STUDENTS' MATHEMATICAL CREATIVE THINKING SKILLS IN SOLVING THE SYSTEM OF TWO VARIABLE LINEAR EQUATIONS VIEWED FROM GENDER

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ABSTRACT

This study aims to describe students' mathematical creative thinking skills in solving two-variable linear equation system problems. Creative thinking skills used include 4 indicators, namely: 1) fluency, 2) flexibility, 3) originality, and 4) elaboration. This research is a qualitative descriptive study. Data collection techniques used in research are creative thinking tests, interviews, and documentation. The subjects of this study were six students from 8th grade of junior high student 1 Jelai who were selected based on high, medium, and low categorization. Data analysis techniques include data reduction, presentation, and conclusion. Test the validity of the data using technical triangulation. The research results are students in the high category can master the indicators of creative thinking from the four test questions. Students in the medium and low categories have not mastered all indicators of creative thinking on the four test questions. Students in the medium male category were able to master the fluency indicator in the first question, but in the second item they were not able to master the flexibility indicator, and in the third item they were able to master the originality indicator while in the fourth item, they were not able to master the elaboration indicator. Students in the low male category in questions one to three were unable to master the indicators of fluency, flexibility, and originality, while in the fourth item, they were able to master the Elaboration indicator. Students in the female category were able to master the fluency indicator on the first question, originality on the third question, and, elaboration on the fourth question, but on the second question, they were not able to master the flexibility indicator. Students in the low female category were able to master the indicators of fluency in the first question, but in the second, third, and fourth questions, they were not able to master the indicators of flexibility, originality, and elaboration.

Keywords: Creative Thinking, System of Two-Variable Linear Equations, Gender

PRELIMINARY

The basic effort to develop the ability to think creatively in mathematics learning is by solving problems (Nurhikmayati & Sunendar, 2020). Students not only interpret speculation and plans but students are expected to think about the main things that are related to current reality so that students can interpret an idea more significantly (Siswono

& Ratu, 2018). Good mathematical knowledge can improve students in creative thinking (Faturohman, Ikhsan & Afriansyah, 2020).

Creative thinking is a skill of thinking that is trained by paying attention to intuition, bringing imagination to life, revealing new possibilities, creating interesting points of view, and balancing unexpected ideas (Sahara & Astutik, 2021). Creative thinking can solve math problems in three aspects, namely: (1) fluency refers to the variety of answers students can give, (2) flexibility refers to students' abilities when solving problems not only in one way but also in other ways, and (3) novelty refers to novelty that is found by students when solving problems (Siswono & Ratu, 2018).

Siswono (2018) states that the criteria for the level of student's creative thinking abilities are based on creative thinking products which include aspects of fluency, flexibility, and novelty. Each of the skills in thinking is different, one of which is related to the skills of mathematics (Widodo & Ikhwanudin, 2018). This is by Mufida (2014) research which states that mathematical ability can influence the creative thinking of someone solving mathematical problems. High students' mathematical ability, so high ability students think when planning their assignments carefully and carefully as well as high ability highly creative students (Tohir et al., 2018). Students with moderate mathematical abilities can solve mathematical problems precisely but are unable to show different ways of solving problems so students with moderate mathematical abilities tend to be creative. Meanwhile, students who have high mathematical abilities can only solve mathematical problems, but the results of their high mathematical abilities are not optimal, and are not able to provide different answers, so students with high mathematical abilities tend to be less creative (Syahara & Astutik, 2021).

Gender is one of the internal factors that influence the ability to solve mathematical problems. A very clear difference can be seen in his cognitive abilities. Men are more rational, reasoning, so they are better at logical thinking and more creative. Meanwhile, women are more emotional, their memory is better and they are more interested in verbal skills (Indrawati & Tasni, 2017). The same thing was also expressed by (Rasiman, 2015) who explained that the differences between men and women are seen in secondary, emotional, and psychological functional activities. This causes the achievement results of male and female students to experience differences.

One of the materials in eighth grade mathematics learning in junior high school which requires creative thinking skills for its solution is the two-variable linear equation system (SPLDV). This means that the SPLDV material is very relevant to the problems of

everyday life and requires a variety of ways of solving problems (Rasnawati et al., 2019). The research conducted by (Maryati, 2021) concluded that the student's creative thinking ability in the matter of the Two-Variable Linear Equation System (SPLDV) material is as follows: a) as a whole the creative thinking ability belongs to the category of sufficient, b) based on knowledge creative thinking ability (1) fluency or fluent thinking includes the sufficient category, (2) flexibility or flexible thinking includes the less category, (3) originality or originality includes the sufficient category, and (4) elaboration or elaborate thinking includes the sufficient category.

