



## **Analysis of Students' Creative Thinking Ability in Solving SPLDV Problems Assisted by GeoGebra Software Based on Initial Abilities**

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### **Abstract**

This study aims to describe the level of creative thinking ability of students in solving problems on SPLDV material using GeoGebra software based on initial abilities. This research is a descriptive research involving three junior high school students from Sidoarjo. Research instruments in the form of initial ability tests and mathematical creative thinking ability tests using GeoGebra software. Data analysis techniques are carried out through the stages of data reduction, data presentation, and conclusions. The results show, subjects with high creative thinking skills are able to meet 2 indicators of creative thinking, namely fluency and flexibility so that they are categorized into level 3 indicators of creative thinking (creative). Subjects with the ability to think creatively in the medium category are able to meet 1 indicator of creative thinking, namely novelty so that it is categorized into level 2 indicators of creative thinking (quite creative). Subjects with low creative thinking ability are able to meet 1 indicator of creative thinking, namely fluency so that it is categorized into level 1 indicator of creative thinking (less creative). The possible causes of the results in this study were discussed in order to get a number of recommendations for further research.

**Keywords:** Creative Thinking, GeoGebra, SPLDV, Initial Ability

### **Abstrak**

Penelitian ini bertujuan untuk mendeskripsikan tingkat kemampuan berpikir kreatif peserta didik dalam menyelesaikan soal pada materi SPLDV menggunakan software GeoGebra berdasarkan kemampuan awal. Penelitian ini merupakan penelitian deskriptif yang melibatkan tiga peserta didik SMP dari sebuah SMP di Sidoarjo. Instrumen penelitian berupa tes kemampuan awal dan tes kemampuan berpikir kreatif matematis menggunakan software GeoGebra. Teknik analisis data dilakukan melalui tahap reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan subjek dengan kemampuan berpikir kreatif kategori tinggi mampu memenuhi 2 indikator berpikir kreatif yaitu kefasihan dan fleksibilitas sehingga dikategorikan kedalam tingkat 3 indikator berpikir kreatif (kreatif). Subjek dengan kemampuan berpikir kreatif kategori sedang mampu memenuhi 1 indikator berpikir kreatif yaitu kebaruan sehingga dikategorikan kedalam tingkat 2 indikator berpikir kreatif (cukup kreatif). Subjek dengan kemampuan berpikir kreatif kategori rendah mampu memenuhi 1 indikator berpikir kreatif yaitu kefasihan sehingga dikategorikan kedalam tingkat 1 indikator berpikir kreatif (kurang kreatif). Mungkin penyebab hasil pada penelitian ini dilakukan diskusi guna mendapatkan sejumlah rekomendasi guna penelitian selanjutnya.

**Kata kunci:** Berpikir Kreatif, GeoGebra, SPLDV, Kemampuan Awal

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### **Introduction**

The development of Science and Technology in the 21st century has a significant impact on global challenges and competition faced by every country, including Indonesia (Hartono, 2020). One of the skills that really needs to be applied is creativity. Creativity in mathematics is more on the ability to think creatively. Mathematics is not only taught to know and understand what is contained in

mathematics, but mathematics is also taught to build students' mindsets to solve a problem or problem that directs students to think creatively, critically, logically, and precisely. Effective mathematics education does not only involve understanding concepts and formulation of formulas, but also developing students' creative thinking abilities. One way to engage students in creative mathematical problem solving is to utilize technology, such as the GeoGebra software, which enables the visualization and exploration of mathematical concepts.

The ability to think creatively is a person's thought process to generate new ideas or new methods in finding solutions to a problem and create various possible answers (Apriansyah & Ramdani, 2018). Developing the ability to think creatively becomes an essential aspect and needs to be considered in the education of students, starting from the elementary level to the secondary level. The capacity to think creatively allows solving problems in various ways or with different approaches, leading to fresh perspectives and high originality (Destianti Sulistyawati *et al.*, 2022). The situation in the field shows that students' mathematical creative thinking skills are low, lack of curiosity, and do not think broadly in solving creative thinking questions as a result students answer in a simple way according to what is asked in the problem (Kadir *et al.*, 2022). The lack of introduction or exploration of students' cognitive abilities is one of the factors that influence inadequate mathematical creative thinking abilities (Hidayat & Widjajanti, 2018). Students can only memorize the formulas they know to solve problems if the mathematics learning process only consists of applying formulas. However, the ability to generate ideas or views encourages students to think creatively and develop tendencies to distinguish between what is right and what is wrong, facts and opinions, and beliefs and knowledge.

