Journal of Mathematics Education
Website: http://usnsj.id/index.php/JME
Email: managerjme@gmail.com
p-ISSN 2528-2468; e-ISSN 2528-2026

DOI: https://doi.org/10.31327/jme.v9i1.2030

ANALYSIS OF MATHEMATICAL CREATIVE THINKING BASED ON THE SELF-CONFIDENCE OF JUNIOR HIGH SCHOOL STUDENTS

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Article Info

Article history:

Received Aug 12, 2023
Revised Feb 13, 2024
Accepted Mei 07, 2024

Keywords:

Creative Thinking Skills
Self-Confidence
Mathematica

ABSTRACT

Creative thinking skills were important for students to have to solve math problems appropriately. This article aims to provide an overview of junior high school students' ability to think creatively. The images to be studied are related to students' abilities for fluency, flexibility, and originality . The topic in this article is the seventh-grade students of SMP Muhammadiyah Kottabarat Surakarta Special Program, with a total of 16 students who will be categorized based on high, medium, and low self- confidence . The data collection technique used a test in the form of five description questions in the material of rectangular flat building problems and interviews. The method used is the descriptive approach. The data analysis techniques in this article are based on Miles and Huberman, namely data collection, data reduction, data presentation and verification. The results show that students' creative thinking skills are divided into 3 categories: 6% in the high category, 75% in the medium category, and 19% in the low category. This result shows that students' ability to think creatively in solving rectangular flat problems is relatively easy, which means that their capacity to solve rectangular flat problems based on creative thinking steps hasn't been maximized .

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How to Cite:

Sabrina, D., Swastika, A., Minsih. (2024) Analysis of Mathematical Creative Thinking Based on the Self-Confidence of Junior High School Students. (2024). *Journal of Mathematics Education*, 9(1), 47-57.

1. INTRODUCTION

Mathematics is a subject given to students from the most basic level to the highest level. There are many benefits that will be felt when students study mathematics (Alamsyah & Samanhudi, 2022), one of which is being able to help students solve real-life problems and in other fields (Ramadhani & Hakim, 2021). Even so, mathematics remains a subject that is considered scary and unpleasant, so many students do not understand mathematics well (Dahlan & Mulyadi, 2022). When students perceive mathematics as something that is considered difficult, it will result in low thinking skills (Siswanto & Ratiningsih, 2020).

Based on several previous research results from Firdaus et al. (2019), Kurnia (2021), and Prasasti et al. (2019) stated that creative thinking skills in learning are still relatively low, and there is a need to empower students' creative thinking skills. The results of this research are also in accordance with research findings from Tayuda & Siswanto (2020) which stated that students' creative thinking abilities were included in the deficient category. This was then confirmed by Amelia et al. (2018) in her research which concluded that the results of the mathematical creative thinking ability test were still below the average minimum completeness criteria. Creative thinking is less considered in the learning process at school. In line with Yulianto (2021), the learning process in class has not developed students' creative thinking abilities. In general, creative thinking is not trained by teachers. This is different from Swastika, Charismajati, & Kholid, (2022) bahwa untuk dapat mengatasi kesulitan siswa that to be able to overcome difficulties students must be trained to think creatively. Efforts need to be made to develop logical, critical and creative thinking such as applying problem solving.

Most of the time, students just pay attention and take notes on what the teacher says. Teachers still think that creative thinking is not important in the learning process (Brito, 2015; Fikri et al., 2022). This can be seen from the frequency with which teachers give tests using routine questions rather than questions that contain problem solving. Creative thinking is important to improve.

Besides creative thinking, there are other factors that can affect student learning, namely self-confidence. Confidence can grow attitude positive student in do math problems (Wondo & Meke, 2021). Self-confidence is a person's belief and attitude towards one's own abilities by accepting what they are, both positive and negative, which are formed and learned through the learning process with the aim of making oneself happy (Apandi & Wardhani, 2020) .

The factors influencing self-confidence are a mixed picture obtained from the experiences and judgments given by others No from congenital. In line with that, Mead cited by Handayani (2016) said that self-confidence is formed from individual psychological experiences. Confidence is important for everyone students listed in KTSP 2006 And enhanced in the curriculum 2013, namely: "Students are expected to have the nature of appreciating the usefulness of mathematics, namely attitude of curiosity, attention, and high interest in learning mathematics, as well as attitude persistent And believe self in finish problem." (Fadella et al., 2018) .

