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JUNIOR HIGH SCHOOL STUDENTS' CREATIVITY IN SOLVING HOTS QUESTIONS BASED ON LEARNING CONCENTRATION

Astridtia Putri Junita Sari
Program Studi Pendidikan Matematika, Fakultas Matematika dan Ilmu Pengethauan Alam, Universitas Negeri Surabaya
email: astridtia.18086@mhs.unesa.ac.id, astridtiaputri@gmail.com

Janet Trineke Manoy
Program Studi Pendidikan Matematika, Fakultas Matematika dan Ilmu Pengethauan Alam, Universitas Negeri Surabaya
email: janetmanoy@unesa.ac.id

Abstrak

Kreativitas merupakan produk atau hasil dari berpikir kreatif seseorang. Soal HOTS merupakan soal yang digunakan untuk mengukur kemampuan berpikir tingkat tinggi siswa. Konsentrasi belajar merupakan proses pemusatan pikiran pada pembelajaran dengan mengesampingkan hal lain di luar pembelajaran Penelitian ini bertujuan untuk menganalisis kreativitas siswa SMP dalam menyelesaikan soal HOTS matematika ditinjau dari konsentrasi belajar. Jenis penelitian ini termasuk penelitian deskriptif kualitatif, dengan 6 subjek penelitian sebagai perwakilan dari kelompok konsentrasi belajar sangat tinggi, konsentrasi belajar tinggi, dan konsentrasi belajar sedang. Instrumen yang digunakan pada penelitian ini yaitu angket konsentrasi belajar, soal HOTS matematika, dan pedoman wawancara. Data hasil angket konsentrasi belajar dianalisis dengan menggunakan Skala Likert, data hasil tes kemampuan berpikir kreatif dianalisis berdasarkan komponen berpikir kreatif. Data hasil tes dan wawancara dianalisis dengan menggunakan metode dari Miles, Huberman dan Sadana. Hasil penelitian menunjukkan bahwa siswa dengan tingkat konsentrasi belajar sangat tinggi tergolong sangat kreatif, tidak semua siswa dengan tingkat konsentrasi belajar tinggi dapat mencapai komponen berpikir kreatif kefasihan dan fleksibilitas. Sementara itu, siswa dengan tingkat konsentrasi belajar sedang tergolong kurang kreatif.
Kata Kunci: Kreativitas Siswa SMP, Soal HOTS, Konsentrasi Belajar

Abstract

Creativity is a product of someone's creative thinking. HOTS questions are questions that are used to measure students' higher order thinking skills. Learning concentration is a process of focusing the mind on learning to the exclusion of other things outside of learning. This study aims to analyze the creativity of junior high school students in solving mathematics HOTS questions based on learning concentration. This type of research includes qualitative descriptive research, with 6 research subjects as representatives of the very high, high, and moderate learning concentration groups. The instruments used in this study were a learning concentration questionnaire, mathematics HOTS questions, and interview guidelines. The data from the learning concentration questionnaire were analyzed using a Likert Scale, the data from the creative thinking ability test were analyzed based on the components of creative thinking. The data from the test and interviews were analyzed using the method of Miles, Huberman, and Sadana. The results showed that students with very high levels of learning concentration were classified as very creative, not all students with high levels of learning concentration could achieve the components of fluency and flexibility. Meanwhile, students with moderate levels of learning concentration were classified as less creative.
Keywords: Junior High School Students' Creativity, HOTS Questions, Learning Concentration.

INTRODUCTION

The 21st century is a century full of changes, followed by changes in the order of life, so that quality in business and human work is very much needed (Wijaya et al., 2016) . The National Education Standards Agency (2010) states that there are several skills that must be mastered by humans in the 21st century one of them is creative thinking, because creative thinking is one of the characteristics of quality human resources. According to (Siswono, 2007; Suardipa, 2019; Samura, 2019; Juwita et al., 2019; Ulandari et al., 2019) creative thinking is a process that a person uses when generating a new idea. Meanwhile, mathematical creative thinking is a person's ability to produce various solutions in different new ways to open mathematical problems (Livne, 2008; Samura,

2019; Novita & Ramlah, 2021). The Directorate General of Teachers and Education Personnel (2018) states that creative thinking is one of the important and necessary skills in 21st century education in order to prepare quality human resources. In Indonesia itself, efforts to improve students' creative thinking skills have been carried out by implementing the 2013 curriculum. The Minister of Education and Culture Regulation Number 20/2016 explains that in the 2013 curriculum creative thinking is one of the abilities that become the standard of graduation competence, so that many students are faced with problems that require high-level thinking skills, one of which is by being given HOTS type questions in every subject, including mathematics, so that students can practice critical, reflective, metacognitive, and creative thinking skills (Suryapuspitarini et al., 2018).

HOTS (Higher Order Thinking Skill) questions are questions that are used to measure students' higher order thinking skills (Suryapuspitarini et al., 2018). HOTS questions measure students' ability to analyze, evaluate, and create (Fanani, 2018). HOTS questions have characteristics including; (1) there is a transfer process between concepts (from one concept to another), (2) process and apply information, (3) look for relationships from various information, (4) use information that has been obtained to solve problems, (5) examine ideas and information critically (Kemendikbud, 2017). By giving these HOTS questions, students who have been trained in their creative thinking skills are expected to be able to develop their creativity (Rapika et al, 2018). Creativity is a product or result of someone's creative thinking (Siswono, 2007)

Silver (1997) and Siswono (2007) describe three important components to assess student creativity, namely a) Fluency is the ability of students to solve problems with various interpretations of answers or solutions. b) Flexibility is the ability of students to solve problems in various ways. c) Novelty is the ability of students to solve problems with methods or answers that are not usually done by students at their level of knowledge. Siswono (2010) describes the level of creative thinking in mathematics which is presented in Table 1 below.

Table 1. Creative Thinking Levels

Levels	Description
4 very creative	Students in solving problems can meet the components of fluency, flexibility, and novelty or flexibility and novelty.
3 creative	Students in solving problems can meet the components of fluency and flexibility or fluency and novelty.
2 quite creative	Students in solving problems can meet the flexibility or novelty component.
1 less creative	Students in solving problems can meet the fluency component.
0 not creative	Students in solving problems cannot fulfill any of the components of fluency, flexibility, and novelty.

