
STUDENTS' CREATIVE THINKING STRATEGIES AS HIGH-LEVEL THINKING, SOLVING HOT PROBLEMS IN IMPROVING MATHEMATICS LEARNING

Muhammad Syaiful Islam Al-Ghozi

Universitas Islam Negeri Kiai Haji Achmad Siddiq, Indonesia

E-mail: m.syaifulislam.alghozi@gmail.com

KEYWORDS

Creative Thinking
Strategy, high level
thinking, SPLTV

ABSTRACT

Creative Thinking Strategy of Students as Higher-Order Thinking, Solving Hot Problems Under Mathematics Learning Improvement. In our observation during PLP at SMK 2 Pancasila Jember, all students in one flat improved their' creative thinking strategy To improve higher-order thinking in mathematics learning. Therefore, this condition results in an imbalance in learning practices. Thus, this study fills the imbalance gap by describing students' creative thinking strategies as higher-order thinking skills in improving mathematics learning. Results of the study: This can contribute knowledge for educators to manage teaching strategies that can improve mathematics learning, which refers to higher-order thinking skills for all levels of creative thinking. This study is a qualitative descriptive study. The course is SMK 2 Pancasila Jember data collection, a test, observation, and interview. Data analysis is done using the data reduction method, presenting data, and concluding. The results of this study are descriptions of students' creative thinking strategies as higher-order thinking skills in improving mathematics learning, namely students' problems in planning detailed problems; students take time breaks to make a plan, identify the core of the problem, provide original ideas, provide alternative plan solving problems, combine previous ideas with question problems; operate and implement their plans by creating various solution original.

INTRODUCTION

Education in the 21st century faces challenges with the fast development of technology, and globalization impacts various aspects of human life. One of the significant impacts is the need for skills and competencies that must be owned by the young generation, especially in matters that are thought level High (Higher Order Thinking Skills - HOTS). HOTS includes the ability to think critically and creatively, and analytics break down problems, which becomes the foundation necessary in the face of dynamic change in the modern (Abduh, 2021)society; Rahmanudin, 2023).

In context education in Indonesia, various studies like The Program for International Student Assessment (P.I.S.A.) and Trends in International Mathematics and Science Study (T.I.M.S.S.) show that the ability of Indonesian students, in particular thinking level, is still low (Yulianto & Maryam, 2023)(Faturohman et al., 2020)level. P.I.S.A. 2018 shows that more than 42.3% of Indonesian students are below level 2 of the six levels measured, indicating domination ability in the Low Order Thinking (LOT) category. Therefore, it is essential to

integrate learning that fosters HOTS in every level of Education, especially in eye lesson mathematics, which has proven to play a crucial role in practising the ability to think analytically and logically (Rahmazatullaili et al., 2017).

Mathematics, as a science discipline that teaches thinking critically, logically and systematically, becomes an ideal medium for developing the HOTS abilities of students (Usman et al., 2022). However, the results show that mathematical students' ability to think creatively still needs to improve at various levels of Education. Students tend to copy method settlement problems that teachers exemplify without understanding the meaning, so they cannot apply more context-wide skills (Muslim Sanusi et al., 2020). This matter is aggravated by the extensive method of teaching mathematics in schools in Indonesia, which still needs to be revised and challenged.

Learning practical mathematics focuses on completing routine tasks and provides challenges that allow students to generate creative ideas to solve problems; creativity in thinking is essential in learning mathematics (Maulidatul M et al., 202). According to Polya's theory, ability breakdown problem mathematics consists of several steps: understanding the problem, planning completion, implementing the plan, and evaluating results . This process also plays a role in developing aspects of creativity, which is one objective of Curriculum 2013 in Indonesia.

Mathematics is the knowledge required . There are many stages in thinking and analyzing a problem To get an original answer. Mathematics is often used in form application life daily and in the knowledge of others. So, mathematics is said to hold a vital role in developing thinking processes. Strategic man can change the development of modern technology today, according to (Usman et al., 2022). In addition, mathematics also has very different characteristics of knowledge besides its abstract nature, so it needs the ability to understand and construct material mathematics. Mathematics is a universal science. According to (Ayunis, 2021), it holds a role in the development of modern technology, where its implementation covers various fields of progress. Power Think Man (Sutriyaningsih, 2020) Mathematics is one of the eye lessons with authentic characteristics because it is used to solve daily problems in life.

