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Analysis Of Numeracy Literacy in Developing Students' Mathematical Creativity in Elementary School

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Abstract

Background - Numeracy literacy plays a crucial role in developing students' mathematical creativity in elementary school. However, students' numeracy skills remain relatively low and require focused attention in the learning process.

Method/approach - This study aims to analyze the role of numeracy literacy in enhancing the mathematical creativity of elementary school students. A descriptive qualitative approach was employed, involving upper-grade elementary school students and teachers as research subjects. Data were collected through observation, interviews, and documentation, and analyzed through data reduction, data display, and conclusion drawing.

Findings - The results show that numeracy literacy—which includes the ability to understand, interpret, and apply mathematics in real-life contexts—significantly contributes to fostering students' creative mathematical thinking. Students' mathematical creativity is reflected in their ability to generate alternative solutions, develop problem-solving strategies, and express ideas logically.

Conclusions - The study concludes that numeracy literacy not only strengthens conceptual understanding of mathematics but also serves as a medium to cultivate students' creative thinking.

Novelty/Originality/Value -The novelty of this research lies in its focused analysis of the relationship between numeracy literacy and mathematical creativity in the context of elementary education, an area that has been relatively underexplored in previous studies.

Keywords: Numeracy literacy, mathematical creativity, problem-solving, elementary school

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INTRODUCTION

Mathematics plays a crucial role in developing students' logical and creative thinking skills. However, many students still struggle to gain a deep understanding of mathematical concepts. One of the key factors influencing this understanding is numeracy literacy. Numeracy literacy is not limited to basic arithmetic skills; it also encompasses the ability to use numbers and data to solve real-world problems. Its scope extends beyond understanding and using numbers, as it also involves analytical thinking skills necessary for addressing everyday challenges. Literacy proficiency is not only about reading and writing but also about wisely utilizing and interpreting information (Rakan et al., 2024).

Numeracy literacy includes knowledge and skills related to using numbers and symbols to find solutions to daily life problems, analyzing information in various forms, interpreting analytical results, and making predictions and decisions based on analyzed data (Dewida et al., 2023). Indonesia continues to rank low in numeracy literacy compared to neighboring countries, as reflected in the 2018 PISA assessment, where Indonesian students ranked 73rd out of 79 participants, with a score of 379. Ideally, numeracy literacy should enhance students' critical and logical thinking skills in understanding mathematical concepts while also fostering creativity in mathematics learning. In line with research conducted by Salsabila et al. (2023), there is a significant correlation between numeracy literacy and the creative thinking abilities of junior high school students in the Curug district.

One of the primary objectives of teaching numeracy literacy is to equip students with logical thinking skills and a deep understanding of mathematical concepts. However, several studies indicate that there is still a gap between numeracy literacy proficiency and its application in developing students' mathematical creativity. At the elementary school level, children often focus solely on mechanical problem-solving without adequate opportunities to enhance their creative thinking skills in mathematics. Based on a study conducted by X involving 110 elementary school students in Malang City, it was found that most students tended to solve problems in a routine manner without adequately developing their creative thinking skills. (Yayuk et al., 2020)

Mathematics helps us understand various aspects of the world around us. In everyday life, mathematics is present everywhere, from time calculations and financial transactions to natural patterns. The application of numeracy includes the ability to implement mathematical concepts and principles in real-life situations (Jannah et al., 2022). Key aspects of numeracy literacy analysis include an understanding of fundamental mathematical concepts. This aspect focuses on students' ability to comprehend basic mathematical concepts such as fraction operations and measurements (subtraction, addition, and division). Numeracy also involves skills such as performing basic arithmetic operations, comparing numerical values, basic logical reasoning, and quantitative reasoning (Mesfin et al., 2024). Problem-solving extends beyond routine mathematical exercises to finding solutions for real-life contextual problems that require reasoning (Iswara et al., 2023).