Hanurrani and Susanah (2019) stated that students with high mathematical ability do not necessarily have a high level of creative thinking ability and students with low mathematical ability do not necessarily have a low level of creative thinking ability. Then what about students' creative thinking skills when viewed from the learning concentration. Learning concentration is a process of focusing the mind on learning to the exclusion of other things outside of learning (Slameto, 2013). Concentration of learning is needed by students in mathematics lessons to understand the material, concepts, formulas, and questions given (Setyani & Ismah, 2018). According to research from Cahayi et al. (2021) the higher the concentration level of students' learning, the higher their ability to understand mathematical concepts. Likewise with learning outcomes, the higher the concentration level of students' learning, the higher the mathematics learning outcomes achieved by students (Yulia & Navia, 2017). Not only that, according to research from Buyung (2021), students with high concentration will have high spatial abilities as well.

Csikszentmihalyi (1996) revealed that concentration is one of the characteristics of a creative person, someone who is creative is able to work for a long time with high concentration. Based on the explanation above, the researcher wishes to examine "Analysis of Junior High School Students' Creativity in Solving Mathematics HOTS Questions Based On Learning Concentration". This study aims to analyze the creativity of junior high school students in solving mathematics HOTS questions based on learning concentration.

METHOD

Research Subject

This research was conducted using a qualitative descriptive method and 21 class VIII students of SMP Negeri 19 Surabaya as the target subjects were given a learning concentration questionnaire. The learning concentration questionnaire was developed based on the

definition of learning concentration according to Slameto (2013) and Dimyati & Mudjiono (2010). The questionnaire used consisted of 40 favorable and non - favorable statements related to student learning concentration. Likert scale is used for scoring each statement on the learning concentration questionnaire with alternative answers always, often, sometimes, rarely, never. The learning concentration questionnaire is divided into five interval classes so that the learning concentration categories are obtained in Table 2 below.

Table 2. Category of Learning Concentration

Percentage of Questionnaire Results	Category Study Concentration
88% - 100%	Very high
71% - 87%	High
54% - 70%	Moderate
37% - 53%	Low
20% - 36%	Very low

Source: Sugiyono (2013) and Setiani (2014)

Based on the data from the learning concentration questionnaire and using *purposive sampling technique* , six subjects were selected, namely two subjects with a very high level of learning concentration, two subjects with a high level of learning concentration, and two subjects with a moderate level of learning concentration. Students with low and very low concentration levels were not selected as subjects because based on the research of Cahani et al. (2021) students with low concentration have poor understanding of mathematical concepts so that it is difficult to solve mathematical problems.

Instruments and Procedures

The procedures in this research consist of: (1) development of research instruments; (2) instrument consultation; (3) giving a learning concentration questionnaire; (4) determine the research subject; (4) giving creative thinking test questions to the subject; (5) conducting interviews with the subject; (5) analyze the data; (6) write the results of data analysis. The supporting instruments used in this study were a learning concentration questionnaire to measure the level of students' learning concentration, mathematics HOTS questions to test students' creative thinking, and interview guidelines. The instruments used have been validated by experts. The HOTS questions used were designed by taking into account the creative thinking components of Silver (1997) and Siswono (2007) so as to enable students to demonstrate the components of fluency, flexibility, and novelty in their work. The following are HOTS questions that are used for the creative thinking test.

CREATIVE TEST QUESTION 1

Dika plans to build a cage for his 25 chickens and 12 goats. He will put every 5 chickens in one cage and 4 goats in one cage. If Dika is going to build a goat cage that is twice the size of a chicken cage, then.

a) What is the minimum area of land needed to build the entire cage? Include way! **(K1, K2, K3)**
b) Try writing down another way to calculate the minimum area of land needed! **(K2 and K3)**
c) Determine the other possible minimum area of land! **(K1)**

Figure 1. Creative Thinking Test Question 1

CREATIVE TEST QUESTION 2

The COVID-19 pandemic requires everyone to wear a mask. This makes Meli plan to sell mask connectors with the following models.

The connector to be made has a length of fabric between 20cm - 30cm and a fabric width on each side between 4 cm - 6 cm. The materials needed to make the connector are as follows.

No.	Materials and tools	Unit Price (Rp)
1	Plain fabric (1m×1m) Motif fabric (1m × 1m)	23,000 26,000
2	Buttons	250
3	Sewing thread (for 20 connectors) Elastic rubber size 2 cm (1 meter)	2,000 3,000

Help Meli to design the selling price of the connector from the available materials.

a) Determine the length and width of the fabric that the connector will be made of! **(K2)**
b) How much fabric area is needed to make one connector? (**K2, K3)**
c) If Meli has 1 m^2 of fabric, how many connectors can she make?,
How many meters of elastic, buttons and thread are needed? **(K2, K3)**
d) How much does it cost to make one connector? **(K2)**
e) Can you solve problems (b), (c), (d) in other ways? If yes, please describe it! **(K2 and K3)**
f) If Meli wants to make a profit of at least 50% of the manufacturing cost, how much is the selling price for one connector? **(K1)**
g) Determine another possible selling price! **(K1)**

Figure 2. Creative Thinking Test Questions 2

After doing the creative thinking test, the subject was interviewed to get reinforcement from the test results that had been carried out. The interview guide in this study was made based on the components of creative thinking according to Silver (1997) and Siswono (2007), namely Fluency, Flexibility, and Novelty.

Data Analysis

The creative thinking component according to Silver (1997) and Siswono (2007) is used for data analysis of the subject's creative thinking test results, presented in Table 3. Furthermore, the subject's test results were analyzed based on the level of creative thinking in mathematics according to Siswono (2010) presented in Table 1. Analysis of creative thinking test results and interviews were conducted in three stages, namely reducting data, displaying data, and drawing conclusions and verification (Miles et al., 2014).