Based on the description that has been described above, the researcher is interested in conducting a study entitled "Analysis of Students' Mathematical Creative Thinking Skills in Solving Problems on the Two-Variable Linear Equation System at Jelai 1 Public Middle School in terms of Gender".

METHODS

This research was conducted at SMP Negeri 1 Jelai using a qualitative descriptive method. Data from tests, interviews, and documentation. The method used is an interactive approach, while the data analysis technique is data collection, data reduction, data presentation, and conclusion. Researchers use triangulation techniques for data validity. After students work on the test questions, then the results of student work will be analyzed based on indicators of creative thinking. Interviews are used to collect detailed and in-depth information about the results of students' thinking test answers.

The selection of research subjects was based on the results of the post-analysis of student work from 21 students VIII B. The researcher is the main instrument and the supporting instrument consists of test questions and interview questions. Interview subjects were selected based on their level of creative thinking, which included high, medium, and low. The basic categorization of creative thinking skills and the selected subjects is presented in Tables 1 and 2.

Table 1. Categorization of Students' Creative Thinking Skills

Creative Thinking Skills Category		
Low	Currently	Tall
(< 65)	$(65 - 80)$	$(80 - 100)$

Source: (Widiastuti et al., 2018)

Table 2. List of Research Subjects

Creative Thinking Skills Level	Subject Code
Tall	STL
Tall	STP
Currently	SSL
Currently	SSP
Low	SRL
Low	SRP

Furthermore, the analytical instruments used are 4 essay questions which are arranged based on creative thinking indicators, namely: 1) fluency, 2) flexibility, 3) originality, and 4) elaboration. The instrument of test questions used is presented in figure 1.

> Question:
> 1. Dimas has Rp. 50,000.00 in cash. He wants to buy mung beans and peanuts for 1 pack of mung beans, which is IDR 4,000.00, and 1 pack of peanuts, which is IDR 2,000.00. Look for the possibilities - the possible amount of green beans and peanuts that Dimas can buy so that his money runs out. At least 2 possibilities…..
>
> 2. The sum of the ages of Nadira and Ula is 72 years, the difference in their ages is 8 years. What conclusions can be drawn from the story above?
>
> 3. If x and y satisfy the system of equations $3x + 5y = 20$ and $x + 2y = 6$, then determine the value of $4x + 7y =$…..
>
> 4. At a shop, Dian and Moly buy flour and rice with them together. Dian bought 2 kg of flour and 4 kg of rice for Rp. 60,000.00 while Moly bought 3 kg of flour and 2 kg of rice for Rp. 50,000.00. How much does 1 kg of flour and 1 kg of rice cost?

Figure 1. Creative Thinking Test Questions

The test instrument in this study is a way to interpret the magnitude of a person's ability indirectly, namely through a person's response to a stimulus or question. In this study, the researchers gave a method of giving tests to students. Instrument Interviews in this study were conducted after students took the test. The interview in this study was by asking questions to respondents (in this case students). The researcher recorded all the answers as they were from the respondents. Interviews were used to find out more about student errors when working on a two-variable linear equation system (SPLDV) problem. The interview further strengthens the data that has been collected through the test results.

The data analysis technique used in this study is based on qualitative data analysis by Miles and Huberman. Miles and Huberman's data analysis consists of several stages, namely:

1. Data Collection

   Data collection in research is done in various ways. Data in this study were collected by conducting tests, interviews, and triangulation of research subjects. After the researcher collects the data, the next step is the researcher reduces the data.

2. Data Reduction

   Reducing data means summarizing, selecting the main ones, focusing on the main ones, and focusing on the important ones. The reduced data provides a clearer picture and makes it easier for researchers to collect further data (Sidiq&Choiri, 2019). At this stage, the researcher summarizes the data that has been obtained by focusing on important things obtained from the results of tests and interviews which are then simplified by removing data that has nothing to do with research.

3. Data Presentation

   After reducing the data, the next step is presenting the data. In qualitative research, the process of presenting data can be in the form of brief descriptions, charts, relationships between categories, or narrative text. Presenting data helps the researcher understand what happened. In this study, the researcher presents data from the data reduction process in narrative form. In this study, to test the validity of the data, researchers used triangulation. Triangulation is testing the validity of the data by comparing and matching data obtained by researchers in the field with data obtained through interviews. Researchers use technical triangulation, namely different data collection techniques to obtain data from the same source (Hardani, Dhika Juliana Sukmana, Helmina Andriani, 2020).

4. Conclusion Drawing

   After presenting the data by Miles and Huberman, the next step is to conclude. Conclusions are drawn based on the results of presenting the data that has been done. Conclusions in qualitative research can answer the formulation of the problem formulated. Schematically the data analysis process using the Miles & Huberman data analysis model is described as follows (Yusuf, 2017)

RESULT AND DISCUSSION

Result

The results of the analysis of students' mathematical creative thinking skills in solving two-variable linear equation system problems in terms of gender with (✓) which means that they meet the indicators of creative thinking and with (-) which means that they do not meet the indicators of creative thinking in the subject of high mathematical creative thinking skills, medium, and low are presented in Table 3.