Another important aspect is understanding and using numerical representations such as tables, diagrams, graphs, or other visual forms. Students should be able to apply mathematical concepts in real-life situations, such as calculating money, measuring time, and determining volume in daily contexts. Additionally, numeracy literacy fosters reflective thinking, the ability to generate multiple solutions to mathematical problems, and original thinking. Students should be able to develop alternative solutions beyond the methods taught by their teachers by utilizing creative and flexible thinking. Those with early literacy skills are more adept at employing strategies beyond basic numeracy skills to effectively solve mathematical problems (Isabelle Chang, 2023).

In practice, numeracy literacy is influenced by both internal and external factors. According to a study conducted by Pardede (2024), there are two main types of factors that affect students' numeracy literacy skills: internal and external. Internal factors include low reading ability, poor conceptual understanding, and limited interest in reading. On the other hand, external factors involve parental guidance, teacher competence, and the availability of facilities and infrastructure. Another external factor is the play environment. A study conducted by Wartani

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et al., (2023) revealed that the arrangement of the play environment and learning resources has an influence on early childhood numeracy literacy skills, with an R-Square value of 0.797. According to Sari et al., (2023), other contributing factors include the large volume of material students are required to master and the limited time allocated for classroom learning. Another external factor is that parents are still not actively involved in assisting their children with homework at home.

Numeracy literacy assessment is conducted by evaluating students' ability to formulate problems and find solutions (Jannah et al., 2022). In addition to analyzing numeracy literacy levels, this study also explores the relationship between numeracy literacy and mathematical creativity. The extent of students' mathematical creativity can be observed through their divergent thinking. Divergent thinking in mathematics refers to the ability to generate multiple solutions and different strategies for solving a problem. To measure the extent of students' mathematical creativity, the variation in strategies they use in problem-solving can be analyzed.

This research is based on several theories and previous studies on numeracy literacy and mathematical creativity in elementary education. According to the OECD (2013), numeracy literacy is defined as the ability to engage in quantitative thinking necessary for full participation in society. Haylock (1997) describes mathematical creativity as the ability to identify, generalize, and formulate new approaches to solving mathematical problems. Creativity can be understood as the ability to create, arrange, or develop something new that makes it more engaging and innovative. A key factor in achieving learning outcomes is fostering open thinking and encouraging students' creativity (Panagiotis et al., 2021). Mathematical creativity can be developed through numeracy literacy, which serves as a foundation for nurturing and enhancing mathematical creativity. Strengthening mathematical creativity can be achieved by practicing problem-solving skills (Y. Salsabila et al., 2023).

On the other hand, students' creative thinking skills are also influenced by several external factors, including communication patterns, laziness, lack of motivation, limited freedom to think, insufficient understanding of the material, and lack of parental attention (Pertiwi et al., 2023). This is further supported by a study conducted by Saidah & Dwijanto, (2020), which found that external factors are influenced by the students' learning environment. Mathematics is one of the subjects that encourages students to develop their creative thinking skills.

Previous studies have found a correlation between numeracy literacy and students' learning outcomes. When students understand and can effectively implement skills in managing numbers and symbols, their mathematics learning outcomes tend to improve. Additionally, numeracy literacy enhances problem-solving abilities related to tables, symbols, and numbers in real-life contexts. Unlike previous research, this study focuses on analyzing numeracy literacy in fostering and developing mathematical creativity at the elementary school level.

This study aims to analyze how numeracy literacy supports the development of mathematical creativity at the elementary school level, with a focus on students' ability to generate multiple solutions to mathematical problems and their level of creativity and innovation in finding alternative solutions beyond the methods taught by teachers, using creative and flexible thinking. This research is expected to contribute to improving the quality of education by highlighting the connection between numeracy literacy and students' creativity.