SMP Muhammadiyah PK Surakarta in learning mathematics, students tend to feel insecure in working on the questions given. From the results of the observations of researchers by giving test questions to students, students were seen not sure of his ability and said he could not do the problem which are given. Especially if students are asked to work on questions on the blackboard, students immediately point to other friends who they think are smarter in mathematics to do the questions. Students also cannot explain what are the benefits of studying mathematics and students tend to get bored easily when math lessons are in progress

Based on the background that has been described, the researcher formulates the problem, namely: how is the mathematical creative thinking ability of students with high, medium and low self-confidence?. The purpose of the research is to describe the mathematical creative thinking abilities of students with high, medium and low self-confidence.

2. METHODS

This research is a quantitative research method with a descriptive approach. This research was conducted at Muhammadiyah Middle School Special Program Kottabarat Surakarta with 16 class VII students as research subjects. The independent variable in this study is an indicator of ability think creatively, with a total of 3 questions. The dependent variable is student self-confidence which is obtained from the results of the self-confidence questionnaire answers to students. Data collection was carried out through tests, questionnaires and interviews which are described as follows.

2.1 Test

Tests are methods (which can be used) or procedures (which need to be taken) in the framework of measurement and assessment in the field of education (Rahmi et al., 2022). The instrument used to carry out the test is a test sheet. Ability Think Creative Mathematical test used form Moma (2015)

After knowing the total score obtained by the subject through the table, then to determine the level of creative thinking ability, the researcher compared the total score obtained by the subject with the maximum score of the subject's creative thinking ability.

The level of mathematical creative thinking ability is assessed by 3 indicators. Each indicator is assessed with a score between 0-4. The assessment of the level of mathematical creative thinking ability is calculated from the scores of the three indicators calculated mathematically with the following formula.

$$TKBK = \frac{S_{fl} + S_{fx} + S_{or}}{S_{maks}} \times 100\%$$

Information :
TKBK : Level of Ability to Think Creatively
S_{fl} : Score for the indicator *fluency*
S_{fx} : Score For indicator *flexibility*
S_{or} : Score For *originality* indicator
S_{max} : Maximum score for each indicator
100% : Fixed percent

Based on the results of the analysis, then the subject's achievement is calculated with the following categories:

Table 1. Categories of Creative Thinking Ability Levels

Intervals Score Test	Category Ability Level Think Creative
Score ≥ 77	High
58 − 76	Medium
Score < 57	Low

The following is a grid of students' mathematical creative thinking ability test questions:

Table 2. Grids of Mathematical Creative Thinking Ability Test Questions

No	Ability Indicator Creative Thinking	Question Indicator	Cognitive level
1	*Fluency*	Determine the size and describe the various rectangular shapes.	C3
2	*Flexibility*	Analyze a shape shape in the image and determine the area of the shape in various ways.	C4
3	*Originality*	Constructing the area of a building in its own way.	C6

Source: Masrura (2021)

2.2 Questionnaire

This study uses a questionnaire to find out information about the ability to think creatively mathematically in terms of self-confidence. This questionnaire contains 25 statements arranged based on self-confidence indicators that will be filled out by students. The questionnaire given to the subject is in the form of multiple choices. Indicators of self-confidence, namely:

Table 3. Self Confidence Indicators

No.	Indicator	Statement Positive	Statement Negative	Number of Questions
1	Believe in your own abilities	1,3,13,19	10,17,23	7
2	Act independently in making decisions	2,5,6,8	7,9	6
3	Have a positive self-concept	4,12,14	11,21,24	6
4	Dare to express your opinion	16,20,22	15,18,25	6
	Amount			25

Source: Prihastiwi (2023)

As for score scale confidence Which used on study Thisas following:

Table 4 Self-Confidence Scale Scoring Format

Answer Choices	Item Score Positive Answer	Item Score Negative Answer
Highly Compliant (SS)	4	1
Fit (S)	3	2
Incompatible (TS)	2	3
Highly Incompatible (STS)	1	4

