Pedagogi :
Jurnal Pendidikan dan Pembelajaran
2025, 5(2), 78-89
https://doi.org/10.56393/pedagogi.v5i1.3945

Habits of Mind and Mathematical Creative Thinking: Evidence from a Correlational Study in Integral Calculus

Hesty Marwani Siregar [1*], Titi Solfitri [1]

[1] Universitas Riau, Indonesia
* Author Correspondence

Article History

Received: 21 December 2025;
Revised : 23 December 2025;
Accepted: 31 December 2025.

Keywords

Calculus;
Habits Of Mind;
Mathematical Creative Thinking Ability;
Mathematics Education.
.

Abstract

In an era of increasing societal complexity and rapid change, developing mathematical creative thinking has become a central challenge in mathematics education worldwide, particularly in cognitively demanding domains such as integral calculus. While conceptual understanding remains fundamental, research indicates that students' engagement in creative mathematical problem solving is strongly influenced by dispositional and metacognitive factors. Among these, habits of mind are increasingly recognized as essential in supporting persistence, flexibility, and reflective thinking when students confront complex mathematical problems. This study investigates the relationship between habits of mind and mathematical creative thinking among undergraduate mathematics education students enrolled in an integral calculus course. Using a correlational research design, data were collected from 60 students through a habits of mind questionnaire and an open-ended mathematical creative thinking test assessing fluency, flexibility, and originality. The findings show that participants' habits of mind and mathematical creative thinking were generally underdeveloped, with most students falling within moderate to low achievement categories. Correlation analysis revealed a very strong positive association between the two variables, indicating that students with more developed habits of mind tend to demonstrate higher levels of creative thinking in integral calculus. Habits of mind accounted for a substantial proportion of variance in students' mathematical creative thinking, providing empirical support for their role as a dispositional foundation for creative thinking in advanced mathematics learning. These findings underscore the importance of instructional approaches that intentionally cultivate students' habits of mind alongside conceptual understanding to foster sustained creative mathematical engagement.

Contact : Corresponding author e-mail: hesty.marwani@lecturer.unri.ac.id
How to Cite : Siregar, H. M., & Solfitri, T. (2025). Habits of Mind and Mathematical Creative Thinking: Evidence from a Correlational Study in Integral Calculus. *Pedagogi : Jurnal Pendidikan Dan Pembelajaran*, 5(2), 78–89. https://doi.org/10.56393/pedagogi.v5i2.3945

Introduction

Mathematics education is globally positioned as a strategic field that plays a crucial role in preparing individuals to respond to the intellectual demands of contemporary society. Beyond its traditional function in procedural problem solving, mathematics education makes a fundamental contribution to cognitive development, logical reasoning, and the formation of adaptive ways of thinking (Sari, Wahyuni, & Rosmaiyadi, 2016; Sheromova et al., 2020; Rohman, Syaifudin, & Astiswijaya, 2021; Siregar & Dewi, 2022). In an era of rapid technological advancement and increasing societal complexity, mathematics learning is closely associated with the development of essential 21st-century skills, particularly creativity, adaptability, and complex problem-solving abilities. Within this context, mathematical creative thinking should be understood as a necessary response to these growing challenges, rather than merely as a desirable learning outcome. Mathematical creative thinking is understood as the ability to generate multiple correct methods and solutions through flexible, original, and reflective thinking when confronting problematic situations (Ginting et al., 2025; Aulia et al., 2025; Sipahi & Bahar, 2025). Mathematical creative thinking involves the ability to generate ideas fluently, apply flexible strategies, produce original solutions, and explore multiple valid solution pathways when solving mathematical problems. Therefore, fostering mathematical creative thinking skills is not an optional competency, but a core educational objective aimed at preparing future generations to confront diverse and complex problems. However, despite the recognized importance of developing mathematical creative thinking, efforts to cultivate this ability in mathematics learning practices continue to face complex challenges, thereby requiring deeper pedagogical and psychological attention.