Table 3. Creative Thinking Indicators

No.	Creative Thinking Component	Indicator	Code
1	Fluency	Students can solve problems with various interpretations of answers or solutions. (at least two solutions)	K1
2	Flexibility	Students can solve problems in various ways. (at least two different ways)	K2
3	Novelty	Students can provide ideas that are relatively new or in their own way in solving problems. Students can make methods or answers that are not usually done by other students.	K3

HASIL DAN PEMBAHASAN

Based on the data analysis of the learning concentration questionnaire results, 6 subjects were selected. The classification of the six subjects is presented in Table 5 below.

Table 4. Classification of Research Subjects

No.	Initials of Subject	Classification of Learning Concentration Levels	Subject Code
1	BMRS	Very High Concentration 1	ST1
2	HE	Very High Concentration 2	ST2
3	AR	High Concentration 1	T1
4	HPR	High Concentration 2	T2
5	CA	Moderate Concentration 1	S1
6	AZ	Moderate Concentration 2	S2

Based on the data analysis of test results and interviews with the 6 subjects above, it can be described as follows.

Student Creativity With Very High Learning Concentration 1 (ST1)

ST1 solves the mathematics HOTS questions as shown in Figure 3, 4, 5, 6 and 7 below.

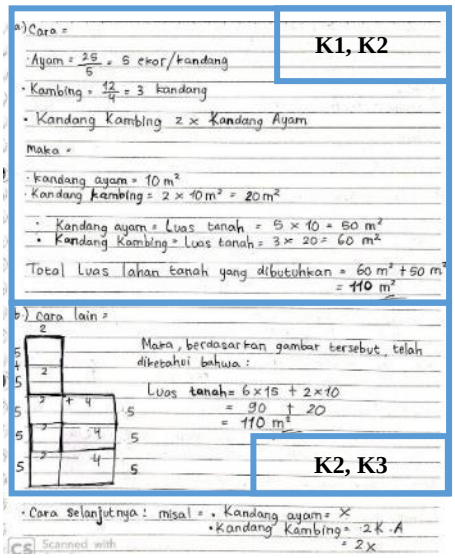

Figure 3. ST1 answer number 1

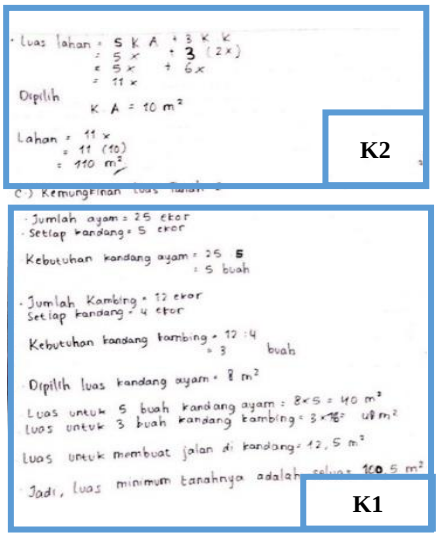

Figure 4. ST1 answer number 1

In question number 1, ST1 can determine the area of the chicken cage and the goat cage and then determine the

area of land needed to build the cage with the concept of multiplication and addition. The answer is 110 m ^{2} . ST1 determines other possible land areas by using multiplication and addition methods. The result is 100.5 m ^{2} . ST1 can give two different answers regarding the minimum land area needed to build a cage, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning ST1 meets the **fluency component** marked with the **K1 code.**

ST1 wrote two other ways to measure the required land area. First ST1 describes the plan of the cage to be built along with its size and then calculates the required land area based on the plan. Second ST1 use the concept of a one-variable linear equation by assuming the area of the chicken cage in the variable "x" and the area of the goat cage "2x". From the two methods used, the result is 110 m ^{2} . ST1 can calculate the area of land needed to build the cage using three ways, based on Hanurrani and Susanah (2019) that, "Students meet the flexibility criteria if they can provide at least two ways of making alternative solutions", meaning ST1 meets the **flexibility component** marked by the **K2 code .** ST1 can calculate the area of land needed to build the cage in a new way (the subject itself and not used by other students) by drawing a plan of the cage that will be built and then calculating the area, based on Maharga and Wijayanti (2019) that, "Students meet the criteria for novelty. if it can provide a different method from the others" means that ST1 meets the **novelty component** marked with the **K3 code .**

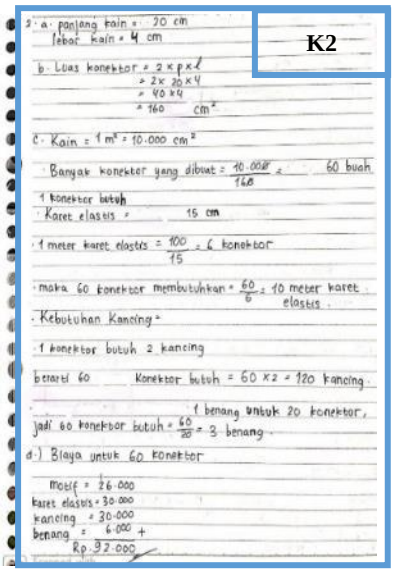

Figure 5. ST1 answer number 2

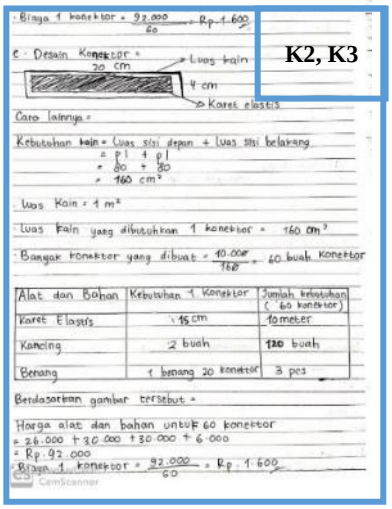

Figure 6. ST1 answer number 2

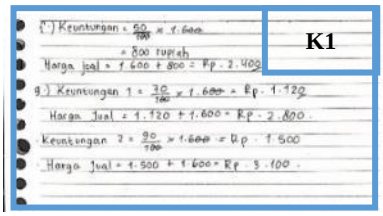

Figure 7. ST1 answer number 2

In question number 2, ST1 can calculate the area of the fabric by using the formula for the area of a rectangle. Calculate the need for other materials using the concepts of division and multiplication. Determine the cost for one connector and finally determine the selling price of the connector with a 50% profit of IDR 2,400. ST1 determines the other possible selling prices by choosing 70% and 90% profit. The resulting selling prices are IDR 2,800 and IDR 3,100. ST1 can provide three different answers for the selling price of the mask connector, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning ST1 meets the **fluency component** marked with the **K1 code.**