METHODS

This study employs a qualitative approach. Qualitative research is a method used to examine phenomena in their natural settings, where the researcher serves as the primary instrument. The study begins with data collection, utilizing existing theories as a foundation to explain findings, and ultimately generating a qualitative research theory. This approach is appropriate as it analyzes phenomena related to the research variables, formulates research problems, and develops research instruments. According to Assyakurrohim et al. (2022), qualitative research relies on narratives or verbal descriptions to explain and interpret the meaning of various phenomena, events, and social situations.

The study was conducted at SD Muhammadiyah 1 Surakarta, with research subjects

consisting of fourth-grade students (Class 4B) and their teacher. Data collection techniques included structured interviews and classroom observations. The interviews aimed to gather insights from the fourth-grade teacher regarding mathematics instruction, students' ability to utilize numeracy literacy in solving mathematical problems, and how numeracy literacy fosters mathematical creativity, particularly in generating multiple solutions to a given problem. Observations were conducted to analyze classroom mathematics instruction, students' application of numeracy literacy in problem-solving, and the extent to which numeracy literacy contributes to their creative mathematical thinking.

This study adopts a case study method. According to Assyakurrohim et al. (2022), a case study is an in-depth exploration of a bounded system or specific cases analyzed over time through comprehensive data collection, incorporating multiple rich sources of information within a particular context. The object of this research is the numeracy literacy of fourth-grade students in fostering mathematical creativity. The research subjects include fourth-grade students and their teacher at SD Muhammadiyah 1 Surakarta.

The validity of the data in this study is tested using a credibility test. To ensure data validity, this study employs method triangulation. Therefore, verification is necessary to minimize bias in the research, as data triangulation helps prevent the presence of bias predicted by positivist perspectives. The data validation technique used in this study applies source triangulation, as it assesses data credibility by comparing information from various sources and data collection techniques.

The data analysis technique used in this study includes data reduction, data display, and conclusion drawing. According to Miles and Huberman (1992), data analysis consists of three concurrent phases: (1) data reduction, (2) data display, and (3) conclusion drawing. Data reduction involves the process of selecting, focusing, simplifying, abstracting, and transforming the data obtained from the study. Data display is used to make reading the data easier and to help the researcher draw conclusions. Meanwhile, conclusion drawing is the final phase aimed at formulating findings based on the analysis of the data.

Data Reduction, the data collected from observation sheets, numeracy test results, and documentation were analyzed to filter out irrelevant information. The analysis focused on students' responses that reflected indicators of numeracy and mathematical creativity. Next, the data were grouped into categories aligned with the indicators of numeracy literacy and mathematical creativity. This categorization facilitated the measurement and interpretation of the data. Data Interpretation and Triangulation.

The results of the analysis from various sources (observations, tests, and documentation) were compared to draw valid conclusions. A triangulation process was carried out to strengthen the credibility of the findings. Data Conclusion and Presentation, the data were concluded in the form of narratives and tables that illustrated the relationship between students' numeracy literacy and mathematical creativity.

RESULTS AND DISCUSSION

The teacher implements an approach that focuses on conceptual understanding, active student engagement, and strengthening creativity and numeracy literacy. The approaches applied include Contextual Teaching and Learning (CTL), Game-Based and Group Learning, the Implementation of a Reward System to Increase Motivation, Differentiated Instruction, and Repetitive Learning for Concept Reinforcement.

Numeracy literacy is the ability to understand, interpret, and use numbers, data, and mathematical symbols in real-world contexts. To assess students' ability to apply numeracy literacy, an evaluation is conducted based on several indicators. The assessment is categorized into three levels: Good (3), Satisfactory (2), and Needs Guidance (1). The indicators for evaluating students' ability to use numeracy literacy in solving mathematical problems include

The first indicator is Application of Mathematics in Daily Life. This indicator measures how well students can connect mathematical concepts to real-life situations. There are several aspects under Indicator 1. The first aspect is Time Measurement. Based on observational data, the results

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showed that 17 students were in the "Good" category, 4 students were in the "Satisfactory" category, and 1 student was in the "Needs Guidance" category. From this data, the average score for students' ability to apply mathematics to daily life was 2.7.