Mathematical creative thinking skills can be developed through various mathematics courses, one of which is integral calculus, an essential component of undergraduate mathematics education. Integral calculus inherently demands higher-order thinking, as students are required not only to master procedures but also to understand abstract concepts, interconceptual relationships, and the underlying mathematical structures. In learning integral calculus, students are encouraged to recognize patterns, engage in abstraction, and make generalizations, while simultaneously considering multiple possible problem-solving strategies. Given these characteristics, integral calculus represents a cognitively demanding domain in which students must regulate their thinking, flexibly shift strategies, and tolerate uncertainty during problem solving (Ariawan & Nufus, 2017; Solfitri et al., 2024). This characterization highlights integral calculus as a cognitively demanding domain in which students must actively regulate their thinking, adapt problem-solving strategies, and engage creatively with abstract mathematical ideas. Therefore, the calculus course is an appropriate context for studying mathematical creative thinking skills, because success in learning calculus is not only determined by mastery of procedures, but also by students' ability to understand concepts, adapt strategies, and think creatively and reflectively. These cognitive demands require students to consciously regulate their thinking processes, persist in the face of non-routine problems, and flexibly explore various alternative solutions. This condition emphasizes the relevance of thinking dispositions such as habits of mind in supporting student engagement in facing complexity and in generating flexible and original solutions to calculus problems.

However, numerous empirical findings indicate that students consistently experience difficulties in achieving optimal levels of mathematical creative thinking, both in understanding and solving problems and in developing diverse alternative solutions, particularly for non-routine tasks (Fineldi & Hidayati, 2023; Hamid et al., 2025; Indrapangastuti et al., 2025). In line with these findings, students frequently encounter obstacles when faced with problems that require more than one correct solution, reflecting limitations in flexibility and strategic exploration during problem solving (Solfitri & Siregar, 2021). The low achievement of mathematical creative thinking skills is also reflected in attainment percentages below 50% across all indicators of mathematical creative thinking (Sarassanti & Mutazam, 2019). The results of another study revealed that only high-ability students were able to complete tests of mathematical creative thinking ability, while medium-ability students could only solve questions related to the fluency indicator, and low-ability students were unable to solve the test items at all (Huljannah et al., 2018). Taken together, these findings suggest that the challenge of developing mathematical creative thinking is not merely rooted in students' conceptual understanding or instructional exposure, but is closely related to deeper cognitive and psychological factors that shape how students regulate, sustain, and flexibly direct their thinking when engaging with complex mathematical tasks.

One psychological construct that is increasingly recognized as essential in supporting mathematical creative thinking is the habits of mind. Habits of mind represent a cognitive–metacognitive construct that supports intentional, reflective, and strategic thinking processes when individuals encounter complex problems. In mathematics learning, habits of mind involve awareness of one's thinking processes, the ability to plan and select appropriate strategies, sensitivity to feedback, and evaluation of actions taken during problem solving (Ramlah & Maya, 2018). Research indicates that well-developed habits of mind are reflected in positive dispositions such as positive thinking, creativity, innovation, self-confidence, curiosity, and independence in learning mathematics (Nurmala et al., 2019). In line with this perspective, several studies emphasize that creativity in mathematics develops through the interaction between cognitive abilities and thinking dispositions, such as openness to new ideas, reflectivity, and willingness to explore multiple possible solutions (Newton et al., 2022; Ibrahim et al., 2024; Genç et al., 2025). In this context, habits of mind act as a psychological foundation that enables students to consciously regulate their thinking processes, maintain productive engagement in solving challenging problems, and develop divergent thinking as a basis for producing flexible and original mathematical solutions.