Mathematics is often used, and mathematics is essential for students. Several significant and necessary reasons somebody must learn mathematics are (1) as a tool to reject logically measuring thinking and (2) as a suggestion for developing modern technology. (3) Suggest solving a problem in an activity we do every day. (4) This means increasing concern for students to develop a Culture around the environment. (Sutriyaningsih, 2020). Based on results observations made by researchers in carrying out the learning process in class 10 A.K.L. at S.M.K.N. 2 Pancasila Jember, it is known that from the results settlement questions given to the researcher, only A few students who complete questions with the strategies obtained, and there are also able students to question with various methods in solving a problem. Skills a strategic, creative student in a way mathematical is one of the objectives prominent in Education and modern mathematics. This is an innovative thinking strategy, one of the ability strategies that everyone in fieldwork can obtain.

Thinking strategies are one of the facilitating skills . Learning thinking is an individual's realization of his imagination, giving him a chance to think. From the opinions above, it can be concluded that the ability to think creatively is the ability to provide new ideas with a method of thinking and realizing imagination, as well as a chance through fluency and flexibility (Ersoy & Başer, 2014). A high level of thinking can construct new knowledge in breaking down

problem statements. A level of thinking is needed in the learning process that leads to the development process of knowledge. This is also my opinion skills think level tall help students apply knowledge previously and produce new and original solutions. In other words, these skills are efficient for students When creating new and original solutions to every breakdown problem. Therefore, students must own skills and thinking levels to think productively in producing original solutions (Eren, 2021). In solving questions with use skills think level tall, someone No do procedure systematic For finish problem mathematics with limited steps, tend to complex, rare produce choice solution, but produce various solution original (Rahmazatull aili et al., 2017).

At the thinking strategy level, a high emphasis on thinking creatively can overcome challenges in settling complex problems. Therefore , a skill level based on thinking creatively can help somebody finish complex issues. People with a skill level with a high emphasis on thinking creatively can finish issues and produce original solutions.(Susilawati et al., n.d.) Explain that thinkers creative in thinking level tall always use principle basis of " situation new, "original, select relevant information in the problem, connect information with experience knowledge previously and form information new. The above statement shows that thinking creatively is important from a " thinking level high." Hence, the required study is more on the description profile thinking level based on thinking creative students finishing problems from question open (Sukiyanto, 2023).

The skill-thinking level in learning needs to be owned by educators. Think level tall college and high school students to improve and develop skills. Students need to increase their skills to the level of height he has. To overcome difficulty in generating new and creative ideas (Lucky Lailani et al., 2022), creativity is vital in learning mathematics and can increase students' skill levels. Thinking creatively is one of the highest levels of thinking because creative thinking focuses on producing various original ideas to solve complex problems. Condiproblemshis pushes educators to provide multiple learning strategies to increase students' skill levels (Faturohman & Afriansyah, 2020).

Many teachers do not help achievement ability think creative students find new and original ideas with the ability to think to level the height he has.(Wahyuni et al., 2018) Argument: This shows that the teacher equates all achievement abilities of native students (low, medium, high) to generating original ideas. This results in an imbalance in practice, learning to think level tall from various ability levels, and thinking creatively. Therefore, research fills in the gap imbalance by exploring and describing the profile of creative students as having the ability to think and increase learning mathematics (Sanusi et al., 2020).

Several case studies in Indonesia have identified the level of students' creative thinking and problem-solving abilities in the context of mathematics learning. For example, a survey conducted in Lebak Regency, Banten, showed that most students still needed more creative thinking abilities. Only about 39.67% of students showed adequate creative skills, while the rest required improved fluency, flexibility, and novelty in thinking. Students with higher mathematical abilities tend to have better creativity than those with low mathematical skills.

In addition, other studies have shown that students with high levels of mathematical ability can meet three indicators of creative thinking: fluency, flexibility, and novelty. In contrast, students with lower mathematical abilities tend only to meet one or two of these indicators. These results indicate a strong relationship between mathematical ability and problem-solving creativity.

Research on HOTS development, especially creative thinking and problem-solving skills, is fundamental to continue to be developed, considering the low results shown by various studies in Indonesia. To improve the quality of Education and prepare a generation that can face the challenges of the 21st century, the curriculum and learning methods must be designed to foster these skills from an early age. Various studies that have been conducted show that by using more innovative learning approaches, such as Project Based Learning and educational games, students can be more motivated to think creatively and solve problems better.