ST1 wrote another way to calculate the fabric area and other material requirements, namely by drawing the connector design and then calculating the fabric area based on the area of each side of the connector. Next, ST1 calculates the need for other materials using the table. ST1 can calculate the area of fabric and other material requirements using two methods, based on Hanurrani and Susanah (2019) that, "Students meet the flexibility criteria if they can provide at least two ways of making alternative solutions", meaning ST1 fulfills the **flexibility component** marked with the **K2 code.** ST1 can calculate the area of the fabric in a new way (the subject's own method and not used by other students) namely by drawing a mask connector design and then calculating the required fabric area, based on Maharga and Wijayanti (2019) that,

"Students meet the novelty criteria if they can provide a method different from the others" means that ST1 meets the **novelty component** marked with the **K3 code.** Based on the results of the interview, ST1 was able to achieve three components of creative thinking. The following is an excerpt from an interview with ST1.

Q : Did you find other answers to the questions given?

ST1 : Yes. In question number 1 I can determine two possible areas of land needed for the cage and in question number 2 I can determine three possible selling prices for connectors.

From the interview excerpts, ST1 can meet the fluency component .

Q : Can you solve the given problem in another way? If you can, try to mention other ways that can be used!

ST1 : Yes, in question number 1 I used the concept of a one-variable linear equation and drew a plan of the cage and then calculated the area of the land. In question number 2 I drew the connector design to determine the area of the fabric and used a table to calculate the needs for other materials.

From the interview excerpts, ST1 fulfills the flexibility component .

Q : In solving the problems given, can you use your own method?

ST1 : Yes.

Q : How do you solve the given problem using a new method (your own way)?

ST1 :In question number 1 I drew a plan of the cage to make it easier to calculate the area of land needed to make the cage. In problem number 2 I drew the design of the connector to make it easier to calculate the area of the fabric.

From the interview excerpts, ST1 fulfills the novelty component.

Student Creativity With Very High Learning Concentration 2 (ST2)

ST2 solves the mathematics HOTS questions as shown in Figure 8, 9, 10, and 11 below.

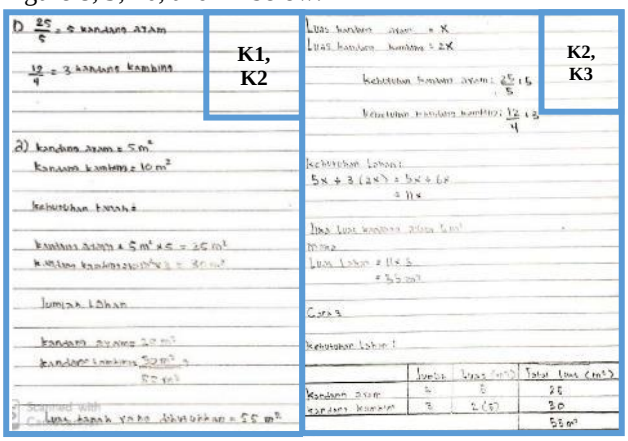

Figure 8. ST2 answer number 1

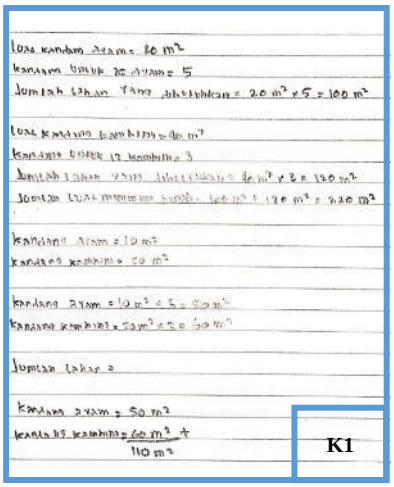

Figure 9. ST2 answer number 1

In question number 1, ST2 can determine the area of the chicken cage and the goat cage and then determine the area of land needed to build the cage with the concepts of multiplication and addition. The answer is 55 m^2. ST2 determines other possible land areas using addition and multiplication methods. The result is 220 m^2 and the result is 110 m^2. ST2 can provide three different answers for the minimum land area needed to build a cage, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning ST2 meets the **fluency component** marked with the **K1 code.**

ST2 wrote two other ways to measure the required land area. First ST2 uses the concept of a one-variable linear equation by assuming the area of the chicken cage in the variable "x" and the area of the goat cage "2x". Second ST2 use tables to calculate land area. From the two methods used, the result is 55 m^2. ST2 can calculate the land area needed to build the cage using three ways, based on Hanurrani and Susanah (2019) that, "Students meet the flexibility criteria if they can provide at least two ways to make alternative solutions", meaning ST2 meets the **flexibility component** marked with the **K2 code. .** ST2 can calculate the land area needed to build the cage in a new way (the subject itself and not used by other students) by calculating the land area systematically using a table, based on Maharga and Wijayanti (2019) that, "Students meet the novelty criteria if can provide a different way from the others" means ST2 meets the **novelty component** marked with the **K3 code.**