The theoretical alignment between habits of mind and mathematical creative thinking can be clearly understood through established frameworks proposed by Costa and Kallick, as well as Marzano. Costa and Kallick conceptualize habits of mind as intelligent behaviors activated when individuals face novel, complex, and non-routine problems, conditions that are characteristic of creative mathematical problem solving. Marzano classifies habits of mind into self-regulation, critical thinking, and creative thinking (Masiah & Adawiyah, 2018). While creative thinking represents an important outcome of these habits, self-regulation plays a more fundamental role, as it enables learners to plan, monitor, and evaluate their cognitive processes. Within the context of integral calculus, such self-regulatory and metacognitive behaviors are

particularly crucial, as students must manage abstract representations, coordinate multiple solution strategies, and reflect on the validity of their reasoning. Through these mechanisms, habits of mind are hypothesized to facilitate mathematical creative thinking by supporting cognitive flexibility, encouraging exploration of alternative methods, and enabling students to persist in solving complex calculus problems. Thus, habits of mind do not merely coexist with mathematical creativity but actively shape the conditions under which creative mathematical thinking can emerge and be sustained.

The theoretical alignment between habits of mind and mathematical creative thinking can be clearly understood through established frameworks proposed by Costa and Kallick, as well as Marzano. Costa and Kallick conceptualize habits of mind as intelligent behaviors activated when individuals face novel, complex, and non-routine problems, conditions that are characteristic of creative mathematical problem solving. Furthermore, Marzano classifies habits of mind into three main categories, namely self-regulation, critical thinking, and creative thinking (Masiah & Adawiyah, 2018), thereby conceptually linking habits of mind to processes that underlie creative thinking ability. Within the context of integral calculus, such self-regulatory and metacognitive behaviors are particularly crucial, as students must manage abstract representations, coordinate multiple solution strategies, and reflect on the validity of their reasoning. Through these mechanisms, habits of mind are hypothesized to facilitate mathematical creative thinking by supporting cognitive flexibility, encouraging exploration of alternative methods, and enabling students to persist in solving complex calculus problems. Thus, habits of mind do not merely coexist with mathematical creativity but actively shape the conditions under which creative mathematical thinking can emerge and be sustained.

Although a number of studies have examined the relationship between habits of mind and mathematical creative thinking across various mathematical topics and instructional contexts, such investigations remain limited within advanced and highly abstract domains. Previous research has predominantly focused on secondary school mathematics topics, such as trigonometry, or has been conducted within specific pedagogical interventions (Nurmeidina et al., 2022; Sumartini, 2022). In contrast, empirical studies that explore this relationship in the context of integral calculus at the university level are still scarce. This gap is significant, given that integral calculus places substantial cognitive demands on students and requires sustained thinking habits, abstraction, and strategic flexibility. Therefore, examining the relationship between habits of mind and mathematical creative thinking in this context provides empirical insight into their association within advanced mathematical learning environments such as integral calculus.

Based on the identified theoretical and empirical gaps, this study aims to investigate the relationship between habits of mind and mathematical creative thinking abilities of mathematics education students in an integral calculus course. Specifically, this study addresses the following research questions: (1) What are the profiles of habits of mind and mathematical creative thinking abilities among mathematics education students in integral calculus? (2) Is there a significant positive relationship between habits of mind and mathematical creative thinking abilities in this context? (3) To what extent do habits of mind explain variance in students' mathematical creative thinking performance in integral calculus?

The findings of this study are expected to contribute theoretically by clarifying the role of habits of mind as a psychological construct supporting creative thinking in advanced mathematics. Practically, the results of this study are expected to serve as a foundation for lecturers in designing learning environments, mathematical tasks, and instructional strategies that deliberately foster students' habits of mind and mathematical creative thinking abilities in higher education.