RESEARCH METHOD

This study uses qualitative methods. It is a descriptive explorative study because researchers analyze a descriptive level, namely analyzing and conveying ideas in a detailed way about the facts experienced by individuals or events in a particular process or activity (Creswell, 2015). This study aims to describe students' creative thinking strategies as higher-order thinking in improving mathematics learning.

The study was conducted with several procedures. Procedure: First, select class 10 A.K.L. subjects; our research is students of SMK 2 Pancasila Jember who can convey aspirations or think critically, both in writing and orally in the research process; this is done when studying mathematics, which is stated in the school's effective schedule. Selection in the study of subjects This results from our consultation during the Introduction to Field School (P.L.P.) activities with the guidance teacher or mathematics subject teacher.

The subjects given to us are hot questions in everyday life (tests) of mathematics material, Three Linear Equations of Variables (S.P.L.T.V.) according to the schedule provided by the school guidance teacher or subject teacher. Based on the results of solving the questions from 12 students, this subject shows high-level thinking skills based on creative thinking skills; students can produce various original solutions. Of the 12 students, three students were selected whose responses were speedy from the third student who represented the response of 12 students on the problem-solving strategy question of the Three Linear Equations System of Variables (S.P.L.T.V.) (Sukiyanto dkk., 2023).

S1: In the first subject, three students represent "high" level creative thinking strategies,

S2: Second Course, Five students represent the creative thinking level strategy "media,"

S3: Subjects three and four students represent the creative "low" level thinking strategies.

The high-level thinking strategies in this study are based on students' creative thinking levels. The statement is that strategies in creative thinking are students' skills to produce various methods of solving with original solutions. Therefore, creative thinking strategies for students include high-level thinking, solving hot problems, and improving mathematics learning by creating original solutions. The study of subject characteristics is shown in Table 1.

Table 1. Characteristics of Study Subjects

subject	Number of students representing creative characteristics	Subject Characteristics	Creative Thinking Level
S1	3	Students can have a solution strategy. Solution methods that are new and original.	Tall
S2	5	Students can have a solution strategy. Solution methods that are new and original.	Now

S3

4

Students can have a solution strategy. Low
Solution method that is new and original.

Based on Table 1, the third subject doing the method related to the interview stage gets each strategy as a response that describes the Creative Thinking Strategy of Students As High-Order Thinking, Solving Hot Problems Under the Improvement of Learning Mathematics based on the level of creative thinking at this time-solving hot questions related in accidents every day. in the study procedure there is an interview activity that aims to test failure in getting data. Therefore, the data we get is Then analyzed first. The research on student mathematics learning is carried out during effective K.B.M. learning during the mathematics learning schedule. Mathematics learning research will provide an overview of the views of the Creative Thinking Strategy of Students As High-Order Thinking, Solving Hot Problems Under the Improvement of Learning Mathematics. Documentation study of student mathematics learning that describes the Creative Thinking Strategy of Students As High-Order Thinking, shown in Figure 1. Figure 1 shows the activity of learning mathematics in the classroom. Each student must have a strategy for solving hot question problems while learning mathematics. Students must respond to mathematics learning To discover the Creative Thinking Strategy of Students As High-Level Thinking.