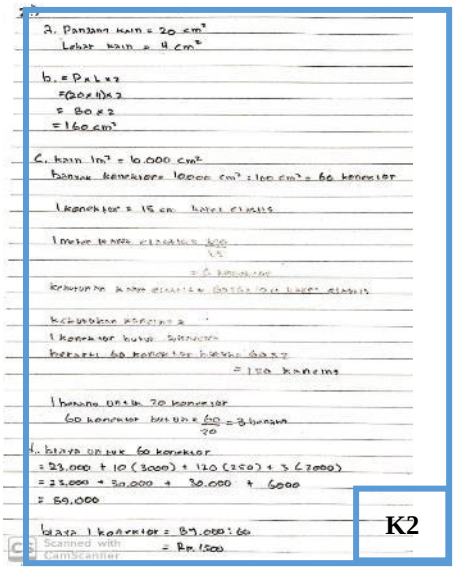

Figure 10. ST2 answer number 2

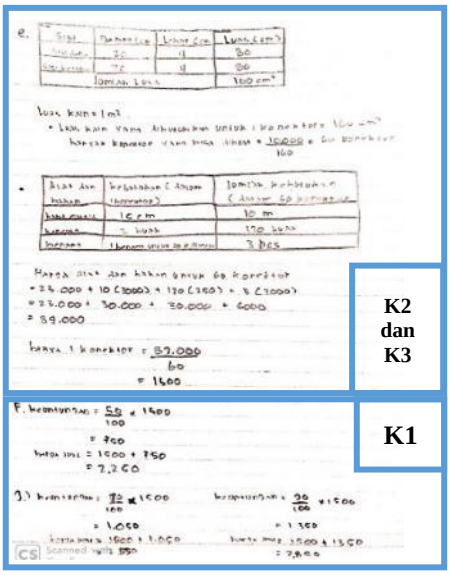

Figure 11. ST2 answer number 2

In question number 2, ST2 can calculate the area of the fabric by using the formula for the area of a rectangle. Calculate the need for other materials using the concepts of division and multiplication. Determine the cost for one connector and finally determine the selling price of the connector with a 50% profit of IDR 2,250. ST2 determines the other possible selling prices by choosing between 70% and 90% profit. The resulting selling prices are Rp. 2,550 and Rp. 2,850. ST2 can provide three different answers for the selling price of the mask connector, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning ST2 meets the **fluency component** marked with the **K1 code.**

ST2 wrote another way to calculate the area of the fabric and other material needs, namely by using a table. ST2 can calculate the area of the fabric and other material requirements using two ways, based on Hanurrani and Susanah (2019) that, "Students meet the flexibility criteria if they can provide at least two ways of making alternative solutions", meaning ST2 meets the **flexibility component** marked with the **K2 code.** ST2 can calculate the area of the fabric in a new way (the subject itself is not used by other students) by using a table, based on Maharga and Wijayanti (2019) that, "Students meet the criteria for novelty if they can provide a different way from the others" means ST2 meets the **novelty component** marked with the **K3 code.** Based on the results of the interview, ST2 was able to achieve three components of creative thinking. The following is an excerpt from an interview with ST2.

Q : Did you find other answers to the questions given?

ST2 : Yes. In question number 1 I can determine three possible land areas needed for the cage and in question number 2 I can determine three possible selling prices for connectors.

From interview quotes, ST2 can fulfill the fluency component.

Q : Can you solve the given problem in another way? If you can, try to mention other ways that can be used!

ST2 : Yes, in question number 1 I used the concept of a one-variable linear equation and used a table to calculate the required land area. In question number 2 I use a table to determine the area of the fabric and calculate the need for other materials.

From the interview excerpts, ST2 fulfills the flexibility component.

Q : In solving the problems given, can you use your own method?

ST2 : Yes.

Q : How do you solve the given problem using a new method (your own way)?

ST2 : In question number 1 I calculated the area of land needed to build a cage using a table. In question number 2 I calculated the required area of the cloth systematically using a table.

From the interview excerpts, ST2 fulfills the novelty component.

Student Creativity With High Learning Concentration 1 (T1)

T1 solves the mathematics HOTS questions as shown in Figure 12,13 and Figure 14 below.

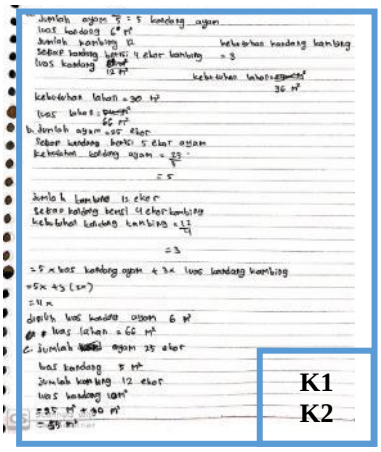

Figure 12. T1 answer number 1

In question number 1, T1 can determine the area of the chicken cage and the goat cage and then determine the area of land needed to build the cage with the concepts of multiplication and addition. The answer is 66 m ^{2}. T1 determines the other possible land areas using addition and multiplication methods. The result is 55 m ^{2}. T1 can provide two different answers for the minimum land area needed to build the cage, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning T1 meets the **fluency component** marked with the **K1 code.**

T1 wrote another way to measure the required land area, namely by using the concept of a one-variable linear equation. T1 assumes that the area of the chicken cage is in the variable "x" and the area of the goat cage is "2x". In this way T1 gets the result 66 m ^{2}. T1 can calculate the area of land needed to build the cage using two ways, based on Hanurrani and Susanah (2019) that, "Students meet the flexibility criteria if they can provide at least two ways to make alternative solutions", meaning T1 meets the **flexibility component** marked with the **K2 code .** T1 did not write down a new method (the subject itself was not used by other students) so it was concluded that T1 did not meet the **novelty component.**