Table 3. The Results Of The Thesis On Creative Thinking Skills

Question Number	Creative Thinking Indicator	Male Student Subject			Female Student Subject		
		STL	SSL	SRL	STP	SSP	SRP
1.	*Fluency*	✓	✓	-	✓	✓	✓
2.	*Flexsibility*	✓	-	-	✓	-	-
3.	*Originality*	✓	✓	-	✓	✓	-
4.	*Elaboration*	✓	-	✓	✓	✓	-

The results of the analysis of male students' work are explained as follows:

1. Results of Work on Question Number 1

The STL and SSL subjects were able to think creatively number one about theist questions, both were able to master Fluency indicators, namely being able to fully convey the information contained in the problem and having written down what was known and what was asked in the problem. Meanwhile, SRL has not been able to fully convey the information contained in the questions. SRL subjects can transform Kei's problems into mathematical form, and they have chosen and implemented strategies in a precise and correct manner. In working on the questions, SRL did not write the conclusion as a final result which indicated that he had not yet reached the Fluency indicator. The results of the SRL subject work on questions of student number 1's creative thinking skills can be seen in Figure 2.

Figure 2. **The Results of The SRL Subject's First-Question Test**

The results of the analysis of the work of SRL subjects show that they can write information from existing problems. SRL subjects can change the problem sentences into mathematical models and write equations presented with the variables "x", and "y" as examples. But have not yet reached the Fluency indicator because only one answer is written. Meanwhile, the results of student work with skills and creative thinking are strengthened by the results of the following interviews.

Q   : Is sentence number 1 clear?

SRL   : It's clear sis

Q   : What do you know about the meaning of this question?

SRL   : Solve the problem of buying green beans and peanuts Sis

Q   : Try to state what is known and what is asked in the problem?

SRL   : For those who know, 1 pack of green beans is IDR 4,000, and 1 pack of peanuts is IDR 2,000, then crushed IDR 50,000. if you ask how much you can buy?

Q   : How many methods did you use to solve this question?

SRL   : One possibility

2. Results of Work on Question Number 2

STL subjects can meet the indicators of flexibility. STL subjects STL subjects can transform Kei's problems into mathematical form, they have also chosen and implemented strategies appropriately and correctly. It can be seen that he was able to solve the problem not in one way but he could in another way because this resulted in his calculations being correct. On the other hand, SRL has not been able to fulfill the indicators of flexibility (Flexibility), it cannot transform key problems into mathematical form. It can be seen that

he has not been able to solve the problem but cannot provide another way, because of this the results of his calculations are still wrong. The results of the SRL subject work on student number 2's creative thinking skills thesis questions can be seen in Figure 3

Figure 3. The Test Results for The Two SRL Subjects

The results of the SRL subject's job analysis showed that they had not been able to write down information about the existing problems. The SRL subject has not been able to turn interrogative sentences into mathematical models and write equations that are presented with the variables "x" and "y" as examples and the students' answers are still wrong. the student's answer information above is still not correct. The explanation is that students have not been able to solve the problem. Meanwhile, the results of students' work with skills and creative thinking were strengthened by the following interview results.

Q : Is sentence number 2 clear?

SRL : It's clear sis

Q : *What do you know about the meaning of this question?*

SRL : Solve the problem according to your age sis

Q : *Try to state what is known and what is asked in the problem?*

SRL : For those who are known, the age of the snake and the age of Nadira are calculated as x and y sis, and asked what conclusions can be drawn.

Q : *How many methods did you use to solve this question?*

SRL : One way sis

3. Results of Work on Question Number 3

The STL and SRL subjects were able to think creatively thinking number one about these questions, both were able to master the originality indicators, namely being able to

transform Kei's problems into mathematical form, they were also able to master and apply strategies correctly and correctly. Meanwhile, SSL has not been able to fully convey the information contained in the question. Subject SSL can transform key problems into mathematical form, and has also chosen and implemented strategies in a precise and correct manner. The conclusion is the final result which shows that it has not yet reached the Originality indicator. The results of the SSL subject work on student number 3's creative thinking skills thesis questions can be seen in Figure 4.

Figure 4. Test Results for The Three SSL Subjects

The results of the SSL subject job analysis show that they have not been able to write information about the existing problems. The SSL subject has not yet been able to change the sentence questions into mathematical models and write the equations presented with the variables "x" and "y" as examples. Meanwhile, the results of student work with skills and creative thinking are strengthened by the results of the following interviews.

Q   : Is sentence number 3 clear?

SSL   : It's clear sis

Q   : What do you know about the meaning of this question?