The second aspect is Measuring Length, Area, Perimeter, and Volume. Based on the observational data, 14 students were categorized as "Good," 4 students as "Satisfactory," and 4 students as "Needs Guidance." From this data, the average score for the aspect of measuring length, area, perimeter, and volume was 2.5.

The second Indicator is Reflective and Analytical Thinking Skills. This indicator evaluates how students understand, analyze, and reflect on mathematical information. There are three aspects in this indicator. The first aspect is Identifying Problems. This aspect assesses students' ability to identify problems in mathematical questions, which is crucial as the initial step in problem-solving and the basis for selecting an approach. The observational results show that 11 students are in the "Good" category, 9 students are in the "Satisfactory" category, and 2 students are in the "Needs Guidance" category, with an average score of 2.4.

The second aspect is data analysis and conclusion drawing, which measures students' ability to analyze data and formulate conclusions. Observations reveal that 9 students are in the good category, 10 in the sufficient category, and 3 in the need's guidance category, with an average score of 2.3. The third aspect is reflection on problems, which assesses students' ability to review their thought processes and solutions, evaluate their effectiveness, and identify the most efficient method. The results show that 5 students are in the good category, 14 in the sufficient category, and 3 require guidance, with an average score of 2.1.

The third indicator is problem-solving ability in mathematics. Mathematical problem-solving skills include understanding the problem, planning a solution strategy, and evaluating the results. This indicator consists of three main aspects, which are: The first aspect is Problem Identification and Understanding. This aspect assesses how well students understand the problem, particularly word problems. The observational results show that the average student ability in this aspect is satisfactory (2.4). A total of 12 students are in the "Good" category, 7 in the "Satisfactory" category, and 3 in the "Needs Guidance" category. The second aspect is Planning the Solution Steps. Planning a solution strategy is important to avoid mistakes and improve efficiency. The research results show that 6 students are in the "Good" category, 13 students are in the "Satisfactory" category, and 3 students are in the "Needs Guidance" category. The third aspect is Creativity in Finding Solutions. Creativity in finding solutions refers to students' ability to discover various different ways to solve mathematical problems, using flexible approaches, and developing new methods that may not have been explicitly taught. The average student ability in this aspect is low (1.9). Only 1 student is in the "Good" category, 18 students are in the "Satisfactory" category, and 3 students are in the "Needs Guidance" category.

This study was conducted with the aim of exploring the application of numeracy literacy in fostering mathematical creativity in class 4B. There are two main indicators discussed in this paper: the ability to generate various solutions to a mathematical problem and the ability to find alternative solutions beyond the methods taught by the teacher, using creative and flexible thinking. To assess the extent of students' mathematical creativity, evaluations were carried out based on these two indicators: the ability to generate multiple solutions to a mathematical problem and the ability to find alternative solutions outside the methods taught by the teacher, employing creative and flexible thinking. The assessment was categorized into three levels: Good (3), Satisfactory (2), and Needs Guidance (1). The data showed that the majority of students performed at a satisfactory to good level, with some aspects still requiring guidance. Overall, students' mathematical creativity was categorized as satisfactory, with some aspects indicating a lower level of understanding.

The first indicator is the ability to generate multiple solutions. There are two aspects in this indicator. The first aspect is the number of solutions provided. The majority of students (21 children) fall into the satisfactory category, with one student needing guidance. The second aspect is Thinking Flexibility. Most students (15 children) are in the satisfactory category, 4 children are in the good category, and 3 children need guidance. The majority still tend to useless effective methods and require guidance in determining the best approach.

The second indicator is divergent thinking ability in solving mathematical problems. Only 2 students fall into the good category, demonstrating the ability to use methods different from those taught by the teacher. Most students (17) are in the sufficient category, while 3 require guidance as they rely entirely on teacher-instructed methods. The first aspect is originality of ideas, where most students (20) are in the sufficient category, 2 are in the good category, and none require guidance. The second aspect is understanding and explaining methods, where 11 students are in the sufficient category, 5 in the good category, and 6 require guidance. Students in the good category can logically and structurally explain their solutions, whereas those in the needs guidance category struggle to articulate their thought processes.