Method

This study employed a correlational research design to examine the relationship between habits of mind and mathematical creative thinking abilities among 60 third-semester mathematics education students enrolled in an integral calculus course at a university in Riau, Indonesia, with all students included through intact group sampling. Participation was voluntary, informed consent was obtained, departmental permission was secured, and anonymity was ensured to meet ethical research standards. Data were collected using two instruments: a habits of mind questionnaire and a mathematical creative thinking ability test. The questionnaire consisted of 15 four-point Likert-scale items (from Strongly Agree to Strongly Disagree), developed based on established indicators relevant to mathematics learning, including metacognitive awareness, persistence, accuracy checking, flexible thinking, creativity, curiosity, and learning independence; it was content-validated by two mathematics education experts, piloted with 32 non-participant students, and demonstrated good reliability (Cronbach's alpha = 0.83) and acceptable item validity (coefficients ranging from 0.32 to 0.71). Mathematical creative thinking ability was assessed using three open-ended integral calculus problems representing fluency, flexibility, and originality, which were expert-validated, piloted with 32 students, and showed acceptable validity (average coefficient = 0.70) and moderate reliability (Cronbach's alpha = 0.49). Student responses were scored using an analytic rubric on a 0–4 scale for each indicator by a single rater to ensure scoring consistency. Data analysis involved descriptive statistics to summarize students' habits of mind and creative thinking abilities, with scores converted into percentages and categorized into five achievement levels, and inferential analysis using Spearman's rho correlation to examine the relationship between the two variables, following confirmation of a positive monotonic relationship, with all analyses conducted using SPSS software.

Results and Discussion

Results

The descriptive results of students' habits of mind and mathematical creative thinking abilities in the integral calculus course are summarized in Table 1. Students' scores on both variables were classified into five achievement categories, namely very good, good, moderate, poor, and not good, to provide an overall profile of students' dispositions and creative thinking performance.

Table 1. Distribution of Habits of Mind and Mathematical Creative Thinking Achievement

Category	Habits of Mind (n)	Habits of Mind (%)	Mathematical Creative Thinking (n)	Mathematical Creative Thinking (%)

Very good	4	6.67	5	8.33
Good	1	1.67	1	1.67
Moderate	23	38.33	15	25
Poor	17	28.33	19	31.67
Not good	15	25	20	33.33
Total	60	100	60	100

As presented in Table 1, the distribution of habits of mind scores indicates that most students were concentrated in the moderate to low categories. More than half of the students (53.33%) were classified in the poor and not good categories, while only a small proportion of students (8.34%) reached the good or very good levels. This distribution suggests that many mathematics education students had not yet developed strong habits of mind in the context of learning integral calculus.

A similar pattern was observed for students' mathematical creative thinking abilities. As shown in Table 1, the majority of students (65.00%) were categorized in the poor and not good levels, whereas only 10.00% of students demonstrated good or very good creative thinking performance. These results indicate that students' mathematical creative thinking ability in integral calculus was generally below the expected level, particularly in terms of generating flexible and original solutions.

To examine the relationship between habits of mind and mathematical creative thinking ability, Spearman's rho correlation analysis was conducted. The results of the correlation analysis are presented in Table 2.

Table 2. Calculation of Spearman's rho Correlation Coefficient

Correlations				
			Habits of Mind	Mathematical Creative Thinking Ability
Spearman's rho	Habits of Mind	Correlation Coefficient	1.000	.852**
		Sig. (2-tailed)	.	.000
		N	60	60
	Mathematical Creative Thinking Ability	Correlation Coefficient	.852**	1.000
		Sig. (2-tailed)	.000	.
		N	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 2, there was a statistically significant positive correlation between habits of mind and mathematical creative thinking ability ($\rho = 0.852$, $p < 0.05$). Based on commonly used criteria for interpreting correlation coefficients, this relationship can be classified as very strong. This finding indicates that students with higher levels of habits of mind tended to demonstrate higher levels of mathematical creative thinking ability in the integral calculus course.

Discussion

The findings of this study indicate that a substantial proportion of mathematics education students demonstrated habits of mind and mathematical creative thinking abilities that remain below the expected level in the context of integral calculus. More than half of the students were classified in the poor and not good categories for habits of mind, and a similar pattern was observed for mathematical creative thinking ability. These results suggest that students encountered considerable difficulty in engaging productively with the cognitive demands of integral calculus, which requires sustained reasoning, strategic flexibility, and reflective thinking. In this context, students' challenges are not merely attributable to conceptual or procedural limitations, but are also related to how they regulate, sustain, and direct their thinking when confronted with complex and non-routine mathematical problems.

