to general knowledge, which will later influence their decisions. The results of research on deduction indicators show a trend that is similar to inference indicators, namely 1 out of 6 people tested tends to remain the same or even decrease.
Cholowski and Chan (2001); and Atabaki et al. (2015) in their research results found that students' weak prior knowledge and low understanding of concepts makes them weak in stating a conclusion. Muchtar and Harizzal (2012); and Fahmi and Irhasyuarna (2017) also found the fact that weak knowledge of concepts will lead to students' difficulties in solving complex problems and leading to errors in drawing or assessing a conclusion.

Of the three general categories, the results shown tend to be low. This is due to several reasons including; 1) students are not used to learning and are trained to apply critical thinking skills, 2) students are not used to the types of questions or instruments tested in research 3) students' thinking levels tend to be low.

Therefore, the results of this research are initial data as a reference for improving and training junior high school students' critical thinking skills and then continuing to improve and improve them for the progress of society, nation, and state.

CONCLUSION
In general, students' critical thinking skills are still low, this requires continuous improvement to train students' critical thinking skills. Improvements are carried out to close the gap between expectations or ideal conditions and reality or actual conditions at this time.

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PEMETAAN KETERAMPILAN BERPIKIR KRITIS PESERTA DIDIK SMP DI KOTA BANJARMASIN

Abstrak
Pembelajaran akan berhasil ketika siswa bukan menghafalkan informasi yang didapatkannya, tetapi mampu mengkritisi informasi yang diperolehnya, mampu menghubungkan kondisi diri dan sekitarnya dengan informasi tersebut, dan menggunakananya untuk melakukan suatu perubahan. Penelitian ini dilakukan untuk mengukur tingkat berpikir kritis peserta didik SMP di Seribu Sungai pada materi pelajaran ilmu pengetahuan alam berbasis kearifan lokal. Hasil penelitian menggambarkan bahwa keterampilan berpikir kritis peserta didik masih cenderung rendah, hal ini mengharuskan adanya perbaikan berkelanjutan untuk melatihkan keterampilan berpikir kritis peserta didik demi mencapai salah satu tujuan pendidikan.

Kata kunci: Kearipan Lokal, Keterampilan Berpikir Kritis, Pemetaan, Peserta Didik SMP.