There are situations where using a graphical approach to solve the SPLDV presents a challenge because students do not have the necessary graphing skills. GeoGebra is a type of mathematics learning media in the form of software that can be used in the learning process both in schools and in universities. The use of GeoGebra allows students to be challenged to explore in generating new ideas so that they can stimulate students' creative thinking.

In SPLDV material there are contextual problems or in everyday life. The solution uses elimination, substitution, combination, and graphic methods. In solving using graphics, difficulties sometimes arise because students are less skilled at drawing graphs. The use of GeoGebra media to complete the SPLDV graphic method can be used to facilitate the delivery of learning material because students become motivated and interested and have new experiences. In class the initial ability of each student is different, there are those who have high, medium and low abilities when the learning process begins. According to Dick and Carry, initial ability is defined as the knowledge and skills that students must have as long as they continue to the next level (Nasution *et al.*, 2017). In research conducted by Mafulah (2010), the results obtained were that students with high, medium, and low mathematical abilities had a significant influence on the creativity of students in posing mathematical problems based on the information provided (Sofyan, 2022). The purpose of this study was to analyze how the students' ability to think creatively in solving questions on SPLDV material using GeoGebra software based on initial abilities focused on 3 categories, namely students with high, medium and low categories.

## Method

This research is a descriptive study using a qualitative approach which aims to determine the level of creative thinking ability of students based on the initial ability of the high, medium, and low categories in solving creative thinking questions on SPLDV material assisted by GeoGebra software. This research was conducted in one of the junior high schools in Sidoarjo. The research subjects used were Class IX junior high school students mainly three students who had studied SPLDV material. The instruments used were initial ability test sheets and mathematical creative thinking ability tests using GeoGebra software. The results of the initial ability test answers were analyzed by checking the answers

first and then giving a score to each answer. To calculate the total score can be expressed using the formula.

Furthermore, grouping the results of student answers based on the specified acquisition standards. The classification is in Table 1 below:

**Table 1. Standard categories of value acquisition**

Category	Obtained value
Height	90 – 100
Currently	80 – 89
Low	< 80

(Directorate of Junior High School Development Team, 2017: 21)

### SOAL KEMAMPUAN BERPIKIR KREATIF

Rifqi mempunyai uang sebanyak Rp. 162.000. Ia ingin memberikan untuk Adik dan sepupunya. ia ingin memberikan Rp. 6.000 kepada setiap Adik dan memberikan 2 kali lipatnya kepada sepupunya. Carilah Kemungkinan-kemungkinan berapa orang adik dan sepupunya yang dapat diberikan Rifqi sehingga uangnya habis?

- Tentukan dua jawaban yang berbeda
- Buatlah dengan minimal 2 cara yang berbeda

**Figure 1. Creative Thinking Ability Test**

Silver (1997) states that “three key components of creativity assessed by the TTCT are fluency, flexibility, and novelty; fluency refers to the number of ideas generated in response to a prompt; flexibility to apparent shifts in approaches taken when generating responses to a prompt; novelty to the originality of the ideas generated in response to a prompt”.

Based on what Silver disclosed below, it can be concluded that the components of creative thinking include three things, namely fluency, flexibility, and novelty, each of which is defined as follows:

- Fluency refers to the number of ideas generated in response to a command.
- Flexibility refers to changes in approach when responding to commands.
- Novelty refers to the originality of ideas created in response to commands.

Based on the essays submitted by the two experts above, it can be concluded about the definition of fluency, flexibility, and novelty used in this study, namely as follows:

- Fluency is the ability of students to produce more than one correct answer to solve a problem.
- Flexibility is the ability of students to use more than one way or method to solve problems.
- Novelty is the ability of students to produce new answers or methods according to students to get the right answers. The new answer or method in question is an answer or method that is different from other students or is not normally used by students at their level of knowledge.