The predominance of low habits of mind scores suggests that many students may not yet perceive challenging calculus tasks as opportunities for exploration and sense-making. Instead, they may approach such tasks with limited persistence, low confidence, and a reliance on familiar procedures. Previous studies describe students with well-developed habits of mind as individuals who demonstrate strong commitment to learning, continuously evaluate their thinking, and strive to improve their performance (Nuurjannah et al., 2018). In contrast, the findings of the present study indicate that many students in integral calculus have not yet exhibited these characteristics, as reflected in the predominance of low habits of mind scores. This gap suggests that students may struggle to sustain reflective engagement and productive persistence when facing cognitively demanding calculus tasks. In the calculus context, where students must coordinate abstract representations and multiple integration techniques, insufficient development of these dispositions can hinder meaningful engagement and deeper mathematical reasoning.

A comparable pattern was found for mathematical creative thinking ability, with most students demonstrating limited fluency, flexibility, and originality in solving integral calculus problems. This finding aligns with previous research reporting that students often struggle to move beyond routine solution strategies and tend to rely on memorized formulas when faced with non-routine tasks (Mardhiyah & Purwaningrum, 2021; Widyastuti & Putri, 2018; Safaria & Sangila, 2018; Anggraini & Zulkardi, 2020; Kadir, Machmud, Usman, & Katili, 2022). However, the present study extends these findings by situating them within integral calculus at the university level, a domain characterized by high levels of abstraction and cognitive demand. The results suggest that without well-developed thinking dispositions, students are less likely to engage in the divergent and reflective processes required for creative mathematical thinking in advanced topics.

One of the most notable findings of this study is the very strong positive correlation between habits of mind and mathematical creative thinking ability. The correlation coefficient of 0.852 indicates a close association between the two constructs, suggesting that habits of mind may serve as a foundational psychological mechanism that supports the emergence of creative thinking in mathematics. Similar findings have been reported in previous studies, which found that habits of mind significantly contribute to students' creativity and higher-order thinking skills (Altakhyneh & Aburiash, 2018; Hodiyanto & Firdaus, 2020). From a cognitive perspective, habits of mind such as persistence, metacognitive awareness, and flexible thinking enable

students to remain engaged with complex problems, monitor their reasoning, and explore alternative solution strategies—processes that are central to mathematical creative thinking.

At the same time, the exceptionally high correlation observed in this study warrants careful interpretation. As noted by Adalberon (2025), the concept of habits of mind has been used in educational research with varying conceptual boundaries and is often closely related to constructs such as creativity and open-mindedness. This conceptual closeness may partially explain the strength of the observed relationship, particularly because both habits of mind and mathematical creative thinking involve flexibility, reflection, and adaptive reasoning. Rather than undermining the findings, this interpretation highlights the importance of understanding habits of mind as a dispositional foundation that supports creative thinking, while also pointing to the need for future research to more clearly distinguish and examine the intersections between these constructs.

The coefficient of determination further indicates that while habits of mind account for a substantial proportion of variance in students' mathematical creative thinking ability, a meaningful proportion remains unexplained. This finding suggests that mathematical creative thinking is influenced by multiple interacting factors beyond habits of mind alone. Previous studies have identified variables such as self-regulated learning, prior knowledge, and motivational factors as important contributors to higher-order thinking and creativity in mathematics (Hodiyanto & Firdaus, 2020). In the context of integral calculus, students' prior exposure to non-routine problems, their familiarity with multiple integration techniques, and their instructional history may also play a critical role in shaping creative thinking outcomes.

From this perspective, the strong association between habits of mind and mathematical creative thinking carries important implications for the teaching and learning of integral calculus. Deliberately fostering habits of mind in calculus instruction requires moving beyond an exclusive focus on procedural mastery toward learning environments that support persistence, strategic flexibility, and reflective thinking. Lecturers can promote these dispositions by presenting non-routine integration problems, encouraging students to explore and compare multiple solution strategies, and facilitating discussion and justification of different approaches. Such instructional practices provide opportunities for students to develop the metacognitive and dispositional foundations necessary for creative engagement with mathematical ideas. As previous studies have emphasized, creativity in mathematics does not emerge spontaneously but develops through sustained cognitive habits that are intentionally nurtured through instructional design (Kadir et al., 2022; Nuurjannah et al., 2018).

