ANALYSIS OF STUDENT'S CRITICAL THINKING ABILITY IN SOLVING HOTS (HIGHER-ORDER THINKING SKILLS) PROBLEMS WITH CREATIVE PROBLEM-SOLVING MODEL

Yunis Setiyowati[1], Ali Shodikin[2*]
[1,2] Program Studi Pendidikan Matematika FKIP Universitas Islam Darul Ulum
Jl. Airlangga No 3 Sukodadi Lamongan, Indonesia
Email: setiyowatiyunis99@gmail.com[1], alishodikin@unisda.ac.id[2*]

ABSTRAK

Penelitian ini bertujuan untuk mengetahui kemampuan berpikir kritis peserta didik dalam menyelesaikan soal HOTS (*Higher order thinking skills*) dengan model *Creative Problem Solving*. Penelitian ini adalah penelitian deskriptif menggunakan pendekatan kualitatif. Subjek dari penelitian ini adalah 4 peserta didik kelas VIII A Sekolah Menengah Pertama Negeri 1 Lamongan Tahun ajaran 2021/2022. Pengambilan subjek tersebut berdasarkan akibat tes uraian yang terdiri berasal dua soal. Data yg dipergunakan merupakan hasil tes serta yang akan terjadi rekaman wawancara. Instrumen dalam penelitian ini berupa tes uraian yang terdiri dari dua soal. Data yang digunakan dalam penelitian ini adalah tes dan rekaman wawancara. sesuai analisis data yg sudah dilakukan, hasil penelitian ini memberikan bahwa: Semakin tinggi *Creative Problem Solving* peserta didik maka kemampuan berpikir kritis peserta didik dalam menyelesaikan soal HOTS (*Higher order thinking skills*) juga semakin baik, dan sebaliknya jika semakin rendah *Creative Problem Solving* peserta didik maka kemampuan berpikir kritis peserta didik dalam menyelesaikan soal HOTS (*Higher order thinking skills*) juga kurang baik.

Kata Kunci: Kemampuan berpikir kritis matematis, soal HOTS (*Higher order thinking skills*), *creative problem solving.*

ABSTRACT

This study aims to determine students' critical thinking skills in solving HOTS (Higher order thinking skills) questions with creative problem-solving models. This research is a descriptive study using a qualitative approach. The subjects of this study were 4 students of class VIII A of the State Junior High School 1 Lamongan for the academic year 2021/2022. Taking the subject is based on the result of a description test consisting of two questions. The data used are the results of the test and what will happen in the interview recording. The instrument in this study was a description test consisting of two questions. The data used in this study were tests and interview recordings. according to the data analysis that has been done, the results of this study show that: The higher the Creative Problem Solving students, the students' critical thinking skills in solving HOTS (Higher order thinking skills) questions are also getting better, and vice versa if the students' Creative Problem Solving is lower then Students' critical thinking skills in solving HOTS (Higher order thinking skills) questions are also not good.

Keywords: Mathematical critical thinking skills, HOTS (Higher order thinking skills) questions, creative problem-solving.

INTRODUCTION

21st-century skills are defined as the broad set of knowledge, skills, work habits, and personalities that are considered essential to the success of today's world (Siahaan & Meilani, 2019). Critical thinking skills are at the heart of the future of all citizens around the world (Redhana, 2013). Critical thinking is one of the important aspects of the learning process, but it has not been developed optimally. Critical thinking skills are not formed from an early age.

The learning process emphasizes problem-solving procedurally so that students are required to memorize formulas without developing their thinking skills (Mulyati, 2016). Students only passively absorb information because the learning process is always centered on the teacher. This prevents students from developing higher-order thinking skills. Indeed, one of the goals of learning mathematics is to be able to develop students' critical thinking.

The same thing was experienced by class VIIA students of SMP Negeri 1 Lamongan. The critical thinking ability of students in this class is considered very lacking and time-consuming. Overcoming this problem requires real efforts, adjusted, well-planned, and research so that students' problem-solving and communication skills can develop and develop optimally for each child.

The current learning model emphasizes more on the position of the teacher as a facilitator and not the class ruler. With increasingly rapid technological developments and increasingly fierce competition, teachers must be able to create active, creative, and fun learning activities using appropriate and sophisticated technology and use diverse learning methods.