Siswono (2007) divides students' creative thinking abilities into five levels, namely TKBK 4 (very creative), TKBK 3 (creative), TKBK 2 (quite creative), TKBK (less creative), and TKBK 0 (not creative). At each level of creative thinking is classified based on three components of creative thinking.

**Table 2. Indicators of creative thinking according to Siswono**

<b>Creative thinking ability</b>	<b>Creative Thinking Indicator</b>
Fluency( <i>fluency</i> )	The ability of students to produce various and correct answers to solve problems
Flexibility	The ability of students to propose various ways or methods to solve problems
Novelty	The ability of students to produce answers that are different from before but have the correct value or one answer that students cannot do at their level of development to solve problems

Then one person is selected from each category based on the considerations of the mathematics teacher to be given questions on creative thinking skills. The results of students' thinking ability test answers were analyzed for their creative thinking skills by examining the results of students' answers then classifying them into 3 categories. The categorization of creative thinking according to Siswono (2008) formulates the level of ability to think creatively in mathematics as shown in the following Table 3.

**Table 3. Characteristics of the level of creative thinking**

<b>Creative thinking level</b>	<b>Characteristics</b>
Level 4 (very creative)	Learners can show fluency, flexibility, and novelty in solving or posing problems.
Level 3 (Creative)	Students can show fluency and novelty or fluency and flexibility in asking and solving problems.
Level 2 (Pretty Creative)	Students can show novelty or flexibility in submitting or submitting problems
Level 1 (Less Creative)	Students can demonstrate fluency in solving and posing problems
Level 0 (Not Creative)	Students cannot show the three aspects of creative thinking indicators

Data collection through the Creative Thinking Ability Test technique is carried out by providing a test instrument consisting of a set of questions/questions to obtain data regarding students' abilities, especially in cognitive aspects (Lestari and Yudhanegara, 2017). The test technique in this study is a way of collecting data by giving an Initial Ability Test which totals 5 questions and a Mathematical Creative Thinking Ability Test using GeoGebra software which amounts to 1 question which is given

to the selected subject in order to get a result that will be used to be categorized into indicators creative thinking. The data analysis technique used uses data analysis that refers to the Miles and Huberman models. Miles and Huberman reveal that the activity in analyzing data consists of three stages, namely data reduction, data presentation and drawing conclusions.

## Result and Discussion

### Result

Based on the results of the research conducted in the first stage, namely giving an initial ability test in the form of 5 essay questions with SPLDV material which was carried out on Tuesday, November 22 2022 with a total of 30 students. From the initial ability test, it was obtained that there were 1 person in the high category, 1 person in the medium category, and 28 people in the low category based on the scores obtained. From the grouping of students, 3 subjects were selected, 1 person each from each category.

**Table 4. Research Subjects**

No.	Ability Type	Subject Code	Mark
1.	High Ability	KT	90
2.	Moderate Ability	KS	80
3.	Low Ability	NOK	75

The following is the data on the results of the creative thinking ability test from the three subjects.

### High Ability

a kemungkinan 1  
 $15x + 6y = 162.000$   
 kemungkinan 2  
 $13x + 7y = 162.000$   
 kemungkinan 3  
 $3x + 12y = 162.000$   
 kemungkinan 4  
 $11x + 8y = 162.000$

cara eliminasi  

$$\begin{array}{r} x \rightarrow 3x + 12y = 162 \quad (\times 2) \quad 6x + 24y = 324 \\ 11x + 8y = 162 \quad (\times 3) \quad 33x + 24y = 486 \\ \hline -27x = -162 \\ x = \frac{-162}{-27} \\ x = 6 \end{array}$$

substitusi  $x = 6$   
 $3x + 12y = 162.000$   
 $3(6) + 12y = 162.000$   
 $18 + 12y = 162.000$   
 $12y = 162.000 - 18$   
 $y = 12$