Source: Nurfajriyanti & Pradipta (2021)

The self-confidence data is then categorized into 3 categories, namely high, medium and low. The categories of self-confidence values are as follows:

Table 5 Categories of Confidence Value

No.	Interval Score	Category
1	$\bar{x}$ > Mi + 1.8 Sbi	Very Good
2	Mi + 0.6 Sbi < $\bar{x}$ < Mi + 1.8 Sbi	Good
3	Mi - 0.6 Sbi < $\bar{x}$ < Mi + 0.6 Sbi	Fair
4	Mi -1.5 Sbi < $\bar{x}$ < Mi - 0.6 Sbi	Poor
5	$\bar{x}$ < Mi - 1.5 Sbi	Very Poor

Source: (Widoyoko 2016)

Information:
Mi= Ideal average = ½ (ideal highest score + ideal lowest score)
Sbi= Standard deviation = (ideal highest score – ideal lowest score)

3. RESULTS AND DISCUSSION

3.1. Results

This research began by measuring students' self-confidence. Research on student self-confidence was carried out by distributing questionnaires to 33 students. The self-confidence indicators used to examine students' self-confidence are believing in their own abilities, being independent in making decisions, having a positive self-concept, and having the courage to express opinions. Based on the research results, it is known that student self-confidence is as follows:

Table 6 Description of Student Self-Confidence Level

No	Self-Confidence Category	Frequency	Percentage
1	Very Good	6	18,2%
2	Good	7	21,2%
3	Fair	9	27,3%
4	Poor	6	18,2%
5	Very Poor	5	15,2%

Student self-confidence was found to be very good as many as 6 students or 18.2%, good for 7 students or 21.2% and fair as many as 9 students or 27.3%. It can be stated that the students' self-confidence is more than good. Most of them are quite good. Meanwhile, the results of the critical thinking ability test are presented in the following table

Table 7 Description of Students' Creative Thinking Abilities

No	Creative Thinking Ability Category	Frequency	Percentage
1	High	10	30%
2	Medium	17	52%
3	Low	6	18%
	Total	33	

As in the data in the table above, it is known that 10 students or 30% have high creative thinking abilities. Medium creative thinking ability was 17 students or 52% while low creative thinking ability was 6 students or 18%.

In the very good self-confidence group, out of 6 students, all students have the ability to think creatively. Students with good self-confidence, of the 7 students, 1 of them has high creative thinking abilities and the other 6 have medium creative thinking abilities. It is known that there are 9 students with a sufficient level of self-confidence, and of the 9 students, 2 have the ability to think creatively and the other 7 students have the ability to think creatively. Meanwhile, students with low and very low levels of self-confidence have high, medium and low creative thinking abilities. The following are creative thinking abilities based on student self-confidence.

Table 8 Creative Thinking Abilities Based On Student Self-Confidence

No	Self-Confidence	Test Results
1	Very good	High
2	Very good	High
3	Very good	High
4	Very good	High
5	Very good	High
6	Very good	High
7	Good	Medium
8	Good	Medium
9	Good	High
10	Good	Medium
11	Good	Medium
12	Good	Medium
13	Good	Medium
14	Fair	High
15	Fair	High
16	Fair	Medium

No	Self-Confidence	Test Results
17	Fair	Medium
18	Fair	Medium
19	Fair	Medium
20	Fair	Medium
21	Fair	Medium
22	Fair	Medium
23	Poor	Low
24	Poor	Low
25	Poor	High
26	Poor	Low
27	Poor	Medium
28	Poor	Medium
29	Very Poor	Low
30	Very Poor	Low
31	Very Poor	Medium
32	Very Poor	Medium
33	Very Poor	Low

Based on the table above, creative thinking abilities appear to be spread across several levels of student self-confidence. Students' creative thinking abilities, from very good to very poor, do not limit students' ability to think creatively. It was found that there was high creative thinking ability in very good, good, fair and poor self-confidence. The condition of students' creative thinking abilities on self-confidence can be presented in the figure 1.