Mathematics Learning at SD Muhammadiyah 1 Surakarta

Examining the results of interviews with respondents, a general description of the research findings related to mathematics learning in Grade 4 at SD Muhammadiyah 1 Surakarta has been presented. The findings from interviews and observations indicate that mathematics instruction in Class 4B is designed to align with students' needs and characteristics. The teacher implements an approach that emphasizes conceptual understanding, active student engagement, and the reinforcement of creativity and numeracy literacy. The approaches applied include Contextual Teaching and Learning (CTL), Game-Based and Group Learning, the Implementation of a Reward System to Increase Motivation, Differentiated Instruction, and Repetitive Learning for Concept Reinforcement.

Contextual Teaching and Learning is an approach that integrates mathematical concepts into everyday life. The objective of this approach is to enhance students' understanding by connecting the material with real-life experiences, increasing their engagement by making lessons more relevant, and fostering critical thinking and problem-solving skills through the application of mathematical concepts in real contexts. The use of contextual approaches also positively impacts student learning outcomes, aligning with research conducted by Asdarina & Ridha (2020), which found that contextual learning strategies influence students' mathematics performance. An example of its implementation in the classroom is when the teacher introduces the concept of weight measurement. If a student is confused about the function of kilograms, the teacher may ask, "If you go to the market to buy fruit, have you ever heard someone buy grapes in meters?" The student typically responds, "No, ma'am, usually in kilograms." The teacher then explains that kilograms are used to measure weight, whereas meters measure length. The selection of an instructional model plays a crucial role, as the model used can significantly influence students' interest in learning and ultimately affect their academic achievement (Sapitri & Sukirman, 2023). This method not only explains the theoretical concept of kilograms and grams but also relates it to daily activities, helping students understand that each unit has its specific function and making mathematical concepts feel less abstract. Contextual strategies have been shown to have a greater impact on conceptual understanding in mathematics compared to conventional strategies (Rahayu et al., 2023).

Game-Based and Group Learning is implemented as a teaching approach because teachers recognize that students quickly become bored if lessons are delivered through lectures or writing exercises alone. This method is used to maintain students' motivation and engagement in mathematics learning. This aligns with research by Sodikin et al. (2024), which emphasizes the importance of using interactive and engaging approaches to facilitate the understanding of complex mathematical concepts. One example of classroom implementation is forming student groups, assigning each group a problem to discuss, and having them present their findings to the class. The use of collaborative learning models has been shown to improve students' problem-solving abilities, as it encourages analysis, synthesis, and critical thinking in addressing mathematical challenges (Rahma et al., 2024).

Differentiated instruction is an approach that adjusts to students' abilities, recognizing that not all students in a class have the same cognitive capacities. Differentiated learning is a teaching method tailored to the diverse needs of students, considering their readiness, learning profiles, and interests to create a more effective and goal-oriented learning process (Maulidiawati & Darmawan, 2024). Students who grasp material quickly are given additional challenges and

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encouraged to explore alternative problem-solving methods. Conversely, students who struggle with the material receive more intensive guidance, with explanations presented in simpler terms to enhance comprehension. This approach aligns with findings by Kurniawan et al. (2025), which suggest that differentiated instruction effectively improves learning outcomes and increases students' interest in the learning process.

The implementation of a reward system is used to enhance students' motivation. Rewards serve as a tool to encourage active learning (Putri et al., 2025). Beyond motivation, a reward system fosters a sense of competition in achieving points or grades, thereby motivating students to study more diligently and creating a healthy competitive classroom environment. This system is applied by having the teacher pose a question, and the student who answers correctly and the fastest receives a reward in the form of points. This practice is supported by research conducted by Putu et al. (2024), which found that the use of rewards can be an effective method for creating a positive learning environment that supports children's holistic development, making it a potential model for adoption in early childhood education across various settings.