2. cara  
 $x + y = 162.000$   
 $15 \cdot (6.000) + 6 \cdot (12.000) = 162.000$   
 $90.000 + 72.000 = 162.000$   
 $15x + 6y = 162.000$   
 $x + y = 162.000$   
 $13 \cdot (6.000) + 7 \cdot (12.000) = 162.000$   
 $78.000 + 84.000 = 162.000$   
 $13x + 7y = 162.000$   
 $x + y = 162.000$   
 $3 \cdot (6.000) + 12 \cdot (12.000) = 162.000$   
 $18.000 + 144.000 = 162.000$   
 $x + y = 162.000$   
 $11 \cdot (6.000) + 8 \cdot (12.000) = 162.000$   
 $66.000 + 96.000 = 162.000$

**Figure 2. KT Subject Answers on the Creative Thinking Ability Essay Test**

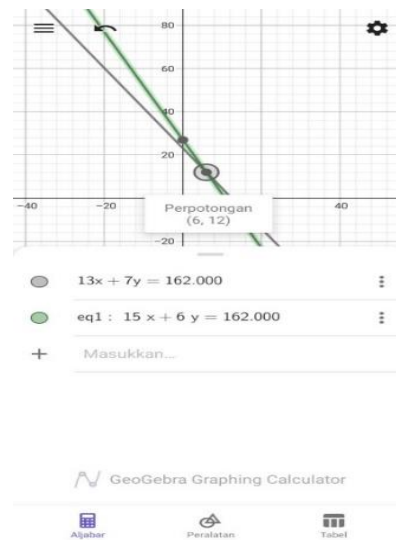


Figure 3. Results of KT Subjects' Answers on the Creative Thinking Ability Essay Test on the GeoGebra software

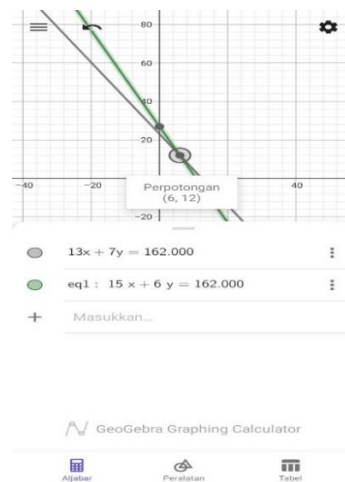


Figure 4. Results of KT Subjects' Answers on the Creative Thinking Ability Essay Test on the GeoGebra software

Based on the test results with KT subjects, it shows that KT subjects can answer questions correctly and correctly and provide various or various answers and can provide answers in various ways by writing 2 ways. This is in accordance with the opinion of Seifert (2009), fluency can be found in the ability to produce many responses to a problem or stimulus. On the fluency indicator, the KT subject is able to provide various answers, namely by writing down 4 possibilities. The first possibility is that the KS subject answers 13 younger siblings and 7 cousins then multiplies each according to the amount he wants to give, the results of the two are added up to produce the amount of money Rifqi has. It is possible that the two KS subjects answered 15 younger siblings and 6 cousins then multiplied each according to the amount they wanted to give, the results of the two were added up to produce the amount of money Rifqi had, namely 162,000. It is possible that the three KS subjects answered 3 younger siblings and 12 cousins then multiplied each according to the amount they wanted to give, the results of the two were added up to produce the amount of money Rifqi had. It is possible that the four KS subjects answered 11 younger siblings and 8 cousins then multiplied each according to the amount they wanted to give, the results of the two were added up to produce the amount of money Rifqi had, namely

162,000. The second method of elimination is by making equations 1 and 2 first and then subtracting the two equations to eliminate the variables *and* so the value of the variable  $x$  is 6, then use the substitution method by replacing one of the variables  $x$  or *and* with known variable values with the correct and the same final result.

### Moderate Ability

#### SOAL KEMAMPUAN BERPIKIR KREATIF

Rifqi mempunyai uang sebanyak Rp. 162.000. Ia ingin memberikan untuk Adik dan sepupunya, ia ingin memberikan Rp. 6.000 kepada setiap Adik dan memberikan 2 kali lipatnya kepada sepupunya. Carilah Kemungkinan-kemungkinan berapa orang adik dan sepupunya yang dapat diberikan Rifqi sehingga uangnya habis?