Learning with creative problem-solving attempts to connect subject matter with real-life situations and motivates students to relate their knowledge to everyday life and is enhanced by increasing creativity (Saputra & Akmal, 2018). When faced with problematic situations students can learn problem-solving skills to select and develop responses (Lubis et al., 2018). To achieve learning that embodies the characteristics above, the learning process must be carried out by interpreting critically, connecting constructing in the thinking and creative questions of the learning community, and using authentic ones (Sugianto, 2016).

If the teacher carries out the teaching and learning process by adopting a learning model that emphasizes student activity and creativity, students will be important in receiving information. Based on the results of several studies, it is explained that the creative problem-solving learning model improves their critical and

creative thinking skills so that they can solve the problems they face (Malisa et al., 2018). By using this learning method, it is hoped that it can arouse students' interest and creativity, and motivation to learn Mathematics so that students can achieve the highest efficiency in the learning process and results.

In CPS learning students must be active so that in learning students can develop their potential to the fullest to solve problems they have not faced (Lestari & Sofyan, 2013). Furthermore, the activities of CPS students during the learning process are more than just listening and taking notes. Students will feel erratic with their friends in free discussions to voice their opinions and students can use calm methods according to their creativity in solving problems (Hidayati, 2017).

Build higher-order thinking in learning mathematics in elementary school students. The 2013 curriculum demands to make students more critical and creative so that higher-order thinking skills in elementary school students are very important.

In CPS learning students must be active so that in learning students can develop their potential to the fullest to solve the problems they face. Furthermore, the activities of CPS students survived the learning process more than just listening and taking notes. Students will feel like they are asking their friends in free discussions to voice their opinions and students can use different ways according to their creativity in solving problems.

RESEARCH METHODS

This research is part of the type of descriptive research using a qualitative approach. Descriptive research with an approach includes a description and analysis of the results obtained during the research process. The instruments used in this study include the main instrument and supporting instruments. The main tool is the researcher, while the supporting tools are teaching materials, tools to test logical-mathematical intelligence, tools to test critical thinking skills in solving HOTS questions (higher-order thinking), and retention guidelines (Erfan & Ratu, 2018)

The main characteristic of high-level thinking is being able to think critically and creatively. Creative thinking comes from the habits gained by finding and using new ideas that are not uncommon but make sense to be involved in learning (Sahidu & Harjono, 2017). Creative thinking is related to creativity, namely a person's ability to create a new product or a combination of things that already exist that are useful and accessible (Suranti et al., 2017).

Higher-order thinking is when a person associates new information with

information stored in memory and relates it and or rearranges and expands that information to achieve a goal or find a solution to a difficult situation to solve (Hartati et al., 2019). The process of associating new information with information stored in memory is usually triggered by a problem or question which of course can trigger and relate to one's thinking ability.

This research was carried out in Class VIII SMP Negeri 1 Lamongan with a total of students in the even semester of the academic year 201212022. Subjects then took a critical thinking ability test to solve HOTS questions on social arithmetic literature and continued interviews.

RESULTS AND DISCUSSION

Research result

The selection of subjects in this study was not chosen at random but was chosen using a purposive sampling technique, namely a sampling technique with several considerations. The first review is based on the results of the mathematical intelligence test. In addition, the selection of these subjects also uses the considerations and suggestions of the mathematics teacher. Results Based on the mathematical critical thinking ability test that has been carried out with questions totaling 2 items of description.

Table 1. Frequency Distribution of Values

Value Conversion	*f*	Predicate
80 – 100	1	Tall
51 – 79	2	Currently
0 – 50	1	Low

Based on the table above, it can be seen that 1 student who has high mathematical critical thinking ability is a group of students with a score of 80 to 100 2 students with average mathematical critical thinking ability is a group of students who have a score between 51 - 79 and 1 student. Students with low critical thinking skills in mathematics are the group of students with a score of 0 to 50.

Critical thinking skills in solving HOTS questions were analyzed based on the critical skill indicators used by researchers, namely the interpretation of price analysis and inference. The results and discussion of students' critical thinking skills in solving HOTS questions are as follows.

1. **Solve HOTS (Higher order thinking skills) questions with the High-ability Creative Problem Solving model**

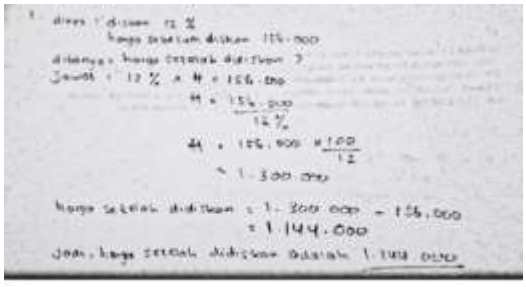

Figure 1. Answer to Question Number 1

Figure 1 shows the student's response with creative problem-solving skills to documents in social arithmetic. Through their answers, they can solve the questions well. Students can analyze the problem and understand the problem posed by writing on paper what is known in the problem, what is developed in the problem, and can answer correctly and correctly. This shows that students are confident in their abilities in social arithmetic, that they can make the right decisions, that they dare to accept challenges by solving HOTS (thinking abilities) problems which are higher in social arithmetic literature.