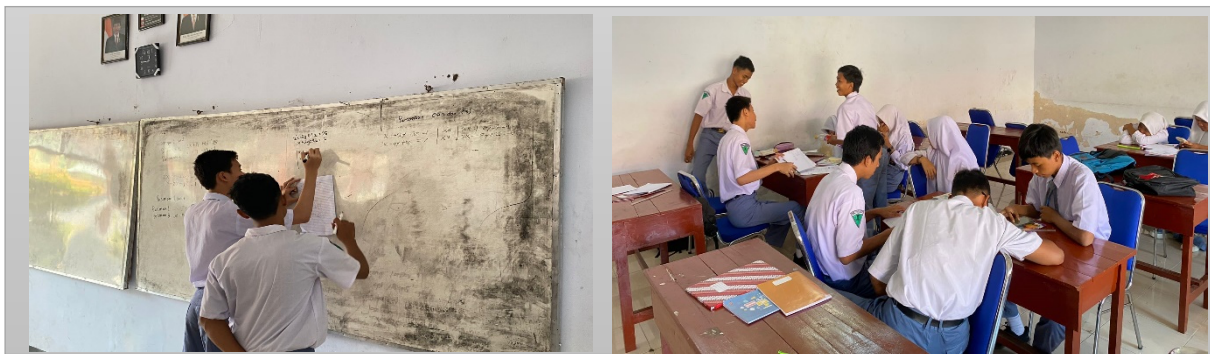


Figure 1. Students' mathematics learning activities

The Collection Method We use several stages: tests, observations and interviews. The test is conducted To determine the high-level thinking strategies of the responses at the end of the Hot Questions that describe our daily lives. Therefore, the validity that we will do is, of course, to test students. To get evidence of the validity of the Content through expert evaluation with the Aiken Index Assessment expert count value in this study are two mathematics subject teachers. The results of the survey showed 0.854167 with very high validity criteria.

item	evaluation		S_1	S_2	$\sum S$	$N(C-1)$	V	KET
	I	II						
point 1	5	5	4	4	8	8	1	very high validity
point 2	4	3	3	2	5	8	0.625	high validity
point 3	5	5	4	4	8	8	1	very high validity
point 4	4	4	3	3	6	8	0.75	high validity
point 5	5	5	4	4	8	8	1	very high validity
point 6	5	5	4	4	8	8	1	very high validity
point 7	4	4	3	3	6	8	0.75	high validity
point 8	3	3	2	2	4	8	0.5	medium validity
point 9	5	5	4	4	8	8	1	very high validity
point 10	4	4	3	3	6	8	0.75	high validity
point 11	5	5	4	4	8	8	1	very high validity
point 12	4	5	3	4	7	8	0.875	very high validity

AIKEN'S VALIDITY TEST

$$V = \frac{\sum S}{n(C-1)}$$

Content validity criteria:

- 0.9-1 = Validity is very high
- 0.6-0.79 = High validity
- 0.40-0.59 = Moderate validity
- 0.20-0.39 = Low validity
- 0.00-0.19 = Very low validity

Items 1-12	evaluation		S_1	S_2	$\sum S$	$N(C-1)$	V	KET
	I	II						
Items 1-12	53	53	41	41	82	96	0,85417	Very high validity

Figure 2. Results of S.P.S.S. Calculation of Validity of Students' High-Order Thinking

Source of the above data: study results

Data source At the time of the completion test, our researchers observed the method of students expressing, behaving, and moving by conducting observations in a direct way and Indirect observation (observation) Indirectly by looking at when studying in class. Both students who respond and do not respond or remain silent are seen). Therefore, the implementation of tests and observations aimed at finding out subjects with students and developing high-level thinking strategies based on the level of thinking moments creatively solving the host's mathematics questions. From the selected student representatives, interviews will be conducted about responses to cracking Questions with students' creative thinking strategies To solve the host's mathematics questions (tests). Interviews were conducted to find out students To test the validity of the data we obtained from the results of A test and observation descriptions related to Students' Creative Thinking Strategies As High-Order Thinking and solving Hot Problems Under Improved Mathematics Learning Data from tests, observations, and interviews were analyzed at the stage furthermore.

Credible data can describe students' creative thinking strategies, such as high-order thinking and solving hot problems. As mathematics learning improves, students think highly based on their innovative thinking in mathematics problem-solving strategies. This study's data analysis stages consist of three: Reduce the data to select the study's most essential and unimportant parts, Presenting data with the process, grouping and interpreting data that has been reduced into seven stages that describe students' high-level thinking strategies based on the level of creative thinking in solving mathematical problems, There are obstacles or problems currently occurring in the research of engineering analysis. Namely, the data shown to the subject because the subject first checks the accuracy and alignment of the data based on his experience.

RESULTS AND DISCUSSION

First subject (S1)

Creative thinking strategies with a "high" level through stages of response in solving Hot Questions in everyday life. Student responses in the method of paying attention to the cracked problem shown from Dania's questions are a bit too understood, and students will throw statements about the information in hot questions because of the existence of questions that are not well understood because students will feel strange or there is something wrong with HOTS. Students begin to experience difficulties or problems in understanding new questions before writing answers on the sheet.

S1: Sir, may I? Do I have permission? Ask what the meaning of this question is. This determines the variable and removes it from equality.

Teacher: Why, is there something confusing?