- Tentukan dua jawaban yang berbeda
- Buatlah dengan minimal 2 cara yang berbeda

uang Rifqi = 162.000  
dibagikan kepada = 6.000  
sepupu = 12.000

Adik =  $x$   
Sepupu =  $y$

$$1. \begin{aligned} x + y &= 162.000 \\ \dots x + \dots y &= 162.000 \\ 25 \dots (6.000) + \dots (12.000) &= 162.000 \\ \hline 25x + y &= 162.000 \\ 6.000 \times 25 &= 150.000 \\ 12.000 \times 1 &= 12.000 \\ \hline &= 162.000 \quad \checkmark \end{aligned}$$

$$2. \begin{aligned} x + y &= 162.000 \\ \dots x + \dots y &= 162.000 \\ \dots (6.000) + \dots (12.000) &= 162.000 \\ \hline 15x + 6y &= 162.000 \\ 6.000 \times 15 &= 90.000 \\ 12.000 \times 6 &= 72.000 \end{aligned}$$

Figure 5. Results of Subject Answers KS on the Creative Thinking Ability Essay Test

#### SOAL KEMAMPUAN BERPIKIR KREATIF

Rifqi mempunyai uang sebanyak Rp. 162.000. Ia ingin memberikan untuk Adik dan sepupunya, ia ingin memberikan Rp. 6.000 kepada setiap Adik dan memberikan 2 kali lipatnya kepada sepupunya. Carilah Kemungkinan-kemungkinan berapa orang adik dan sepupunya yang dapat diberikan Rifqi sehingga uangnya habis?

- Tentukan dua jawaban yang berbeda
- Buatlah dengan minimal 2 cara yang berbeda

Rifqi = Rp. 162.000

$x = \text{Adik}$   $y = \text{Sepupu}$

$$a. \begin{aligned} 3x + 12y &= 162.000 \\ (x \times 3) \quad (12 \times 12) &= 144 \end{aligned} \quad \checkmark$$

$$b. \begin{aligned} 15x + 6y &= 162.000 \\ (15 \times 90) \quad (6 \times 72) &= 72 \end{aligned}$$

$$\begin{aligned} X \rightarrow \begin{aligned} 3x + 12y &= 162 \quad (1 \times) \\ 15x + 6y &= 162 \quad (2 \times) \\ \hline 37x &= 162 \\ x &= \frac{162}{37} = 6 // \end{aligned} \end{aligned}$$

$$\begin{aligned} Y \rightarrow \begin{aligned} 3x + 12y &= 162 \quad (x \times) \\ 15x + 6y &= 162 \quad (x \times) \\ \hline 57y &= 648 \\ y &= \frac{648}{57} = 12 // \end{aligned} \end{aligned}$$

Figure 6. KS Subject Answers on the Creative Thinking Ability Essay Test



$$\begin{array}{l} \text{Adik} = x \\ \text{Sepupu} = y \end{array} \quad \left\{ \begin{array}{l} 25x + y = 162.000 \\ 15x + 6y = 162.000 \end{array} \right.$$

$$\begin{array}{l} \text{Nilai } x = \frac{25}{15} \times \frac{1}{6} \times \frac{162}{162} \\ 25 \times 6 = 6 \times 162 \rightarrow 150 = 972 \\ 15 \times 1 = 1 \times 162 \rightarrow 15 = 162 \\ 135 = 810 \\ x = 810 \\ 135 \\ x = 6 \end{array}$$

$$\begin{array}{l} \text{Nilai } y = \frac{25}{15} \times \frac{1}{6} \times \frac{162}{162} \\ 25 \times 6 = 15 \times 162 \\ 15 \times 1 = 25 \times 162 \\ 150 = 2430 \\ 15 = 4050 \\ 150 - 15 = 4050 - 2430 \\ 135 = 1620 \\ y = \frac{1620}{135} \\ y = 12 \end{array}$$