SSL   : May solve system problems, sis

Q   : Try to state what is known and what is asked in the problem.

SSL   : For information, $3x + 5y = 20$ and $x + 2y = 6$, ask for a value of $4x + 7y$ sis

Q   : What are the methods you used to solve the top questions?

SSL   : One-way sis

4. Results of Work on Question Number 4

The STL and SRL subjects were able to think creatively thinking number one about these questions, both of them were able to master the elaboration indicators, namely being able to transform Kei's problems into mathematical form, they had also chosen and implemented strategies in a precise and correct manner. Meanwhile, SSL has not been able to fully convey the information contained in the question. The conclusion is the final result which shows that it has not yet reached the Elaboration indicator. The results of the SSL subject work on student number 4's creative thinking skills thesis questions can be seen in Figure 5.

Figure 5. The Test Results for The Four SSL Subjects

The results of the SSL subject's job analysis show that they have not been able to write information about the existing problems. The SSL subject has not been able to change the question sentences into mathematical models and write down the equations presented with the variables "x" and "y" because the calculations and calculations carried out by the subject are still wrong. the information on the student's answer above is not correct. Meanwhile, the results of student work with skills and creative thinking are strengthened by the following interview results.

Q   : Is sentence number 4 clear?

SSL   : It's clear sis

Q   : What do you know about the meaning of this question?

SSL   : They solve the problem of buying flour and rice Sis

Q   : How do you answer the questions in a sequence of answers that require knowing, asking, and answering

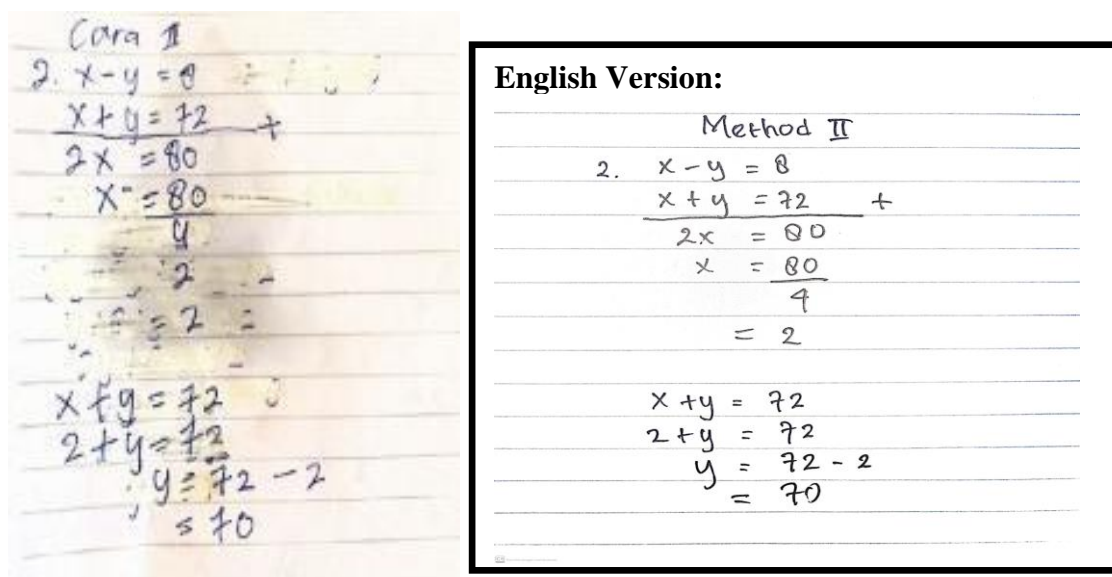*SSL   : easy to understand*

The results of the analysis of the work of female students are explained as follows:

1. Results of Work on Question Number 1

STP subjects can fulfill Fluency indicators, can convey the information contained in the questions in a complete manner, and have already written down what is known and what is asked in the questions. STP subjects can transform Kei's problems into mathematical forms, but they have also chosen and implemented strategies in a precise and correct manner. It can be seen that he was able to solve the problem with a variety of answers well because this resulted in his calculations being correct. In working on the questions, also write down the conclusions as the final result which shows that he can achieve Fluency indicators.

2. Results of Work on Question Number 2

STP subjects were able to fulfill Fluency indicators, STP subjects were able to transform key problems into a mathematical form, they had also chosen and implemented strategies in a precise and correct manner. Meanwhile, the SRP has not been able to solve the questions, as a final result which shows that it has not been able to achieve Fluency indicators. The results of the SRP subject work on the questions of student number 2's creative thinking skills and skills can be seen in Figure 6

Figure 6. The Test Results for The Two SRP Subjects

The results of the job analysis for SRP subjects show that they have not been able to write down information about existing problems. SRP subjects have not been able to change the question sentences into mathematical models and write down the equations presented with the variables "x" and "y" as examples and calculations made on questions

that are still wrong. the information on the students' answers above is that they have not been able to do the questions correctly. Meanwhile, the results of student work with skills and creative thinking are strengthened by the following interview results.