S1: I need help understanding how many equations are eliminated. Are there lots?

Teacher: Before performing elimination, we see equality, especially before forming a different equation. One of the variables is lost, and a linear equation of two variables is formed.

S 1: Oh, that is all, sir.

Teacher: Sendy also took a break for 1-3 minutes to find a strategy for determining the next step in solving the problem of heat. In addition, they spontaneously conveyed a new strategy with direct and verbal statements.

S1:

- 1) step First, I do what else before To find all the equivalences from the First equivalence to the equality third.
- 2) Identifying from equation 1-3, then we get the correct equation is equation 2 and 3 from equation 1 and 3 is result 1
 $10\ 5z = 7,500$ (4) produces equality with 4
- 3) Then search variable x from equations 1 and 3 and get the result
 $2y + 6z = 6,500$ (5) yields equality for 5
- 4) Then remove variable y from equations 4 and 5 and produce a value of $Z = 1000$
- 5) Find the elimination of z from equations 4 and 5, giving $y = 250$
- 6) final step replace x, y and z signs in equation 1, giving $x = 5,000$
- 7) So, the price For 1 kg of oranges is Rp. 5,000,- x 9 = Rp. 45,000,-, the price for 1 kg of langsat is Rp. 250,- x 36 = Rp. 9,000,-, and the price for 1 kg of grapes is Rp. 1,000,- x 40 = Rp. 40,000,-

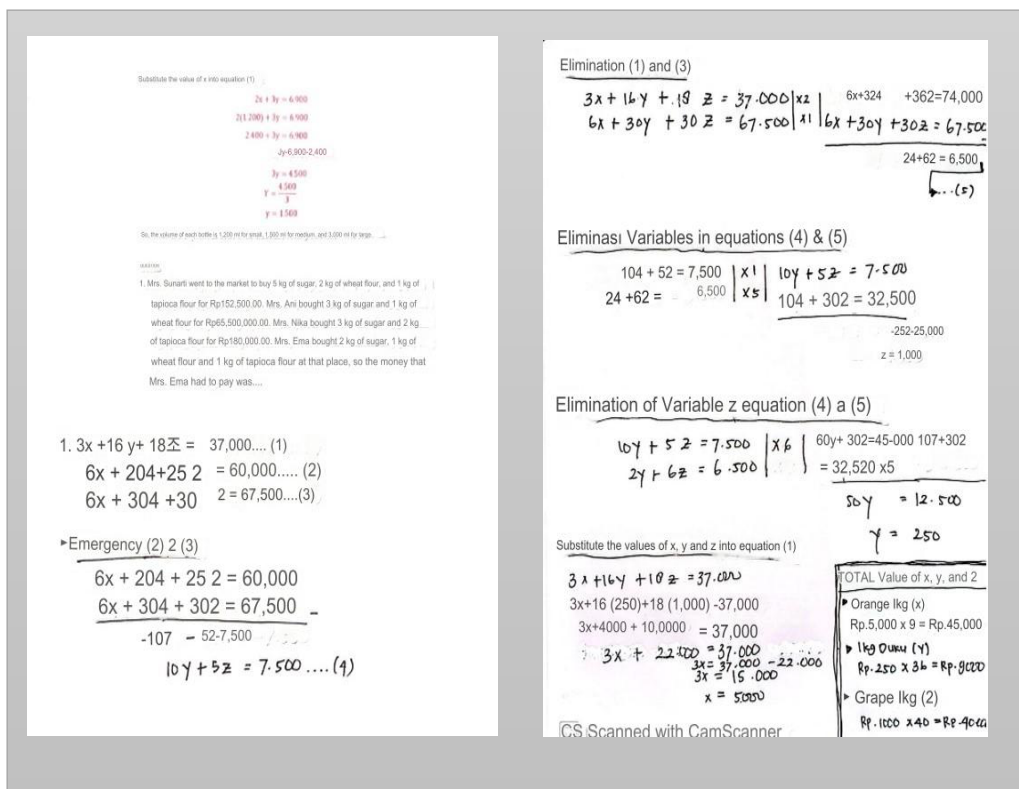


Figure 3. HOTS Question Results for First Master Students

Based on the results of the Students Working in Figure 3, the First Student who can think of creative strategies of students as a high level of thinking, solving hot question problems to improve S.P.L.T.V. mathematics learning, and eliminating each equality to determine the method of completing the answer stage is excellent and accurate. The First Student can use a technique that his friends in his class do not think of: elimination with high multiplication, which will make him feel extra.