Figure 7. KS Subject Answers on the Creative Thinking Ability Essay Test

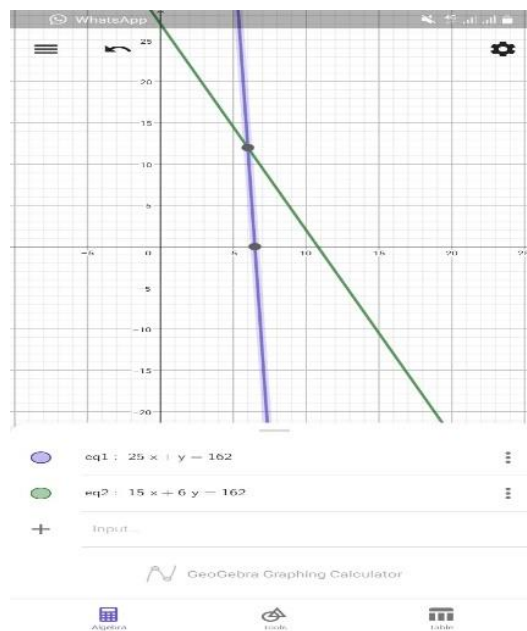


Figure 8. Results of KS Subjects' Answers on the Essay Test for Creative Thinking Ability on the GeoGebra software

Based on the test results with the KS subject, it shows that the KS subject can solve questions in a new way of working that is rarely used by other students with correct and correct answers.



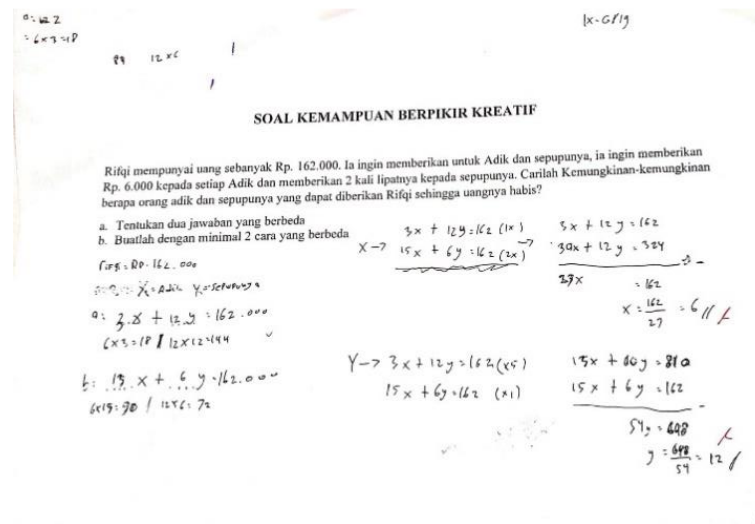
**Low Ability**

Figure 9. Results of KR Subjects' Answers on the Creative Thinking Ability Essay Test

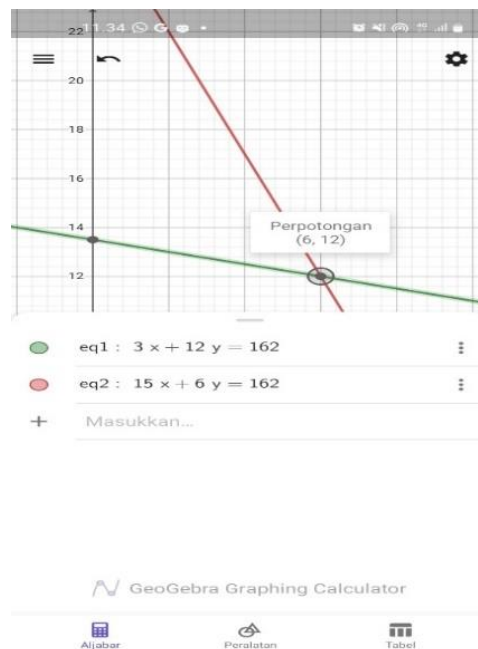


Figure 10. Results of KR Subjects' Answers on the Creative Thinking Ability Essay Test on the GeoGebra software

Based on the test results with the KR subject, it was shown that the KR subject had not been able to work on the question with various answers or using various methods.

### **Description of High Ability Subject's Creative Thinking Ability**

From the results of data analysis, it is known that subjects with high ability categories meet the indicators of creative thinking, namely fluency and flexibility, so it can be said that the level of creative thinking ability of KT subjects is very creative (level 3).