Q : *Is sentence number 2 clear?*

SRP : *It's clear sis*

Q : *What do you know about the meaning of this question?*

SRP : *Solve the problem according to your age sis*

Q : *Try to state what is known and what is asked in the problem?*

SRP : *For those who are known, the age of the snake and the age of Nadira are calculated using x and y and asked what conclusions can be drawn.*

Q : *How many methods did you use to solve this question?*

SRP : *One way sis*

3. Results of Work on Question Number 3

The subjects of STP and SSP were able to think creatively thinking number one about these questions, both of them were able to master the originality indicators, namely being able to transform Kei's problems into mathematical form, they had also mastered and applied strategies correctly and correctly. Meanwhile, the SRP has not been able to fully convey the information contained in the questions. SRP subjects can transform Kei's problems into mathematical form, and they have also chosen and implemented strategies in a precise and correct manner. The conclusion is the final result which shows that it has not yet reached the Originality indicator. The results of the SRP subject work on student number 3's creative thinking skills thesis can be seen in Figure 7.
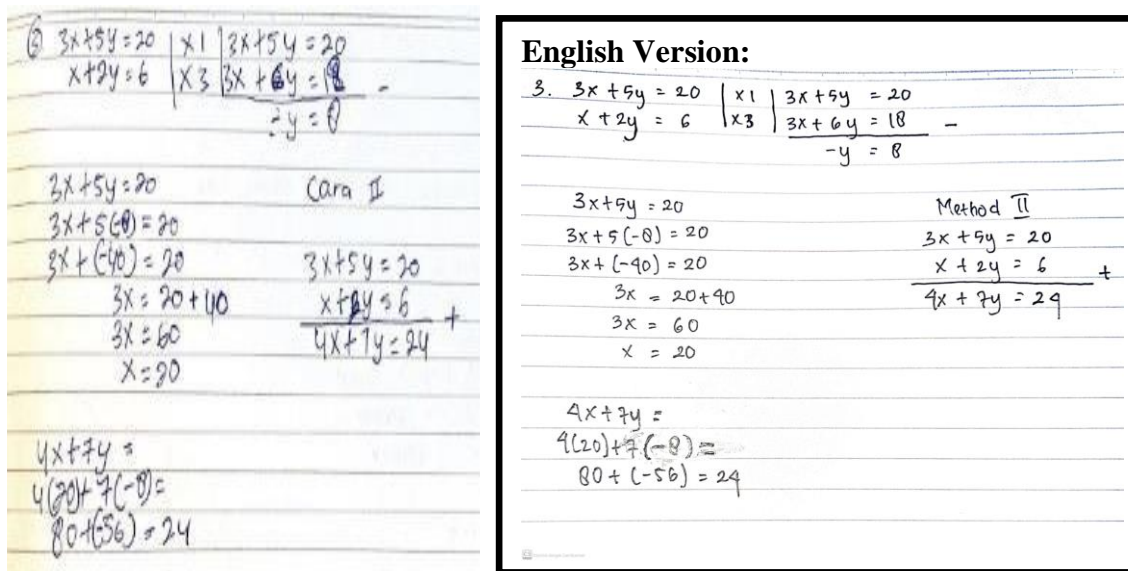

Figure 7. The Test Results for The Three SRP Subjects

The results of the job analysis for SRP subjects show that they have not been able to write down information about existing problems. SRP subjects have not been able to change the question sentences into mathematical models and write statements that are presented with the variables "x", and "y" as many as the calculations are not correct, and the calculations that should be $20 + 6 = 26$, not 24. the information on the student's answers above is still not Correct. Meanwhile, the results of students' work by thinking creatively and advertising smoothly were improved by the results of the following interviews.

Q   : Is sentence number 3 clear?

SSL   : It's clear sis

Q   : What do you know about the meaning of this question?

 SSL   : May solve system problems, sis

Q   : Try to state what is known and what is asked in the problem?

SSL   : For information, $3x + 5y = 20$ and $x + 2y = 6$, ask for a value of $4x + 7y$ sis

Q   : What are the methods you used to solve the top questions?

SSL   : One way, sis

4. Results of Work on Question Number 4

The subjects of STP and SSL were able to solve the theist questions with creative thinking number one, both of them were able to master the indicators of elaboration, namely being able to transform Kei's problems into mathematical form, they had also chosen and applied strategies in a precise and correct manner. Meanwhile, SRL has not been able to fully convey the information contained in the questions. The conclusion is the final result which shows that it has not yet reached the elaboration indicator. The results of the SRP subject work on this question of students' creative thinking skills and creative thinking number 4 can be seen in Figure 8.