S2: Sir, how are you? To understand this question, one must obtain the equation's variables. One arrives at three.

Teacher: Try to understand what other related questions were previously asked and each variable type.

S2: How is father?

Teacher: So it is like this from the question, for example, if the first parcel is filled with three oranges, 16 pieces of duke and 18 grapes for Rp. 37,000; That is how three oranges are symbolized by the variable (x), 16 duke fruits are symbolized by the variable (y), 18 grapes are symbolized by the variable (z), and the total is Rp. 37,000; (=).

S2: Accept father's love

Teacher: You are welcome, and students take a moment to give written and oral answers.

S2:

- 1) Look for variable from every equality from the story question
- 2) After getting the variable from each equation 1-3, find eliminations 2 and 3 to get the result that must be reduced directly.
- 3) The results from equations 2 and 3 get the result $-10y - 5z = -7,500$, so it is not harmful; the negative is crossed out $-10y$ and $-7,500$ and will produce $10y + 5y = 7,500$... Equation (4)
- 4) Find equations 1 and 3 using the method of eliminating the variable x first, multiplying equation 1 by x_2 first, then multiplying equation 3 by x_1 produces the value $2y + 6z + 6,500$ (5)
- 5) Find equations 4 and 5 by eliminating the variable y first, multiplying equation 4 first by x_1 , then multiplying equation 5 by x_5 to produce a value of $z = 1,000$.
- 6) Remove variable z in equations 4 and 5, multiply equation 4 first by x_6 , then multiply equation 5 by x_5 to produce the value $y = 250$
- 7) sign Substituting x , y and z from equation 1 yields $x = 5,000$
- 8) total 1 kg of fruit: 1 kg of oranges Rp. 5,000,- x 9 = Rp. 45,000,- , 1 kg of langsat Rp. 250,- x 36 = Rp. 9,000,-, 1 kg of grapes Rp. 1,000,- x 40 = Rp. 40,000,-

Substitute the value of x into equation (1):

$$2x + 3y = 6,900$$

$$2(1200) + 3y = 6,900$$

$$2400 + 3y = 6,900$$

$$3y = 6,900 - 2,400$$

$$3y = 4,500$$

$$y = \frac{4,500}{3}$$

$$y = 1,500$$

So, the value of y is 1,500 for wheat, 1,500 for rice, and 1,500 for sugar.

1. Mrs. Sunarti went to the market to buy 5 kg of sugar, 2 kg of wheat flour, and 1 kg of tapioca flour for Rp152,500.00. Mrs. Ani bought 3 kg of sugar and 1 kg of wheat flour for Rp65,500.00. Mrs. Nika bought 3 kg of sugar and 2 kg of tapioca flour for Rp180,000.00. Mrs. Ema bought 2 kg of sugar, 1 kg of wheat flour and 1 kg of tapioca flour at that price, so the money that Mrs. Ema had to pay was ...

1. $5x + 16y + 18z = 37,000$... (1)
 $6x + 30y + 35z = 60,000$... (2)
 $6x + 30y + 30z = 67,500$... (3)

Elimination (2) and (3)

$$6x + 30y + 35z = 60,000$$

$$6x + 30y + 30z = 67,500$$

$$-10y - 5z = -7,500$$

$$10y + 5z = 7,500$$

Elimination (1) don (3)

$$3x + 16y + 18z = 37,000$$

$$6x + 30y + 30z = 67,500$$

$$-12x - 14y - 12z = -30,500$$

$$2y + 6z = 6,500$$

Elimination of Variable y Pessaman (4) and (5)

$$10y + 5z = 7,500$$

$$2y + 6z = 6,500$$

$$-8y - 5z = -10,000$$

$$8y + 5z = 10,000$$

$$-10z = -25,000$$

$$z = 2,500$$

Elimination of variables & Equations (4) and (5)

$$104 + 52 = 7,500$$

$$24 + 62 = 6,500$$

$$104 + 302 = 32,500$$

$$-252 = -25,000$$

$$z = 1,000$$

Elimi Substitute x, y values on 2 Equation (1)

$$3x + 16y + 18z = 37,000$$

$$3x + 16(1,500) + 18(1,000) = 37,000$$

$$3x + 9,000 + 18,000 = 37,000$$

$$3x + 27,000 = 37,000$$

$$3x = 10,000$$

$$x = 3,333.33$$

So, the price for 1 kg of oranges is Rp. 5000
 Rp 4500, the price for 1 kg of duku is Rp 290 x 36 =
 Rp 9wo, and the price for 1 kg of grapes is Rp-000 x 46
 = Rp 40,000,