The presentation of the results of the analysis of the answers to the creative thinking ability test on the KT subject is as follows:

#### **Fluency Indicator**

The indicator of fluency is that students are able to write various answers. Based on the presentation of the data on the results of the creative thinking ability test, it can be concluded that the subject understands what is asked according to the questions and it can be seen that the subject gives answers by writing down 2 possibilities. This is in accordance with Munandar's statement (Siswono, 2008) which states that a person's creative thinking ability is higher, if he is able to show many possible answers to a problem. This can be seen in the work of the subjects who were able to complete a creative thinking ability test with various answers. This is in line with the opinion of Fardah (2012) which states that high ability students will create creative thinking products that include various types, react very differently to other students and the results presented are very detailed and clear. the subject can make 2 different possibilities, the first possibility is that the KT subject gives answers to 13 younger siblings and 7 cousins then multiplies each according to the amount he wants to give, the results of the two are added up to produce the amount of money Rifqi has. It is possible that the two KT subjects answered 15 younger siblings and 6 cousins then multiplied each according to the amount they wanted to give, the results of the two were added up to produce the amount of money owned by Rifqi. The subject can solve questions with various answers so that it can be concluded from the results of the creative thinking test and interview results that the subject meets the fluency indicators.

#### **Flexibility Indicator**

The flexibility indicator is that students are able to provide answers in various ways. Based on the presentation of the data, the results of the creative thinking test show that the subject knows and understands the intent of the question, and the subject is able to provide answers in various ways. This is in line with the opinion of Vivin Septiana Riyadi Putri & Pradnyo Wijayanti (Saffawati, 2019), students with high mathematical abilities are able to solve open ended questions in other ways, besides that students also find unusual ways. The subject is able to write down what is known and what is asked from the results of the creative thinking test answers. From the creative thinking ability test questions, the subject can answer these questions correctly and well. On the KT flexibility indicator, they are able to provide answers in various ways, namely by writing 2 ways. The first way is that the KT subject uses the method by looking for possible  $x$  and  $y$  values which are the result of the two being added together to produce the amount of money Rifqi has. The second method of elimination is by making equations 1 and 2 first and then subtracting the two equations to eliminate the variable and so the value of the variable  $x$  is 6, then use the substitution method by replacing one of the variable or with known variable values. From the results of the answers to the creative thinking ability test, it can be concluded that the subject is able to solve questions in various ways so that they meet the flexibility indicator.

**Recency Indicator**

The indicator of novelty is that students are able to solve a problem with answers that are not usually done by other students. Based on the presentation of the data, the results of the creative thinking test show that the subject understands the intent of the question. KR subjects have not been able to provide unusual answers or provide different solutions from existing solutions. It can be seen that the subject has not been able to solve creative thinking ability test questions using his own way or has not been able to provide solutions that are different from existing solutions. From the results of the work on the creative thinking ability test it can be concluded that the subject does not meet the novelty indicator.

**Description of the Subject's Creative Thinking Ability Moderate Ability**

From the results of data analysis, it is known that subjects with high ability categories meet the indicator of creative thinking, namely novelty, so it can be said that the level of creative thinking ability of KS subjects is very creative (level 2).

The presentation of the results of the analysis of the answers to the creative thinking ability test on the KS subject is as follows:

**Fluency Indicator**

The indicator of fluency is that students are able to write various answers. Based on the presentation of the data, the results of the creative thinking ability test showed that the subject had not been able to solve questions with various kinds of answers. From the results of the creative thinking ability test, it could be concluded that the subject did not meet the fluency indicators.

**Flexibility Indicator**

The flexibility indicator is that students are able to provide answers in various ways. From the test results, the subject has not been able to solve the problem using 2 different ways of solving it. Based on the test results, it was shown that the subject had not been able to solve the problem in various ways so that he could not meet the flexibility indicator.

**Recency Indicator**

The indicator of novelty is that students are able to solve a problem with answers that are not usually done by other students. Based on the presentation of the data on the results of the thinking skills test, it can be said that the subject has understood what is meant by the questions and the subject is able to complete the test of creative thinking skills on the questions and can use new or different methods from other students. From the results of the creative thinking ability test it can be concluded that the subject meets the novelty indicator.

**Description of Low Ability Subject's Creative Thinking Ability**

From the results of data analysis, it is known that subjects with high ability categories meet the indicators of creative thinking, namely fluency, so it can be said that the level of creative thinking ability of KR subjects is very creative (level 1).