Despite its contributions, this study has several limitations. The correlational design does not permit causal inferences regarding the influence of habits of mind on mathematical creative thinking ability. In addition, the study was conducted within a single institutional context with a relatively limited sample size. Future research could employ longitudinal or experimental designs to examine how instructional interventions explicitly targeting habits of mind influence the development of students' creative thinking over time. Qualitative analyses of students' solution processes may also provide deeper insight into how habits of mind manifest during creative problem solving in advanced mathematical domains such as integral calculus.

Conclusion

This study provides robust empirical evidence that, within the cognitively demanding context of integral calculus, students' mathematical creative thinking is deeply intertwined with the development of habits of mind. The findings indicate that creative thinking in advanced mathematics is not merely a function of cognitive ability or procedural knowledge, but is strongly associated with trainable thinking dispositions such as persistence, metacognitive awareness, flexibility, and reflective engagement. In this sense, habits of mind function as a foundational psychological infrastructure that supports students' capacity to engage creatively with complex mathematical ideas. These results underscore the need for a pedagogical shift in advanced mathematics education, particularly in calculus instruction. Rather than focusing predominantly on the transmission of techniques and procedural fluency, calculus learning environments should be intentionally designed to cultivate students' habits of mind alongside conceptual understanding. By embedding non-routine problems, encouraging multiple solution strategies, and promoting reflection and justification, educators can foster the dispositions that enable creative mathematical thinking to emerge and be sustained. Ultimately, this study highlights that developing creative thinkers in mathematics requires not only strengthening what students know but also deliberately nurturing how they think.

Acknowledgments

The author would like to thank the various parties who have helped in carrying out the research and completing this article. Thank you to FKIP Riau University for providing financial assistance so that this research can be carried out and completed correctly. Thanks also to LPPM Riau University as an institution that supports both morally and materially the implementation of research by Riau University lecturers. Thanks also to fellow Riau University lecturers who have helped complete and evaluate the habits of mind questionnaire instrument and the mathematical creative thinking ability test. Furthermore, my gratitude goes to the students of Riau University who were involved as participants in this study. Finally, the author is grateful to various parties supporting and engaging in researching the relationship between habits of mind and mathematical creative thinking skills of mathematics education students.

Authors' Note

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

References

Adalberon, E. Y. (2025). Habits of mind as an ambiguous concept in educational research. *Cogent Education, 12*(1), 1–13. https://doi.org/10.1080/2331186X.2025.2520519

Altakhyneh, B., & Aburiash, H. (2018). Impact of habits of mind in mathematical creative thinking at Amman schools. *An-Najah University Journal for Research – B (Humanities), 32*(2), 417–438. https://doi.org/10.35552/0247-032-002-008

Anggraini, E., & Zulkardi. (2020). Kemampuan berpikir kreatif siswa dalam mem-posing masalah menggunakan pendekatan Pendidikan Matematika Realistik Indonesia. *Jurnal Elemen, 6*(2), 167–182. https://doi.org/10.29408/jel.v6i2.1857

Ariawan, R., & Nufus, H. (2017). Profil kemampuan koneksi matematis mahasiswa dalam menyelesaikan masalah pada mata kuliah Kalkulus I ditinjau berdasarkan gaya kognitif. *Suska Journal of Mathematics Education, 3*(2), 102–111. https://doi.org/10.24014/sjme.v3i2.4036

Aulia, M., Siswono, T. Y. E., & Harini, N. V. (2025). The creative thinking ability of MTs students in solving one-variable linear inequality problems viewed from mathematics anxiety. *Journal of the Indonesian Mathematics Education Society, 3*(1), 44–56. https://doi.org/10.26740/jimes.v3n1.p44-56

Fineldi, R. J., & Hidayati, K. (2023). Students' difficulties in mathematical creative thinking skill questions based on habits of mind. *Jurnal Riset Pendidikan Matematika, 10*(1), 16–29. https://doi.org/10.21831/jrpm.v10i1.60001