Figure 8. The Test Results For The Four SRP Subjects

The results of the analysis of the work of the SRP subject showed that they had not been able to write information about the existing problems. The SRP subjects have not been able to change the sentence questions into mathematical models and write the equations presented with the variables "x" and "y" as examples and calculations that are not very thorough. 40,000:4 = 10,000, not 8,000. Meanwhile, the results of student work with skills and creative thinking are strengthened by the results of the following interviews.

Q   : Is sentence number 4 clear?

SRP   : It's clear sis

Q   : What do you know about the meaning of this question?

SRP   : May solve the problem of buying flour and rice sis

Q   : Try to state what is known and what is asked in the problem.

SRP   : For your information, Dian buy 2 kg of flour and 4 kg of rice at prices
IDR 60,000, while Moly buys 3 kg of flour and 2 kg of rice, which is priced at IDR 50,000,
what is the price of 1 kg of flour and 1 kg of rice

Q   : How many methods did you use to solve this question?

SRP   : one-way sis

Discussion

Based on the results of the thesis questions and interviews with the subject regarding the ability to think creatively in solving the two-variable linear equation system (SPLDV) problem, in terms of Gender will be described as follows. From the results above, it can be concluded that Gender distinction is very influential on the students' creative thinking ability in solving the two-variable linear equation system problem (SPLDV). This is shown by female students with a high, average, and beautiful level of creative thinking ability than male students with a high, average, level of creative thinking ability.

The results of this research are in line with the previous research carried out by Kamalia & Ruli (2022) where the ability of students' creative thinking is still classified as very beautiful, with the elaboration indicator being one of the indicators with the most beautiful values along with the key indicator. flexibility (flexibility) is an indicator with the highest score. In line with the results above, Suparman & Zanthy (2019) stated that the results of the analysis of the level of creative thinking ability of junior high school students at Jelai were still relatively low, as seen from the many mistakes students made in solving mathematical creative thinking ability test questions. Meanwhile, according to Putra (2018) the ability to think creatively among State Middle School students in Jelai is mostly in the

criteria of being quite creative (moderate). This result shows that students' creative thinking abilities at SMP are still quite beautiful and at the same time not at all at the SMK level, students have a very good level of creative thinking ability. From the results of the analysis on students' errors in solving questions on the ability to think creatively mathematically, it can be seen that students are not very good at understanding the questions they are asking, students only answer in one way of solving and are wrong in making calculations. This shows that students are not used to doing questions that test their ability to think creatively.

Azhari (2018) states that the facts in the field show that students' creative thinking abilities have not been optimal, the beauty of students' creative thinking abilities is suspected because so far the teacher has not tried to leave students' knowledge and understanding of creative thinking challenged. Improving students' thinking abilities can be done by facilitating them to work on questions that contain indicators of creative thinking (Putra et al., 2018) because that is why the role of the teacher is very important in training students' mathematical creative thinking abilities. Students must think outside the box, involve new ways of thinking, get opportunities to present new ideas and solutions, ask unusual questions, and try to give assumed answers (Ndiung et al., 2019). The students learning in each step must only concentrate on their abilities to find out the correct answers to problems and encourage the students thinking to discover solutions through open-ended problems or divergent thinking continuously. Together with this traditional approach in mathematics learning, it could not affect the nurturing of creative thinking in the students learning, as the results revealed in the research (Sriwongchai, 2015).

Murtiyasa (2016) states that the ability to think creatively in understanding problems is 34.93%, so that includes a high level of error, an error within an error. in planning problem-solving by 35.47%, then includes a low level of error, errors in implementing problem-solving by 53.6%, then include a moderate error level, and errors in checking returns are 60.8%, then include a high error rate. Nopitasari (2017) that student with category of level of mathematical creative thinking while the percentage of respondents is 84.61%, creative thinking level category very low math with percentages 12.82%, creative thinking level category math is not creative with percentages 2.56%.

Sumardi (2021) states that the ability to think creatively first produces fluency indicators that can be achieved by students who have high and moderate abilities, each student can state more than one answer as well as make conclusions about the correct answers. Second, an indicator of flexibility can be achieved by students who have

moderate mathematical abilities, such as students who can explain how to solve math problems and also provide the right conclusions. Third, indicators of originality can only be achieved by students who have high mathematical abilities. Students can find various ideas for solving math problems. Khotimah (2020) state that the ability to think creatively on the educational worksheet (LKPD) is based on higher-order thinking skills (HOTS) on the material for the Linear Equation System of Two Variables (SPLDV) using an environmental context A balanced environment fulfills the aspects of validity and good practicality so that it is suitable for use in the process of teaching mathematics.