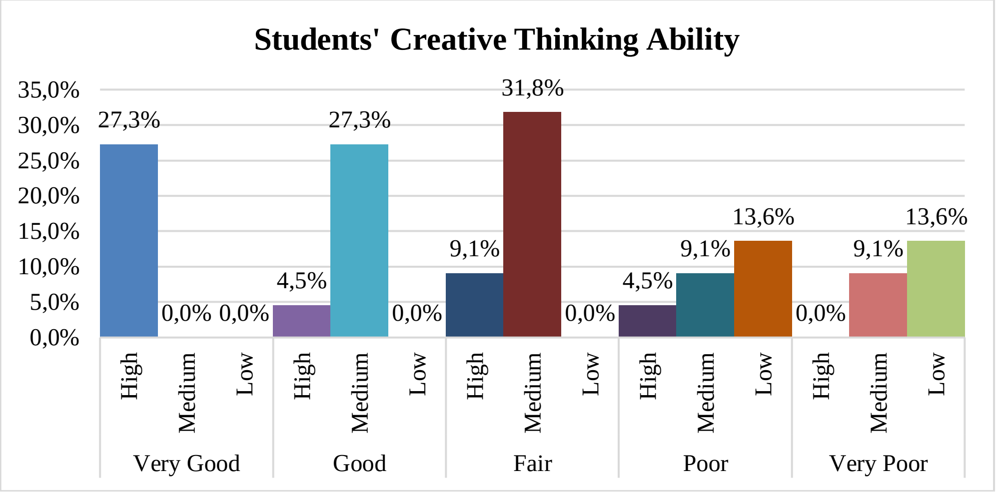

Figure 1. Graph of Students' Creative Thinking Ability

Table 9 Categorization of Student Completion

No	Self-Confidence	Category	Description
1	Very Good	High	Students with high self-confidence already know the direction of the questions. Based on the variations in the answers attached, students can correctly explain the types and properties of quadrilaterals (square, rectangle, and trapezoid). Students also include the names of the buildings, so that the indicators of fluency, flexibility and originality are met.

No	Self-Confidence	Category	Description
		Medium	
		Low	
2	Good	High	Students with high self-confidence already know the direction of the questions. Based on the variations in the answers attached, students can correctly explain the types and properties of quadrilaterals (square, rectangle, and trapezoid). Students also include the names of the buildings, so that the indicators of fluency, flexibility and originality are met.
		Medium	Students with moderate self-confidence already know the direction of the questions. However, it can be seen from the answers attached, the students have not described the variations of the flat rectangles and trapezoids ordered in the questions, so there appears to be a type. So that the indicators of flexibility are fulfilled but the indicators of smoothness have not been fulfilled.
		Low	
3	Poor	High	Students with high self-confidence already know the direction of the questions. Based on the variations in the answers attached, students can correctly explain the types and properties of quadrilaterals (square, rectangle, and trapezoid). Students also include the names of the buildings, so that the indicators of fluency, flexibility and originality are met.
		Medium	Students with moderate self-confidence already know the direction of the questions. However, it can be seen from the answers attached, the students have not described the variations of the flat rectangles and trapezoids ordered in the questions, so there appears to be a type. So that the indicators of flexibility are fulfilled but the indicators of smoothness have not been fulfilled.
		Low	Low self-confidence students cannot understand the purpose of the questions. It can be seen from the answers attached, students cannot classify the types and properties of the rectangles, rectangles, and trapezoids contained in the problem pictures. So that the indicator interpretation is not fulfilled
4	Very Poor	High	
		Medium	Students with moderate self-confidence already know the direction of the questions. However, it can be seen from the answers attached, the students have not described the variations of the flat rectangles and trapezoids ordered in the questions, so there appears to be a type. So that the indicators of flexibility are fulfilled but the indicators of smoothness have not been fulfilled.
		Low	Low self-confidence students cannot understand the purpose of the questions. It can be seen from the answers attached, students cannot classify the types and properties of the rectangles, rectangles, and trapezoids contained in the problem pictures. So that the indicator interpretation is not fulfilled

3.2. Discussion

Student Self-Confidence

In the results of the research above, it is known that most students' self-confidence is sufficient, followed by the good and very good categories. In a school, there are various students with different levels of self-confidence. Through assessments carried out by teachers, it was found that the majority of students had a level of self-confidence that could be categorized as "Fair" This shows that the majority of students have adequate confidence in their abilities and potential.