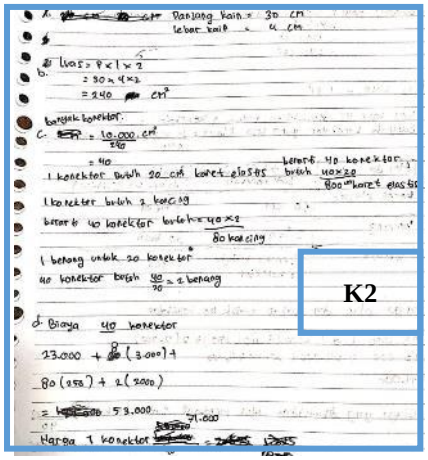

Figure 13. T1 answer number 2

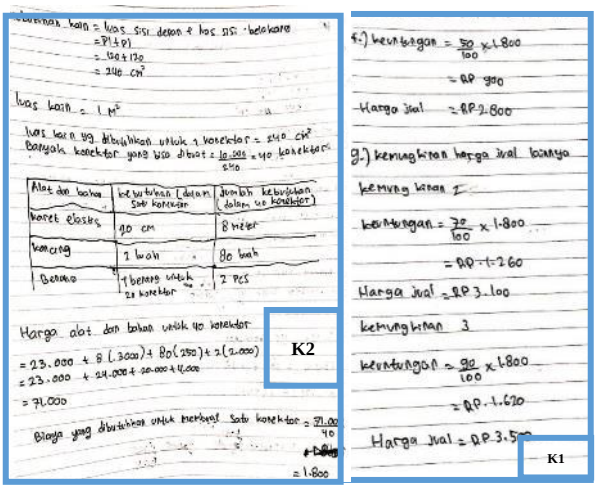

Figure 14. T1 answer number 2

In question number 2, T1 can calculate the area of the fabric by using the formula for the area of a rectangle. Calculate the need for other materials using the concepts of division and multiplication. Determine the cost for one connector and finally determine the selling price of the connector with a 50% profit of IDR 2,800. T1 determines the other possible selling prices by selecting 70% and 90% profit. The resulting selling prices are Rp. 3,100 and Rp. 3,500. T1 can provide three different answers for the selling price of the mask connector, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning T1 meets the **fluency component** marked with the **K1 code.**

T1 wrote another way to calculate the area of the fabric and other material requirements, namely by calculating the area of each side of the connector. Next, T1 uses the table to calculate the other material requirements. T1 can calculate the area of fabric and other material requirements using two ways, based on Hanurrani and Susanah (2019) that, "Students meet the flexibility criteria if they can provide at least two ways of making alternative solutions", meaning T1 meets the **flexibility component** marked with the **K2 code.** T1 did not write down a new method (the subject itself was not used by other students) so it was concluded that T1 did not meet the **novelty component.** Based on the results of the interview, T1 was able to achieve two components of creative thinking. The following is an excerpt from an interview with T1.

Q : Did you find other answers to the questions given?

T1 : Yes. In question number 1 I can determine two possible areas of land needed for the cage and in question number 2 I can determine three possible selling prices for connectors.

From the interview quotes, T1 can meet the fluency component.

Q : Can you solve the given problem in another way? If you can, try to mention other ways that can be used!

T1 : Yes, in question number 1 I used the concept of a one-variable linear equation. In question number 2 I used a table to calculate the need for other materials.

From interview excerpts, T1 fulfills the flexibility component.

Q : In solving the problems given, can you use your own method?

T1 : Can't. I haven't thought of a new way that can be used to solve the problems given.

From the interview excerpts, T1 does not meet the novelty component.

Student Creativity With High Learning Concentration 2 (T2)

T2 solves the mathematics HOTS questions as shown in Figure 15 and Figure 16 below.

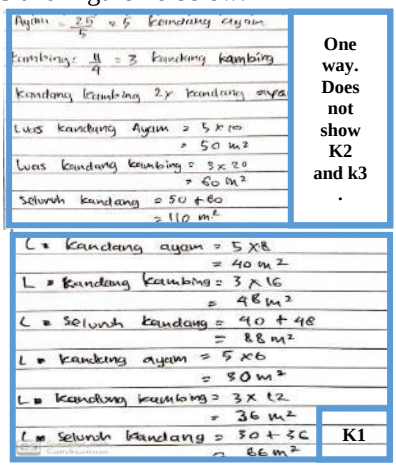

Figure 15. T2 answer number 1

In question number 1, T2 can determine the area of the chicken cage and the goat cge and then determine the area of land needed to build the cge with the concepts of multiplication and addition. The answer is 110 m ^{2}. T2 determines the other two possible areas of the land using addition and multiplication methods. The results are 88 m ^{2} and 66 m ^{2}. T2 can provide three different answers for the minimum land area needed to build a cage, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning T2 meets the **fluency component** marked with the **K1 code.** T2 did not write another way to calculate the required land area, so it is concluded that T2 does not meet the **flexibility component.** T2 did not write down a new method (the subject's own method and was not used by other students) so it was concluded that T2 did not meet the **novelty component.**

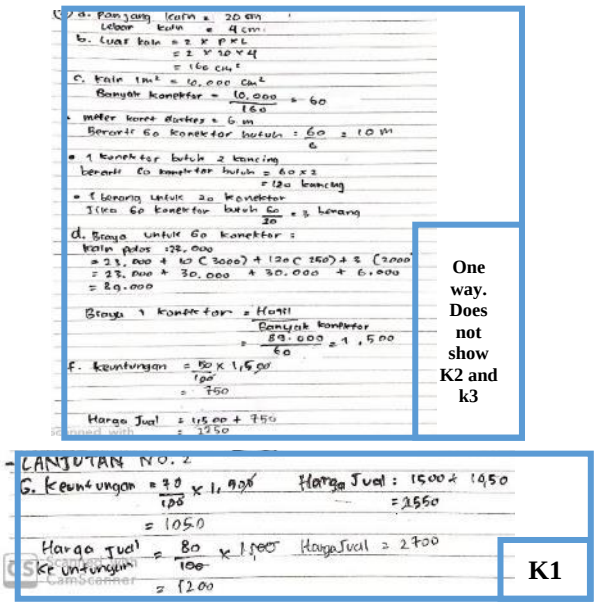

Figure 16. T2 answer number 2

In question number 2, T2 can calculate the area of the fabric by using the formula for the area of a rectangle. Calculate the need for other materials using the concepts of division and multiplication. Determine the cost for one connector and finally determine the selling price of the connector with a 50% profit of IDR 2,250. T2 determines the other possible selling prices by choosing a profit of 70% and 80%. The resulting selling prices are IDR 2,550 and IDR 2,700. T2 can provide three different answers for the selling price of the mask connector, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning T2 meets the **fluency component** marked with the **K1 code.**

T2 did not write down other ways to calculate the area of the fabric and other material requirements, so it is concluded that T2 does not meet the **flexibility component.** T2 did not write down a new method (the subject's own method and was not used by other students) so it was concluded that T2 did not meet the **novelty component.** Based on the results of the interview, T2 was able to achieve one component of creative thinking. The following is an excerpt from an interview with T2.