Genç, M., Akıncı, M., Karataş, İ., Çolakoğlu, Ö. M., & Tığlı, N. Y. (2025). From thinking to creativity: The interplay of mathematical thinking perceptions, mathematical communication dispositions, and creative thinking dispositions. *Behavioral Sciences, 15*(10), Article 1346. https://doi.org/10.3390/bs15101346

Ginting, S. S. B., Armanto, D., Amry, Z., Dewi, I., & Napitupulu, E. (2025). Factors affecting mathematical creative thinking ability: A systematic review and multidimensional perspective. *JEP (Jurnal Eksakta Pendidikan), 9*(1), 18–33. https://doi.org/10.24036/jep/vol9-iss1/949

Hamid, A., Upu, H., & Jafaruddin. (2025). Mathematical creative thinking process analysis based on student learning style. *International Journal of Education, Vocational and Social Science, 4*(1), 340–371. https://doi.org/10.63922/ijevss.v4i01.1595

Hodiyanto, H., & Firdaus, M. (2020). Self-regulated learning, habits of mind, and creativity as higher-order thinking skills predictors. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika, 9*(1), 21–30. https://doi.org/10.24127/ajpm.v9i1.2589

Huljannah, M., Sa'dijah, C., & Qohar, A. (2018). Profil berpikir kreatif matematis mahasiswa pendidikan guru sekolah dasar. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan, 3*(11), 1428–1433. https://doi.org/10.17977/jptpp.v3i11.11730

Ibrahim, Khalil, I. A., & Prahmana, R. C. I. (2024). Mathematics learning orientation: Mathematical creative thinking ability or creative disposition? *Journal on Mathematics Education, 15*(1), 253–276. https://doi.org/10.22342/jme.v15i1.pp253-276

Indrapangastuti, D., Rokhmaniyah, & Wahyudi. (2025). Exploring students' mathematical creative thinking in the context of social arithmetic. *Al-Ishlah: Jurnal Pendidikan, 17*(1), 221–229. https://doi.org/10.35445/alishlah.v17i1.5980

Kadir, I. A., Machmud, T., Usman, K., & Katili, N. (2022). Analisis kemampuan berpikir kreatif matematis siswa pada materi segitiga. *Jambura Journal of Mathematics Education, 3*(2), 128–138. https://doi.org/10.34312/jmathedu.v3i2.16388

Mardhiyah, U., & Purwaningrum, J. P. (2021). Menumbuhkan kemampuan berpikir kreatif matematis dan self-confidence siswa melalui model pembelajaran resource-based learning. *AKSIOMA: Jurnal Matematika dan Pendidikan Matematika, 12*(3), 330–337. https://doi.org/10.26877/aks.v12i3.7668

Masiah, & Adawiyah, S. R. (2018). Pengembangan worksheet berorientasi guided inquiry untuk membentuk dan melatih habits of mind mahasiswa. *Prisma Sains: Jurnal Pengkajian Ilmu dan Pembelajaran Matematika dan IPA IKIP Mataram, 6*(2), 120–127. https://doi.org/10.33394/j-ps.v6i2.1078

Newton, D., Wang, Y. (L.), & Newton, L. (2022). Allowing them to dream: Fostering creativity in mathematics undergraduates. *Journal of Further and Higher Education, 46*(10), 1334–1346. https://doi.org/10.1080/0309877X.2022.2075719

Nurmala, N., Rohaeti, E. E., & Sariningsih, R. (2019). Pengaruh habits of mind terhadap pemecahan masalah matematik siswa SMP. *Journal on Education, 1*(2), 163–168. https://doi.org/10.31004/joe.v1i2.41

Nurmeidina, R., Ariyanti, I., & Lestari, F. (2022). Analisis kemampuan berpikir kreatif dan habits of mind siswa SMA pada pembelajaran daring. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika, 11*(1), 144–158. https://doi.org/10.24127/ajpm.v11i1.4283