Self-confidence is a belief that a person has in his own abilities (Antu, Zees, and Nusi 2023). High self-confidence can have a positive impact on various aspects of life, including in the field of education. Students who have high self-confidence will be more motivated to learn, braver to try new things, and better prepared to face challenges. Based on the results of research conducted by Febriyani et al. (2020), student self-confidence can be categorized into three, namely: Fair self-confidence means that students have confidence in their own abilities, but not too high. They still need to develop their self-confidence so they can be more optimal in learning and achieving achievements. Good self-confidence, where students have high confidence in their own abilities, but can still be improved. Very good self-confidence means students have very high confidence in their own abilities.

This "Fair" category reflects a positive attitude and adequate self-confidence in dealing with various situations and tasks. These students are able to overcome challenges and have confidence that they can achieve success with the right effort and dedication. In addition, there are a number of students who fall into the "good" and "very good" categories in terms of self-confidence. These students demonstrate higher than average levels of self-confidence, both in terms of academic ability and interpersonal ability. They may have a strong sense of self-confidence and high levels of optimism regarding their ability to achieve goals and achieve success.

Creative Thinking Ability

In the results of research on creative thinking abilities, it is known that more than half of students have moderate creative thinking abilities, followed by high and low. Through research on students' creative thinking abilities at an educational institution, the majority of students show a level of creative thinking ability that can be categorized as "medium." These findings illustrate that most students are able to explore creative ideas and apply creative thinking in completing their academic assignments.

In further analysis, it was also seen that there were variations in ability levels, with some students standing out as having creative thinking abilities that could be categorized as "high," while others had "low" levels. The results of this study reflect the diversity in creative thinking abilities among students, highlighting that there are groups that may be more open to new ideas and innovation, while others may require additional support in developing creative thinking skills.

These results provide a basis for further understanding of the dynamics of creative thinking abilities in these educational environments. With this understanding, educators can identify more targeted learning strategies to support and motivate students in developing their creative thinking abilities, creating an environment that stimulates innovation and creativity.

Students' Creative Thinking Ability According to Students' Level of Self-Confidence

In an educational context, research results regarding the relationship between critical thinking skills and students' level of self-confidence reveal an interesting dynamic. These findings indicate that critical thinking skills can develop at various levels of self-confidence, which include the categories very good, good, fair, poor, and very poor.

An educational journal from Riyanto et al. (2019) entitled “Mathematics Critical Thinking Reviewed from Self-efficacy and Motivation of Learning in Arias Learning” provides a relevant perspective regarding this phenomenon. The study concluded, "It was found that the level of student self-confidence is not always the sole determinant of the level of critical thinking ability. Although there are students with high self-confidence who demonstrate high critical thinking ability, however, there are also students with low levels of self-confidence but have significant critical thinking abilities."

These results can be interpreted as an indication that self-confidence is not always the sole determining factor in measuring students' critical thinking abilities. Although self-confidence can provide a motivational boost, critical thinking skills can be present at varying levels of self-confidence. This shows the complexity of the relationship between these psychological aspects and supports the idea that the development of critical thinking skills does not always depend on high levels of self-confidence.

With this understanding, educators can design more holistic learning strategies, which focus not only on increasing self-confidence but also on developing critical thinking skills. Thus, education can be a vehicle that stimulates student development in various aspects of intelligence and skills, producing individuals who not only believe in themselves but are also able to think critically in facing challenges.

4. CONCLUSION

Based on the results of the study it can be concluded that students with high self-confidence, their creative thinking abilities are fulfilled in answering questions. Students with high self-confidence can demonstrate fluency in answering questions by describing all shapes of flat shapes. Students are also flexible in solving problems where students show a picture along with a description of the name. Students who have low self-confidence cannot show variations in flat shapes, and only depend on the work of other friends. Conversely, students who have low self-confidence are unable to demonstrate fluency, flexibility and originality in their work.