Figure 4. Final Results of HOTS Questions for Masters Students

Figure 4 above shows that S2 uses the thinking strategies that creative students are capable of, such as "moderate" level thinking, solving hot question problems to improve mathematics learning, and eliminating each equality to determine the eight stages of accurately solving excellent answers.

Subject to three (S3)

S3 shows creative student thinking strategies as a high level of thinking, solving hot questions of problems, and improving mathematics learning—creative thinking strategies with a "low" level in solving hot questions. S3 is similar to S1 and S2, which are the same; students think for a few minutes in understanding the questions and reading repeatedly.

S3: Sir, how are you? How do you understand this question by getting the variables of equation One to three?

Teacher: Try to understand this problem again,

S3: Yes, sir. However, I still need to know how to make each variable equal.

Teacher: Try looking at the example of the method that has been discussed. Are the stages the same for obtaining the variables in the equation for each variable?

S3: Yes, Dad, but I still need clarification. Which part is equation 1-3?

Teacher: Okay, Dad explains again. So, like this from the question, for example, if the parcel is filled with three oranges, 16 langsats fruits and 18 grapes for Rp. 37,000; That is how three oranges are symbolized by the variable (x), 16 langsats fruits are symbolized by the variable (y), 18 grapes are symbolized by the variable (Z), and the total is Rp. 37,000; (=).

S3: Oh, so that is it, sir. Package I understand

Teacher: Okay, continue, then. Students buy and work on questions. Then, students will show the results in writing and oral form.

S 3 :

- 1) Determine each variable equation 1-3, then calculate equations 2 and 3.
- 2) Count Again, the variable x is eliminated with equations 2 and 3, and the result is obtained; the result becomes equality with 4
- 3) Then, The 1st and third equations are calculated by multiplying first and producing equality to be 5
- 4) Then, count and remove variable (y) from equations 4 and 5 to get the results of the z equation.
- 5) Remove variable (z) of equations 4 and 5 and produce the value (y)

Substitution x, y and z signs) with equation 1 yields mark variable (x), all mark counted price every 1 kg of type fruit multiplied by what is needed.



The results of our study show three subjects had problems in completing S.P.L.T.V. sola hot material in daily activities. The stages of the S1, S2, and S3 tests were similar; students were less accustomed to solving hot questions like story problems. This is because students ask more questions to identify problems first. Therefore, because difficulties can motivate learning, they can solve strategies in someone's creative thinking to reflect and identify unsolved issues. Based on the results of interviews with subjects, S1, S2, and S3 were slightly constrained by confusion regarding the use of reasoning or understanding of the questions asked in determining problem-solving strategies, so students were silent in finding problem-solving strategies in solving problems from questions, the emergence of feelings of dissatisfaction, certainty and resulting in a lack of high-level thinking can result in delays in determining decisions to plan the following problem-solving. However, the emergence of confusion and high curiosity can help students plan strategies and solve math problems (Leo et al., 2019).

Students' creative thinking strategies to improve high-level mathematics learning outcomes based on different levels are different, namely (1) students at the beginning experience problems Because students are not yet accustomed to non-routine questions and are confused in determining the problem details of the plan; (2) students take a break several times to think about the plan; (3) students identify the essence of the problem, while subjects with "medium" and "low" levels of creative thinking require intervention To be able to identify the problem; (4) students with three different levels form new and original ideas, (5) students provide alternative plans; (6) students with three different levels synthesize ideas by combining previously existing ideas with problem questions; (7) students operate and apply problem-solving plans by creating more than four original solutions. Practical implications of the study This can contribute knowledge to educators regarding the management of teaching strategies

that can improve mathematics learning, which refers to high-level thinking skills for all levels of their creative thinking, especially in online learning activities. Managing practical teaching strategies can improve or build students' high-level thinking. This can help students develop various levels of creative thinking in every mathematical problem-solving. Therefore, students' creative thinking profile as a high-level thinking skill must be discussed in students' mathematics learning practices.