Students' Ability in Utilizing Numeracy Literacy

After analyzing the data from interviews with the classroom teacher and observations during lessons involving both the teacher and students in Class 4B, the following findings can be presented. Students demonstrated a good understanding of connecting mathematical concepts to daily activities. Numeracy literacy includes the ability to apply mathematical concepts in real-life situations, utilize various problem-solving approaches, and relate to non-mathematical factors (Fauzanah et al., 2022). In the aspect of measuring time, most students were able to comprehend and apply the concept effectively, with an average score of 2.7. Meanwhile, in the aspect of measuring length, area, perimeter, and volume, the average score was 2.5, indicating that some students still face difficulties and require further guidance. Students' ability to grasp basic measurement concepts is relatively good, particularly because these concepts are frequently applied in daily life. However, their understanding of measuring length, area, perimeter, and volume needs to be further enhanced through more contextual and concrete teaching methods to facilitate easier comprehension of its applications.

Students' reflective and analytical thinking skills remain varied. In numeracy literacy, analytical thinking is a crucial aspect. According to Kurniawati et al. (2024), reflective thinking has become a significant focus in mathematics education. In the aspect of identifying key problems, students achieved an average score of 2.4, with some still struggling to carefully read and interpret problems. In the aspect of analyzing data and drawing conclusions, the average score of 2.3 indicates that many students can comprehend data but still struggle to draw appropriate conclusions. Meanwhile, in the aspect of reflecting on problems, the average score of 2.1 suggests that only a few students can effectively evaluate their problem-solving steps. The reflective and analytical thinking skills of students still need improvement, as many of them focus on numerical values in problems without understanding the overall context. Reflective thinking allows individuals to assess their confidence in the problem-solving steps they have taken (Hadimu et al., 2020). This suggests that students require more practice in critically reading problems and independently evaluating their problem-solving processes.

In solving mathematical problems or problem-solving tasks, students exhibit a moderate level of understanding but still face several challenges. In the aspect of identifying and understanding problems, the average score of 2.4 suggests that most students grasp the steps involved in problem-solving but struggle to plan their approach systematically. According to Yunarti et al. (2024), problem-solving is a critical aspect of mathematical comprehension, and the strategies employed significantly influence students' ability to tackle mathematical challenges. In the aspect of planning a solution strategy, the average score of 2.3 indicates that many students remain uncertain about determining the appropriate problem-solving approach.

Meanwhile, the aspect of creativity in finding solutions received the lowest average score of 1.9, highlighting that most students rely solely on teacher-taught methods without attempting alternative approaches. Creativity in students is the ability to interact between attitudes, processes, and environments to generate ideas or solutions that are considered novel and

valuable in their social context (Purwanto, 2021). Students' problem-solving abilities still require development, particularly in fostering creativity in finding solutions. Problem-solving is expected to enhance students' thinking patterns, enabling them to analyze problems critically and devise effective solutions (Wahyu Ariyani & Prasetyo, 2021). Most students are not yet accustomed to adopting flexible problem-solving approaches and remain heavily reliant on teacher-led methods. This underscores the need for instructional strategies that encourage students to explore various solution methods, fostering greater independence and creativity in problem-solving.