The presentation of the results of the analysis of the answers to the creative thinking ability test on the KR subject is as follows.

### **Fluency Indicator**

The indicator of fluency is that students are able to write various answers. Based on the presentation of the data on the results of the creative thinking ability test, it can be seen that the subject is able to work on the problem by writing 2 different answers, the subject is able to solve the problem correctly. This is in accordance with Torrance's opinion (Siswono, 2008) who argues that fluency refers to the number of ideas generated in response to a command. On the fluency indicator, the KR subject was able to provide various answers, namely by writing down 2 possibilities. The first possibility is that subject KR answers 3 younger siblings and 12 cousins then multiplies each according to the amount he wants to give, the results of the two are added up to produce the amount of money Rifqi has. It is possible that the two KR subjects answered 15 younger siblings and 6 cousins then multiplied each according to the amount they wanted to give, the results of the two were added up to produce the amount of money Rifqi had, namely 162,000. From the results of the creative thinking ability test it can be concluded that the subject can solve questions with various answers so that they meet the fluency indicators.

### **Flexibility Indicator**

The flexibility indicator is that students are able to provide answers in various ways. From the test results, the subject has not been able to solve the problem using 2 different ways of solving it. Based on the test results, it showed that the subject had not been able to solve the problem in various ways so that it did not meet the flexibility indicator.

### **Recency Indicator**

The indicator of novelty is that students are able to solve a problem with answers that are not usually done by other students. Based on the presentation of the data, the results of the answers to the creative thinking ability test show that the subject does not know the meaning of the questions and the subject has not been able to provide answers in an unusual way or provide solutions from existing solutions. This is in line with the opinion of Aliksa Kristiana Dwi Utami & Erna Kuneni (Nufus, 2021) which states that students with low math skills are mostly unable to think flexibly and novelty even the three indicators. Based on the results of the test answers on the subject's creative thinking ability, only on the novelty indicator, the KR subject was unable to provide answers using unusual methods or methods. This is in line with Siswono's statement (2008), only 5% showed the ability to solve problems in a novel way. In this study, it is in accordance with the opinion of Siswono (2018) so that it can be concluded that the achievement of the novelty indicator is still relatively low/a little. Based on the results of the creative thinking ability test, it can be concluded that the subject has not been able to provide a solution that is different from the existing solutions so that the subject does not meet the novelty indicator.

In learning Mathematics, in SPLDV material students still have difficulty in determining the solution. This is in line with research (Pratiwi, 2018) showing that students with low, medium, and high initial abilities still experience misconceptions in solving it. In the less creative indicator, students are unable to provide more than one different solution. This is in line with the results of research (Ambararum Ayuningtyas *et al.*, 2017) that in the less creative indicator, students are unable to make one different answer, even though the methods made are diverse.

In solving using the graph method, students still have difficulty, with GeoGebra software can help improve students' understanding and mathematical concepts. This is supported by the results of research (Oktaria *et al.*, n.d.) whose results reveal that the use of GeoGebra software media can improve students' mathematical representation skills on SPLDV material. The use of GeoGebra can help increase interest and mathematical problem solving skills. This is supported by research (Muliani *et al.*, 2021) that learning using GeoGebra learning media is better than classes with conventional learning.

## Conclusion

From the results of this study, it can be concluded that high ability subjects show that the subject fulfills two indicators of creative thinking. Indicators of fluency, the subject is able to give various answers by writing down 4 kinds of possibilities that occur, indicators of flexibility, the subject is able to provide answers in various ways, namely using 2 ways, the first way is to write down 4 possibilities and the second way is elimination and substitution so that the subject is said to be creative or categorized into level 3 at the level of creative thinking skills. The subject of moderate ability shows that the subject fulfills one indicator of creative thinking. The indicator of novelty, the subject is able to provide a solution that is different from existing solutions, namely not using the usual solving method so that the subject is said to be quite creative or categorized into level 2 at the level of creative thinking ability. Then, low ability subjects show that the subject fulfills one indicator of creative thinking. Indicators of fluency, the subject is able to provide various answers by writing down 2 kinds of possibilities that occur so that the subject is said so that the subject is said to be less creative or categorized into level 1 at the level of creative thinking ability.

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