REFERENCE

- Abduh, M. et. al. (2021). Analysis HOTS Content and 2nd Century Skills in Books Student Class V Ecosystem Theme in Elementary School. *Journal Basicedu*, 5 (4).
- Ayunis, A, & BS (2021). The Influence of a Realistic Mathematics Education (R.M.E.) Approach to the Development of Literacy Mathematics Students at Basic School. *Journal Basicedu*, 5363–5369.
- Faturohman, I, Ekasatya, D., & Afriansyah, A. (2020). *I am increasing my Ability to Think about Creative Mathematical students via Creative Problem Solving*. 9 (1). <http://journal.institutpendidikan.ac.id/index.php/mosharafa>
- Lucky Lailani, R., Rosita Dewi Nur, I., Singaperbangsa Karawang, U., Ronggo Waluyo, JH, Telukjambe Timur, K., Karawang, K., West, J., & Thinking Creative Mathematical , K. (2022). Analysis Of Mathematical Creative Thinking Ability Of Grade X Students On Spltv Material. In *Jurnal Pendidikan Matematika* (Vol. 6).
- Maulidatul Munawaroh, Z., Elviani , E., & Al-A, B. (2020). Analysis Ability Think Creative Student Class X On Spldv Material Reviewed From Learning Outcomes Students, 1, 64–75.
- Muslim Sanusi, A., Septian , A., Sarah Inayah, and, Muwardi Complex Pasir Gede Raya, J., & Barat, J. (2020). *Mosharafa: Journal of Mathematics Education Ability Think Creative Mathematical with Using Android Assisted Education Games on Rows and Series*. 9 (3). <http://journal.institutpendidikan.ac.id/index.php/mosharafa>
- Rahmanudin , A. et. al. (2023). The Influence of Problem-Based Learning Model Assisted by Interactive Multimedia and Cooperative Learning Type S.T.A.D. *Journal Elementary Education Science*, 8.
- Rahmazatullaili , R., Zubainur , CM, & Munzir, S. (2017). Ability to think creatively and solve problems for students by implementing a project-based learning model. *Beta: Jurnal Tadris Matematika* , 10 (2), 166–183. <https://doi.org/10.20414/betajtm.v10i2.104>
- Sukiyanto , DAKSMF (2023). Analysis Ability Think Creative Mathematical Madrasah Aliyah Students in Completing System Three Linear Equations Variables. *I.J.M.S.: Indonesian Journal of Mathematics and Natural Science*, 43–55.
- Sukiyanto , S., Agustito , D., Kuncoro , KS, & Riswandi , MF (2023). Analysis Ability Think Creative Mathematical Madrasah Aliyah Students in Completing System Three Linear Equations Variables. *I.J.M.S.: Indonesian Journal of Mathematics and Natural Science*, 1 (1), 43– 55. <https://doi.org/10.61214/ijms.v1i1.39>
- Susilawati , S., Pujiastuti , H., & Sultan Ageng Tirtayasa , U. (nd). *Analysis Ability Think Creative Mathematical Viewed From Mathematical Self-Concept Student*.
- Sutriyaningsih, S. (2020). Analysis Ability Think Creative Student Class X on Spldv Material Reviewed from Learning Outcomes Student. *Journal of Mathematical Education*, 1, 64–75.

- Usman, PM, Tintis , I., & Nihayah , EFK (2022). Analysis Ability Solution Problem Mathematics Student in Finish System Three Linear Equations Variable. *Journal Basicedu*, 6 (1), 664–674. <https://doi.org/10.31004/basicedu.v6i1.1990>
- Wahyuni, A., Kurniawan, P., Mathematics, P., Technology, P., & Vocational, D. (2018). *Relationship Ability Think Creative On Learning Outcomes Students*. 17 (2). <http://ejournal.unisba.ac.id>Received:14/08/2018Approved:5/11/2018Online Publication:29/11/2018
- Yulianto, D., & Maryam, S. (2023). *Analysis Ability Students' Higher Order Thinking (HOTS) Public Elementary Schools in Solving A.K.M. Questions: Case Study in Lebak Regency, Banten*.

Copyright holder:

Muhammad Syaiful Islam Al-Ghozi (2024)

First publication rights:

JoSS - Journal Knowledge Social



**This article is licensed under Creative Commons Attribution- ShareAlike 4.0
International.**