Based on the results of the analysis of students' errors in solving questions about skills and creative thinking mathematically, it can be seen that students are not very good at understanding the questions given, students only answer in one way of solving and in doing calculations. This shows that students are not used to working on questions that test their creative thinking abilities (Rasnawati et al., 2019).

CONCLUSION

Based on the results of the research and discussion, the student's creative thinking skills in working on the two-variable linear equation system problem (SPLDV) are viewed from the perspective of Gender. Students in the high category can master all the indicators of creative thinking skills from the four thesis questions. Students with the medium category and high category have not mastered all the indicators of creative thinking skills on the four thesis questions.

Students in the male category were able to master the fluency indicator on the first item, but on the second item they had not been able to master the flexibility indicator, and on the third item they were able to master the originality indicator while on the fourth item, they had not mastered the elaboration indicator. Students in the low-male category in the first, second, and third questions were not able to master the indicators of fluency, flexibility, and originality, while in the fourth item, they were able to master the elaboration indicators. Students in the female category were able to master the fluency indicator in the first item, but in the second item they were not able to master the flexibility indicator, and in the third item they were able to master the originality indicator while in the fourth item they were able to master the elaboration indicator. Students in the low-female category were able to master the indicators of fluency in the first question, but in the second, third, and fourth questions, they were not able to master the indicators of flexibility, originality, and elaboration.

This research is expected to be a means of teacher reflection to improve students' creative thinking skills as well as a reference for students to practice working on questions to improve mathematical creative thinking. In addition, there is a need for further research on improving mathematical creative thinking skills on two-variable linear equation system problems (SPLDV) in terms of gender.

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REFERENCES

Azhari. (2018). Peningkatan Kemampuan Berpikir Kreatif Matematik Siswa melalui Pendekatan Konstruktivisme di Kelas VII Sekolah Menengah Pertama (SMP) Negeri 2 Banyuasin III. *Jurnal Pendidiikan Matematika7*, *7*(2), 1-12. https://doi.org/https://doi.org/10.22342/jpm.8.1.992.1-12

Faturohman, Ikhsan & Afriansyah, E. A. (2020). Peningkatan Kemampuan Berpikir Kreatif Matematis Siswa melalui Creative Problem Solving. *Mosharafa: Jurnal Pendidikan Matematika*, *9*(1), 107–118. https://doi.org/10.31980/mosharafa.v9i1.562

Hardani, Sukmana, D. J., & Andriani, R. F. H. (2020). Buku Metode Penelitian Kualitatif dan Kualitatif. CV. Pustaka Ilmu Group.

Indrawati, N., & Tasni, N. (2017). Analisis Kemampuan Pemecahan Masalah Berdasarkan Tingkat Kompleksitas Masalah dan Perbedaan Gender. *Saintifik*, *2*(1), 16–25. https://doi.org/10.31605/saintifik.v2i1.92

Kamalia, N. A., & Ruli, R. M. (2022). Analisis Kemampuan Berpikir Kreatif Matematis Siswa Smp Pada Materi Bangun Datar. *Jurnal Edukasi Dan Sains Matematika (JES-MAT)*, *8*(2), 117–132. https://doi.org/10.25134/jes-mat.v8i2.5609

Khotimah, R. P., Cahya, M., & Sari, P. (2020). Pengembangan Lembar Kerja Peserta Didik Berbasis Higher Order Thinking Skills (HOTS) Menggunakan Konteks Lingkungan Pendidikan Matematika. *Jurnal Program Studi Pendidikan Matematika*, *9*(3), 761–775. https://doi.org/https://doi.org/10.24127/ajpm.v9i3.2909

Maryati, I. (2021). *PYTHAGORAS : Jurnal Pendidikan Matematika , 16 (2), 2021 , 253-265 Analisis kemampuan berpikir kreatif matematis siswa sekolah menengah atas dalam materi aljabar.* *16*(2), 253–265. https://doi.org/https://doi.org/10.21831/pythagoras.v16i2.40007

Mufida, I. (2014). Identifikasi Kemampuan Berpikir Kreatif Siswa Dalam Pemecahan Masalah Matematika Materi Segiempat Dan Segitiga Ditinjau Dari Kemampuan Matematika Siswa Di Kelas Vii Smpn 1 Driyorejo. *MATHEdunesa Jurnal Ilmiah Pendidikan Matematika*, *3*(2), 113–119. https://doi.org/https://doi.org/10.26740/mathedunesa.v3n2.p%25p

Murtiyasa, B. (2016). Kemampuan Pemecahan Masalah Matematika Aljabar Berbasis TIMSS pada Siswa SMP Kelas VIII. *Seminar Nasional Pendidikan Matematika*, 1–9. https://publikasiilmiah.ums.ac.id/handle/11617/7594