Q : Did you find other answers to the questions given?

T2 : Yes. In question number 1 I can determine three possible land areas needed for the cage and in question number 2 I can determine three possible selling prices for connectors.

From the interview excerpts, T2 can meet the fluency component.

Q : Can you solve the given problem in another way? If you can, try to mention other ways that can be used!

T2 : No, I haven't thought of another way that can be used to solve the problem given.

Q : In solving the problems given, can you use your own method?

T2 : Can't.

From the interview excerpts, T2 does not meet the components of flexibility and novelty.

Student Creativity With Moderate Learning Concentration 1 (S1)

S1 solves the mathematics HOTS questions as shown in Figure 17,18 and Figure 19 below.

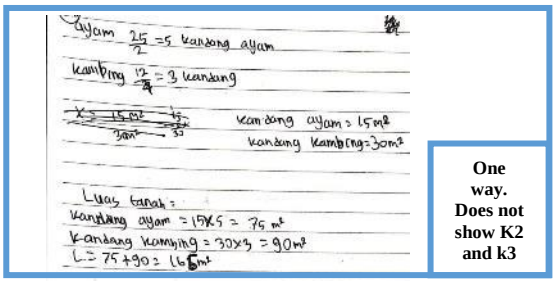

Figure 17. S1 answer number 1

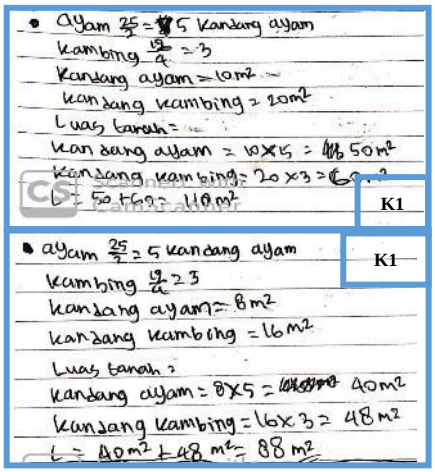

Figure 18. S1 answer number 1

In question number 1, S1 can determine the area of the chicken cage and the goat cage and then determine the area of land needed to build the cage with the concept of multiplication and addition. The answer is 165 m ^{2}. S1 determines the other two possible land areas using addition and multiplication methods. The results obtained are 110 m ^{2} and 88 m ^{2}. S1 can provide three different answers for the minimum land area needed to build a cage, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning S1 meets the **fluency component** marked with the **K1 code.** S1 did not write another way to calculate the required land area, so it was concluded that S1 did not meet the **flexibility component.** S1 did not write down a new method (the subject itself was not used by other students) so it was concluded that S1 did not meet the **novelty component.**

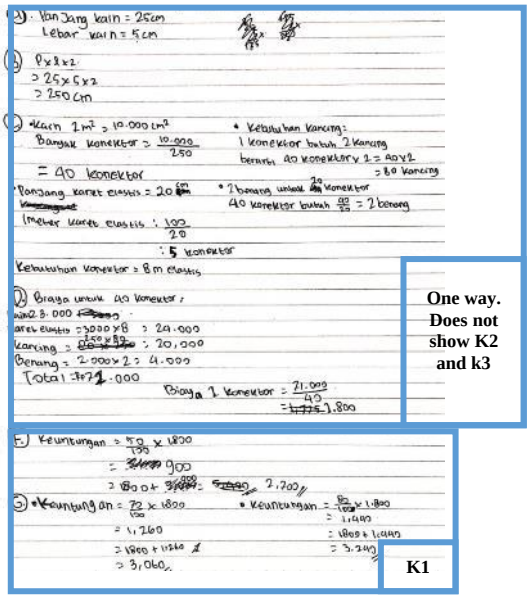

Figure 19. S1 answer number 2

In question number 2, S1 can calculate the area of the fabric using the formula for the area of a rectangle. Calculate the need for other materials using the concepts of division and multiplication. Determine the cost for one connector and finally determine the selling price of the connector with a 50% profit of IDR 2,700. S1 determines the other possible selling prices by choosing a 70% and 80% profit. The resulting selling prices are Rp. 3,060 and Rp. 3,240. S1 can provide three different answers for the selling price of the mask connector, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning S1 meets the **fluency component** marked with the **K1 code.**

S1 did not write down other ways to calculate the area of the fabric and other material requirements, so it is concluded that S1 does not meet the **flexibility component.** S1 did not write down a new method (the subject itself was not used by other students) so it was concluded that S1 did not meet the **novelty component.** Based on the results of interviews, S1 is able to achieve one component of creative thinking. The following is an excerpt from an interview with S1.

Q : Did you find other answers to the questions given?

S1 : Yes. In question number 1 I can determine three possible land areas needed for the cage and in question number 2 I can determine three possible selling prices for connectors.

From interview quotes, S1 can fulfill the fluency component.

Q : Can you solve the given problem in another way? If you can, try to mention other ways that can be used!

S1 : Can't, I tried to use another way but couldn't solve it.

Q : In solving the problems given, can you use your own method?

S1 : Can't.

From the interview excerpts, S1 does not meet the components of flexibility and novelty.

Student Creativity With Moderate Learning Concentration 2 (S2)

S2 solves the mathematics HOTS questions as shown in Figure 20 and Figure 21 below.