ACKNOWLEDGEMENTS

Thanks to Allah SWT for all His grace, gifts, blessings, and inclusion, the author can finish this article. The author is also grateful to both parents and family who always support and provide motivation, supervisors, and all parties who always provide support so that the writer can finish this article.

REFERENCES

Alamsyah, I., and D. Samanhudi. 2022. “Analisis Kemampuan Literasi Dan Numerasi Siswa Smp Atma Widya Surabaya Menggunakan Metode Asesmen Kemampuan Minimum (AKM).” *Pascal (Journal of Physics and Science Learning)* 6(2):123–30.

Amelia, Risma, Usman Aripin, and Nurul Hidayani. 2018. “Analisis Kemampuan Berpikir Kreatif Matematik Siswa SMP Pada Materi Segitiga Dan Segiempat.” *JPMI (Jurnal Pembelajaran Matematika Inovatif)* 1(6):1143–54. doi: 10.22460/jpmi.v1i6.p1143-1154.

Antu, Mihrawaty, Rini Fahriani Zees, and Ramlia Nusi. 2023. “Hubungan Kekerasan Verbal (Verbal Abuse) Orang Tua Dengan Tingkat Kepercayaan Diri Pada Remaja.” *Jurnal Ners* 7(1):425–33. doi: 10.31004/jn.v7i1.13530.

Apandi, Idris, and Erni Wardhani. 2020. *Tip Jitu Menjadi Fasilitator & Peserta Yang Santuy*. Yogyakarta: Penerbit Samudra Biru.

Brito, Sílvio Manuel. 2015. "Teaching and Detecting The Creative Potential — Experience and Perspectives." in *Entrepreneurship Education and Training*. Spain: IntechOpen.

Dahlan, D., and T. Mulyadi. 2022. "Perancangan Dan Implementasi Game Edukasi Matematika Bahasan Trigonometri Berbasis Mobile (Studi Kasus Smk Pakuan Lembang)." *Journal of Informatics and Electronics Engineering* 2(1):23–29.

Fadella, Eki Firda, Sugiarto Sugiarto, and Ardhi Prabowo. 2018. "Keefektifan Problem Based Learning Berbantuan Komik Matematika Terhadap Kemampuan Pemecahan Masalah Dan Rasa Ingin Tahu." Pp. 77–86 in *PRISMA, Prosiding Seminar Nasional Matematika*. Semarang: Universitas Negeri Semarang.

Febriyani, Tarlem, Febi Kurniawan, and Rustam Effendi. 2020. "Kepercayaan Diri Siswa Dalam Pembelajaran Lompat Harimau." *Altius: Jurnal Ilmu Olahraga Dan Kesehatan* 9(2):92–99. doi: 10.36706/altius.v9i2.13001.

Fikri, Refsya Aulia, Hadi Suwono, and Herawati Susilo. 2022. "Online Three-Tier Diagnostic Test to Identify Misconception about Virus and COVID-19." *JPBI (Jurnal Pendidikan Biologi Indonesia)* 8(2). doi: 10.22219/jpbi.v8i2.18895.

Firdaus, Aulia, Lulu Choirun Nisa, and Nadhifah Nadhifah. 2019. "Kemampuan Berpikir Kritis Siswa Pada Materi Barisan Dan Deret Berdasarkan Gaya Berpikir." *Kreano, Jurnal Matematika Kreatif-Inovatif* 10(1):68–77. doi: 10.15294/kreano.v10i1.17822.

Handayani, Shinta Dwi. 2016. "Pengaruh Konsep Diri Dan Kecemasan Siswa Terhadap Pemahaman Konsep Matematika." *Formatif: Jurnal Ilmiah Pendidikan MIPA* 6(1):23–34. doi: 10.30998/formatif.v6i1.749.

Kurnia, Alifia. 2021. "Profil Kemampuan Berpikir Kreatif Siswa Menggunakan Soal Tes Pilihan Ganda Pada Pembelajaran Ilmu Pengetahuan Alam." *Indonesian Journal of Educational Science (IJES)* 4(1):27–32. doi: 10.31605/ijes.v4i1.1147.

Masrura. 2021. "Analisis Kemampuan Berpikir Kreatif Matematis Siswa Melalui Penerapan Strategi Scaffolding." Banda Aceh: UIN Ar-Raniry.