This is by the research of Marfuah and Julaeha (2021). The geometry section is the problem presented and there are errors in calculations because students do not record carefully what they know about the problem and what is written in the calculations and conclusions.

2. Solving HOTS (Higher order thinking skills) questions with the Medium-capable Creative Problem Solving model

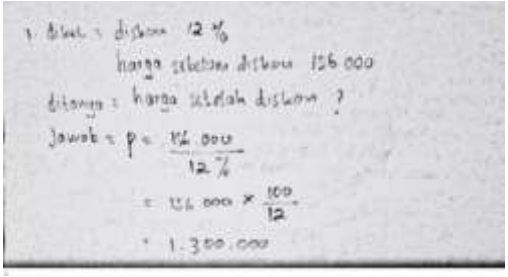

Figure 2. Answers to Question Number 1

Figure 2 shows students' responses to creative problem-solving skills on social arithmetic material. This can be seen from the students' answers that have not been completed correctly and sufficiently. Students are not able to analyze the problem and understand the problem posed. This can be seen in the students' answers that are less precise and correct, although students can write down what they know is being asked in the question, students answer the question incorrectly and correctly. This shows that students are less confident in their social calculation skills, students cannot make correct decisions, students cannot answer completely. do not know what formula to use to solve the problem and students have difficulty answering questions.

3. Solving HOTS (Higher order thinking skills) questions with the Low-ability Creative Problem Solving model

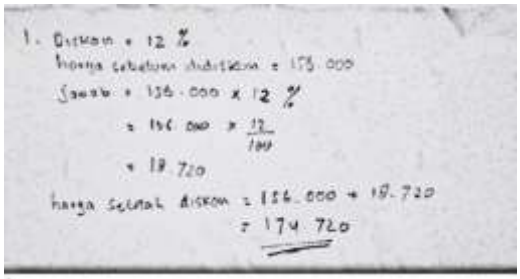

Figure 3. Answers to Question Number 1

Figure 3 is feedback for weak students in creative problem-solving in social arithmetic literature. This can be seen from the students' answers that have

been completed sufficiently and sufficiently. Students are not able to analyze the problem and understand the problem posed. This can be seen in the answers and correct, even though students can know what is seen in the questions, but students answer the questions incorrectly and correctly. This shows that students lack confidence in their ability in social arithmetic, students do not have good decision-making abilities, students do not complete answers, do not know the formula used to solve mathematical problems, and students find it difficult to answer questions.

Subjects with low mathematical ability cannot fully understand the problem. Subjects with low mathematical ability will be less accurate in modeling mathematical sentences on this problem. Subjects with low mathematical ability are also unable to load the solution of the subject directly to solve the problem without loading a plan to solve the problem first and the answers of subjects with low mathematical ability will be less accurate, because the subject made an error in modeling mathematical sentences. Subjects for RPR also cannot check the answers they receive. The results of this study are in line with research (Aqilah et al., 2017) that low ability subjects when students do not understand the questions will be easy to guess without using the mathematical thinking process students cannot find. what to assume. information that must be solved from the problem and difficulties in understanding the keywords that appear in the problem so that they cannot interpret them simply. This study is also by (Novitasari & Wilujeng, 2018) that low-ability male and female students have a problem-solving phase that is not good because they cannot solve the problem completely so no results are obtained.

CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on the results of analysis and analysis of data related to students' critical thinking skills when solving Higher Order Thinking Skills (HOTS) questions on the Creative Problem Solving Model, it can be concluded that the higher the creative problem-solving ability, the better. mathematics. Barakat. Critical thinking skills and vice versa are getting weaker creative problem-solving abilities. Mathematical critical thinking ability is not good.

Suggestion

Based on the results of the research and the conclusions obtained, it is suggested that mathematics teachers should know the critical thinking skills of students in solving mathematical problems so that they can complete effective learning

models. In addition, teachers should motivate students to develop their critical thinking skills in solving mathematical problems, such as by providing HOTS questions.

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