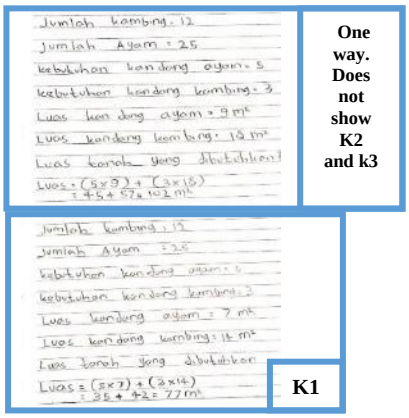

Figure 20. S2 answer number 1

In question number 1, S2 can determine the area of the chicken cage and the goat cage and then determine the area of land needed to build the cage with the concepts of multiplication and addition. The answer is 102 m ^{2}. S2 determines the other possible land areas using addition and multiplication methods. The result is 77 m ^{2}. S2 can provide two different answers for the minimum land area needed to build a cage, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning S2 meets the **fluency component** marked with the **K1 code.** S2 did not write another way to calculate the required land area, so it was concluded that S2 did not meet the **flexibility component.** S2 did not write down a new method (the subject itself was not used by other students) so it was concluded that S2 did not meet the **novelty component.**

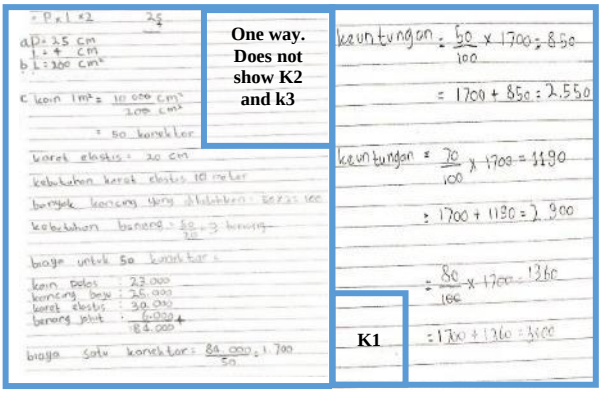

Figure 21. S2 answer number 2

In question number 2, S2 can calculate the area of the fabric by using the formula for the area of a rectangle. Calculate the need for other materials using the concepts of division and multiplication. Determine the cost for one connector and finally determine the selling price of the connector with a 50% profit, which is IDR 2,550. S2 determines the other possible selling prices by choosing a profit of 70% and 80%. The resulting selling prices are IDR 2,900 and IDR 3,100. S2 can provide three different answers for the selling price of the mask connector, based on Hanurrani and Susanah (2019) that "Students meet the fluency criteria if they can provide at least two alternative solutions", meaning that S2 meets the **fluency component** marked with the **K1 code.**

S2 did not write down another way to calculate the area of the fabric and other material requirements, so it was concluded that S2 did not meet the **flexibility component.** S2 did not write down a new method (the subject itself was not used by other students) so it was concluded that S2 did not meet the **novelty component.** Based on the results of the interview, S2 is able to achieve one component of creative thinking. The following is an excerpt from an interview with S2.

Q : Did you find other answers to the questions given?

S2 : Yes. In question number 1 I can determine two possible areas of land needed for the cage and in question number 2 I can determine three possible selling prices for connectors.

From the interview quotations, S2 can meet the fluency component.

Q : Can you solve the given problem in another way? If you can, try to mention other ways that can be used!

S2 : Can't, I tried to use another way but couldn't solve it.

Q : In solving the problems given, can you use your own method?

S2 : Can't.

From the interview excerpts, S2 does not meet the flexibility and novelty components.

When working on creative thinking test questions, subjects ST1, ST2, T1, T2, S1, S2 can meet the fluency component. The six subjects could give two to three different answers. ST1, ST2, and T1 subjects can meet the flexibility component. ST1, ST2, and T1 subjects can answer the test questions using two to three different ways. T2 subjects could not fulfill the flexibility component even though T2 subjects had the same level of learning concentration as T1. ST1 and ST2 subjects were able to fulfill the *originality component* , namely answering questions using different methods (methods) that were not commonly used by other students. This is in accordance

with research from Carruthers (2016) which states that the higher a person's concentration level, the higher the ability to achieve *originality* . Based on the explanation above, the subject's level of creative thinking is obtained according to Siswono (2010) which is presented in table 5 below.

Table 5. Subject's Creative Thinking Level

Subject Initials	Creative Thinking Component	Creative Thinking Level
ST1	Fluency, Flexibility, Novelty	Very creative
ST2	Fluency, Flexibility, Novelty	Very creative
T1	Fluency, Flexibility	Creative
T2	Fluency	Less Creative
S1	Fluency	Less Creative
S2	Fluency	Less Creative

From table 5 it is found that students with very high learning concentration are classified as very creative and students with moderate learning concentration are classified as less creative. This is in line with Syaiful et al. (2020) which states that students who pay full attention (concentrate) on the learning process will have the ability to think creatively and Zabelina (2018) which states that to create original thoughts or products someone must focus (concentrate).

CONCLUSION

In working on mathematics HOTS questions, students with very high levels of learning concentration fulfill three components of creative thinking, namely fluency, flexibility, and novelty. Because it fulfills the three components of creative thinking, students with a very high level of learning concentration are classified as **very creative** .

Not all students with a high level of learning concentration fulfill the two components of creative thinking. Two students with a high level of learning concentration fulfill different components of creative thinking. The first student with a high level of learning concentration fulfills two components of creative thinking, namely fluency and flexibility. Because it fulfills two components of creative thinking, the first student with a high learning concentration level is classified as **creative.** The second student with a high level of learning concentration fulfills one component of creative thinking, namely fluency. Because it fulfills one component of creative thinking, the second student with a high level of learning concentration is classified as **less creative** .

Students with a moderate level of learning concentration fulfill one component of creative thinking, namely fluency. Because it fulfills one component of creative thinking, students with moderate levels of learning concentration are classified as **less creative.**

SUGGESTION

Based on the conclusions that have been obtained, the researchers provide suggestions regarding student creativity in solving HOTS questions based on learning concentration as follows.

Teachers are expected to carry out learning by prioritizing student activity. Students are given more opportunities to be active either expressing opinions or asking questions about the material in learning so that students are expected to be able to maintain and improve their concentration. High concentration is needed for students so that students have high creativity. In addition, teachers are expected to be able to provide HOTS mathematics questions regularly in each learning material to students so that students are trained to think at higher levels, one of which is creative thinking so that students can develop their creativity. Teachers are expected to be able to guide and not limit students in answering the HOTS questions given so that students are able to come up with creative ideas.

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