Ndiung, S., Dantes, N., Ardana, I. M., & Marhaeni, A. A. I. N. (2019). Treffinger creative

learning model with RME principles on creative thinking skill by considering numerical ability. *International Journal of Instruction*, *12*(3), 731–744. https://doi.org/10.29333/iji.2019.12344a

Nopitasari, D. (2017). Analisis Kemampuan Berpikir Kreatif Matematis Terhadap Soal-Soal Open Ended. *M A T H L I N E : Jurnal Matematika Dan Pendidikan Matematika*, *2*(2), 195–202. https://doi.org/10.31943/mathline.v2i2.46

Nurhikmayati, I., & Sunendar, A. (2020). Pengembangan Project Based Learning Berbasis Kearifan Lokal Berorientasi pada Kemampuan Berpikir Kreatif dan Kemandirian Belajar. *Mosharafa: Jurnal Pendidikan Matematika*, *9*(1), 1–12. https://doi.org/10.31980/mosharafa.v9i1.604

Putra, H. D., Akhidayat, A. M., & Setiany, E. P. (2018). Kemampuan Berpikir Kreatif Matematik Siswa SMP di Cimahi. *Jurnal Matematika Kreatif - Inovatif*, *9*(1), 47–53. https://doi.org/http://dx.doi.org/10.15294/kreano.v9i1.1247

Rasiman. (2015). Leveling of Students ' Critical Ability in Solving Mathematics. *International Journal of Education and Research*, *3*(4), 307–318. http://eprints.upgris.ac.id/356/

Rasnawati, A., Rahmawati, W., Akbar, P., & Putra, H. D. (2019). Analisis Kemampuan Berfikir Kreatif Matematis Siswa SMK Pada Materi Sistem Persamaan Linier Dua Variabel (SPLDV) Di Kota Cimahi. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *3*(1), 164–177. https://doi.org/10.31004/cendekia.v3i1.87

Sidiq, U & Choiri, M. M. (2019). Metodologi Penelitian Kualitatif di Bidang Pendidikan. CV. Nata Karya. http://repository.iainponorogo.ac.id/484/

Siswono, T. Y. E. & Ratu, N. (2018). Pembelajaran Learning Cycle 5E Berbasis Pengajuan Masalah untuk Meningkatkan Hasil Belajar Siswa Kelas X pada Topik Trigonometri. *Kreano: Jurnal Matematika Kreatif-Inovatif*, *9*(1), 54–62. https://doi.org/http://dx.doi.org/10.15294/kreano.v9i1.9856

Siswono, T. Y. E. (2018). Analisis Tingkat Berpikir Kreatif Siswa Dalam Menyelesaikan Soal Luas Gabungan Pada Materi Bangun Datar Di Smp Negeri 8 Salatiga Kelas Vii. *Pendekar : Jurnal Pendidikan Berkarakter*, *1*(1), 103. https://doi.org/10.31764/pendekar.v1i1.298

Sriwongchai, A. (2015). Developing the Mathematics Learning Management Model for Improving Creative Thinking In Thailand. *International Education Studies*, *8*(11), 77–87. https://doi.org/10.5539/ies.v8n11p77

Sumardi. (2021). Mathematical creative thinking ability of junior high school students' on polyhedron. *Journal of Physics: Conference Series*, *1806*(1), 36–45. https://doi.org/10.1088/1742-6596/1806/1/012069

Suparman, T., & Zanthy, L. S. (2019). Analisis Kemampuan Beripikir Kreatif Matematis Siswa SMP. *Jurnal On Education*, *1*(2), 503–508. https://jonedu.org/index.php/joe/article/view/104

Syahara, M. U., & Astutik, E. P. (2021). Analisis Berpikir Kreatif Siswa dalam Menyelesaikan Masalah SPLDV ditinjau dari Kemampuan Matematika. *Mosharafa: Jurnal Pendidikan Matematika*, *10*(2), 201–212. https://doi.org/10.31980/mosharafa.v10i2.892

Tohir, M., Abidin, Z., Dafik, D., & Hobri, H. (2018). Students creative thinking skills in solving two dimensional arithmetic series through research-based learning. *Journal of Physics: Conference Series*, *1008*(1). https://doi.org/10.1088/1742-6596/1008/1/012072

Widiastuti, Y., Ilma, R., & Putri, I. (2018). Kemampuan Berpikir Kreatif Siswa Pada Pembelajaran Operasi Pecahan Menggunakan Pendekatan Open-Ended. *Jurnal Pendidikan Matematika*, *12*(2), 13–22.

https://doi.org/https://doi.org/10.22342/jpm.12.2.5961.13-22

Widodo, S. A., & Ikhwanudin, T. (2018). Improving mathematical problem solving skills through visual media. *Journal of Physics: Conference Series*, *948*(1). https://doi.org/10.1088/1742-6596/948/1/012004

Yusuf. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan Gabungan. Kencana.*