Nuurjannah, P. E. I., Hendriana, H., & Fitrianna, A. Y. (2018). Faktor mathematical habits of mind dan kemampuan literasi matematis siswa SMP. *Jurnal Mercumatika: Jurnal Penelitian Matematika dan Pendidikan Matematika, 2*(2), 51–58. https://doi.org/10.26486/jm.v2i2.423

Ramlah, R., & Maya, R. (2018). Implementasi pendekatan problem solving dalam pencapaian kemampuan berpikir kreatif matematis serta habits of mind siswa MTs. *Jurnal Penelitian dan Pembelajaran Matematika, 11*(1), 127–138. https://doi.org/10.30870/jppm.v11i1.2991

Rohman, Syaifudin, & Astiswijaya, N. (2021). Kemampuan pemahaman konsep pada pembelajaran matematika menggunakan metode penemuan terbimbing di SMA Negeri 14 Palembang. *Jurnal Penelitian Pendidikan Matematika, 5*(2), 165–173. https://doi.org/10.32502/jp2m.v5i2.4333

Safaria, S. A., & Sangila, M. S. (2018). Kemampuan berpikir kreatif matematis siswa SMP Negeri 9 Kendari pada materi bangun datar. *Jurnal Al-Ta'dib, 11*(2), 73–90. https://doi.org/10.31332/atdb.v0i0.986

Sarassanti, Y., & Mutazam. (2019). Analisis kemampuan berpikir kreatif matematis mahasiswa PGSD pada materi bangun ruang di STKIP Melawi. *Jurnal Pendidikan Dasar, 7*(2), 133–139. https://doi.org/10.46368/jpd.v7i2.168

Sari, A. N., Wahyuni, R., & Rosmaiyadi, R. (2016). Penerapan pendekatan open-ended untuk meningkatkan kemampuan berpikir kritis siswa pada materi aljabar kelas VIII SMP Negeri 10 Pemangkat. *JPMI (Jurnal Pendidikan Matematika Indonesia), 1*(1), 20–24. https://doi.org/10.26737/jpmi.v1i1.78

Sheromova, T. S., Khuziakhmetov, A. N., Kazinets, V. A., Sizova, Z. M., Buslaev, S. I., & Borodianskaia, E. A. (2020). Learning styles and development of cognitive skills in mathematics learning. *Eurasia Journal of Mathematics, Science and Technology Education, 16*(11), Article em1905. https://doi.org/10.29333/ejmste/8538

Sipahi, Y., & Bahar, A. K. (2025). Mathematical creativity: A systematic review of definitions, frameworks, and assessment practices. *Education Sciences, 15*(10), Article 1348. https://doi.org/10.3390/educsci15101348

Siregar, R. M. R., & Dewi, I. (2022). Peran matematika dalam kehidupan sosial masyarakat. *Scaffolding: Jurnal Pendidikan Islam dan Multikulturalisme, 4*(3), 77–89. https://doi.org/10.37680/scaffolding.v4i3.1888

Solfitri, T., & Siregar, H. M. (2021). Developing integration techniques modules to improve mathematical creative thinking ability in integral calculus. *Jurnal PAJAR (Pendidikan dan Pengajaran), 5*(2), 296–305. https://doi.org/10.33578/pjr.v5i2.8221

Solfitri, T., Siregar, H. M., Kartini, & Permata, A. (2024). Facilitating mathematical creative thinking ability: Analysis of validation, practicality, and effectiveness of learning modules. *Jurnal Pendidikan Progresif, 14*(1), 619–634. https://doi.org/10.23960/jpp.v14.i1.202445

Sumartini, T. S. (2022). Pengaruh habit of mind terhadap kemampuan berpikir kreatif matematis melalui metode pembelajaran IMPROVE. *Mosharafa: Jurnal Pendidikan Matematika, 11*(1), 167–178. https://doi.org/10.31980/mosharafa.v11i1.1253

Widyastuti, W., & Putri, R. (2018). Kemampuan berpikir kreatif siswa pada pembelajaran operasi pecahan menggunakan pendekatan open-ended. *Jurnal Pendidikan Matematika, 12*(2), 13–22. https://doi.org/10.21831/pg.v13i1.21167