The Implementation of Numeracy Literacy in Fostering Mathematical Creativity

Observations and interviews indicate that numeracy literacy is applied as a strategy to encourage students' creativity in solving mathematical problems. The teacher allows students the freedom to choose the problem-solving methods they find most suitable, without requiring them to use only the methods taught in class. This approach aims to train students to explore various problem-solving strategies based on their understanding. However, challenges arise in its implementation, particularly due to differences in students' levels of numeracy literacy. Students with strong numeracy literacy can grasp mathematical concepts more easily and explore different solution approaches. Conceptual understanding serves as the foundation for mathematical problem-solving (Apriyanti et al., 2023). Conversely, students who require additional guidance tend to struggle with basic concepts, limiting their creativity in problem-solving. This aligns with the findings of Sabilah & Nuh (2024), who stated that mathematical creative thinking skills play a crucial role in solving mathematical problems and are closely linked to numeracy literacy. Creative thinking is considered one of the factors that contributes to problem-solving ability. (Yudi Kristanto & Niko, 2021)

Regarding the ability to generate multiple solutions, most students still rely on a single approach taught by the teacher and are not accustomed to exploring alternatives. Among the 22 students observed, 21 fell into the sufficient category, while one required additional guidance. One strategy to enhance this skill is by providing exercises with multiple possible answers, encouraging students to think more flexibly. In terms of flexibility in thinking, most students can determine solution methods but tend to choose the ones they are most familiar with, without considering their efficiency. Observational data show that 15 students are in the sufficient category, 4 in the good category, and 3 require further guidance. According to Suswono, creative thinking in solving mathematical problems can be assessed through four components: fluency, flexibility, originality, and elaboration (Miatun & Nurafni, 2019). This suggests that additional guidance is needed to help students become more accustomed to selecting the most efficient methods for specific situations.

Divergent thinking in mathematical problem-solving remains a challenge. Only two students fell into the good category, demonstrating the ability to find new methods that had not been taught by the teacher. Seventeen students were categorized as sufficient, as they still relied on teacher-taught methods, though they were not entirely dependent on them. Finding a systematic approach to problem-solving is challenging for many students, particularly when faced with unfamiliar situations that differ from the examples provided by the teacher (Irfana et al., 2024). Meanwhile, three students required further guidance, as they lacked the initiative to explore alternative methods. The aspect of originality in ideas showed that most students (20) remained in the sufficient category, meaning they tended to imitate taught methods rather than attempt unique approaches. Mathematical creative thinking skills improve when students are engaged in problem-solving processes (Hendriana & Fadhilah, 2019). Only two students fell into the good category, demonstrating the ability to solve problems differently from their peers.

Regarding the understanding and explanation of methods, most students still struggle to articulate the steps they take to reach a solution. Analysis shows that 11 students are in the sufficient category, meaning they can apply problem-solving methods but struggle when asked to

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explain their reasoning verbally or in writing. Five students are in the good category, as they are capable of logically and structurally explaining their chosen methods and justifying their decisions. Meanwhile, six students require further guidance, as they merely follow examples without fully understanding the underlying logic.

Overall, this study highlights the significant role of numeracy literacy in fostering mathematical creativity. A strong conceptual understanding serves as the foundation for students to explore various problem-solving approaches. However, challenges remain in terms of flexibility in thinking and innovation in solution methods, particularly for students who require additional guidance in understanding fundamental concepts. Therefore, instructional strategies should emphasize the exploration of new methods, open-ended problem-solving, and reflective thinking exercises to enhance students' creativity and independence in mathematical problem-solving.

CONCLUSION

Based on the data analysis and research findings, it can be concluded that numeracy literacy is closely related to the development of elementary school students' mathematical creativity. Students' numeracy literacy is reflected in their ability to use symbols and numbers accurately, understand and apply mathematical concepts in real-life contexts, and draw logical conclusions from quantitative information. Meanwhile, students' mathematical creativity is demonstrated through the aspects of fluency (the ability to generate ideas), flexibility (the variety of strategies used), originality (the uniqueness of solutions), and elaboration (the development of ideas). The data show that students with strong numeracy skills are more capable of expressing ideas creatively when solving mathematical problems. Thus, numeracy literacy plays a significant role in encouraging and fostering students' mathematical creativity. This study also reveals that mathematics instruction in elementary schools has not yet fully provided enough space to develop both skills equally. Therefore, more integrative and contextual learning strategies are needed to support students in nurturing these essential competencies.

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