Moma, La. 2015. "Pengembangan Instrumen Kemampuan Berpikir Kreatif Matematis Untuk Siswa SMP." *Delta-Pi: Jurnal Matematika Dan Pendidikan Matematika* 4(1):27–41. doi: http://dx.doi.org/10.33387/dpi.v4i1.142.

Nurfajriyanti, Iriana, and Trisna Pradipta. 2021. "Analisis Kemampuan Pemahaman Konsep Matematis Pada Materi Bangun Ruang Sisi Datar Ditinjau Dari Kepercayaan Diri Siswa." *Jurnal Cendekia : Jurnal Pendidikan Matematika* 5(3):2594–2603. doi: 10.31004/cendekia.v5i3.797.

Prasasti, Dianita Eka, Henny Dewi Koeswanti, and Sri Giarti. 2019. "Peningkatan Keterampilan Berpikir Kritis Dan Hasil Belajar Matematika Melalui Model Discovery Learning Di Kelas IV SD." *Jurnal Basicedu* 3(1):174–79. doi: 10.31004/basicedu.v3i1.98.

Prihastiwi, Niken. 2023. "Pengaruh Self Confidence Terhadap Kemampuan Pemahaman Matematis Siswa Kelas VIII SMP Negeri 3 Bantarsari Kabupaten Cilacap." Purwokerto: Universitas Islam Negeri Profesor Kiai Haji Saifuddin Zuhri Purwokerto.

Rahmi, Hadeli, and Martin Kustati. 2022. *Evaluasi Pendidikan Perspektif Islam*. Yogyakarta: Deepublish.

Ramadhani, Delia Adinda, and Dori Lukman Hakim. 2021. "Kemampuan Problem-Solving

Matematis Siswa SMA Dalam Menyelesaikan Permasalahan Materi Fungsi." *Jurnal Pembelajaran Matematika Inovatif* 4(5):1113–22.

Riyanto, Onwardono Rit, St. Budi Waluya, and Scolastika Mariani. 2019. "Mathematics Critical Thinking Reviewed from Self-Efficacy and Motivation of Learning in Arias Learning." *Journal of Primary Education* 8(5):243–50.

Siswanto, Rizki Dwi, and Rega Puspita Ratiningsih. 2020. "Korelasi Kemampuan Berpikir Kritis Dan Kreatif Matematis Dengan Kemampuan Pemecahan Masalah Matematis Materi Bangun Ruang." *Anargya: Jurnal Ilmiah Pendidikan Matematika* 4(3):96–103.

Swastika, Annisa, Rangga Chresna Charismajati, and Muhammad Noor Kholid. 2022. "Analysis of Student Difficulties in Completing Social Arithmetic Stories Assessed from Understanding the Concept." in *AIP Conference Proceedings*.

Tayuda, Laswadi Arif, and Joko Siswanto. 2020. "Profil Keterampilan Berpikir Kreatif Siswa SMA Negeri 3 Pemalang Pada Konsep Solar Cell." *Media Penelitian Pendidikan : Jurnal Penelitian Dalam Bidang Pendidikan Dan Pengajaran* 14(2):128–32. doi: 10.26877/mpp.v14i2.5550.

Widoyoko, Eko Putro. 2016. *Teknik Teknik Penyusunan Instrumen Penelitian. Yogyakarta*.

Wondo, Maria Trisna Sero, and Konstantinus Denny Pareira Meke. 2021. "Analisis Pengaruh Sikap Percaya Diri Siswa Dalam Pembelajaran Matematika Menggunakan Model PBL Berbantuan Bahan Manipulatif." *Jupika: Jurnal Pendidikan Matematika* 4(1):11–21. doi: 10.37478/jupika.v4i1.894.

Yulianto, Dwi. 2021. "Pengaruh Pembelajaran Rigorous Mathematical Thinking (RMT) Terhadap Peningkatan Kemampuan Berpikir Kreatif Siswa Ditinjau Dari Tingkat Habit Of Mind (HOM)." *Jurnal Multidisiplin Madani (MUDIMA)* 1(3):249–68. doi: 10.54259/mudima.v1i3.245.