The Influence of Interest in Learning Mathematics on the Ability to Solve Numeracy Problems Reviewed from the Self-Efficacy of Fifth Grade Elementary School Students in Cluster 29, Saradan District, Madiun Regency

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Abstract

Numeracy skills are essential competencies that elementary students must master to develop logical, analytical, critical, creative, and collaborative thinking. However, observations at SDN Bandungan 01, Saradan District, revealed that 15 out of 25 fifth-grade students still struggled to solve numeracy problems. Low self-efficacy and interest in learning mathematics are suspected to be the main causes. This study aims to analyze the effect of students' interest in learning mathematics on their numeracy problem-solving abilities in terms of self-efficacy among fifth-grade students in Cluster 29, Saradan District, Madiun Regency. The research employs a Systematic Literature Review (SLR) with a quantitative correlational approach to identify relationships between variables. The literature review results indicate that learning interest and self-efficacy significantly influence students' numeracy abilities. Furthermore, self-efficacy also affects students' interest in learning and their numeracy problem-solving skills simultaneously.
Keywords: *Learning Interest, Numeracy Skills, Self-Efficacy*

Abstrak

Kemampuan numerasi merupakan keterampilan penting yang harus dikuasai siswa sekolah dasar untuk membentuk pola pikir logis, analitis, kritis, kreatif, dan kolaboratif. Namun, hasil observasi di SDN Bandungan 01 Kecamatan Saradan menunjukkan bahwa 15 dari 25 siswa kelas V masih mengalami kesulitan dalam menyelesaikan masalah numerasi. Rendahnya self-efficacy dan minat belajar matematika diduga menjadi penyebab utama. Penelitian ini bertujuan menganalisis pengaruh minat belajar matematika terhadap kemampuan pemecahan masalah numerasi ditinjau dari self-efficacy siswa kelas V SD se-Gugus 29 Kecamatan Saradan, Kabupaten Madiun. Metode yang digunakan adalah Systematic Literature Review (SLR) dengan pendekatan kuantitatif korelasional untuk mengidentifikasi hubungan antarvariabel. Hasil kajian literatur menunjukkan bahwa minat belajar dan self-efficacy berpengaruh signifikan terhadap kemampuan numerasi siswa. Selain itu, self-efficacy juga memengaruhi minat belajar dan kemampuan pemecahan masalah numerasi secara simultan.
Kata kunci: *Minat Belajar, Kemampuan Numerasi, Self Efikasi*

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INTRODUCTION

Numeracy is an important skill that students need to master at the elementary level. Numeracy is not only related to understanding basic mathematical concepts but also students' ability to solve everyday mathematical problems. This aims to provide students with logical, analytical, systematic, critical, and creative thinking skills, as well as the ability to work together (Minister of National Education Regulation Number 22, 2006). According to Pulungan (2022: 267), numeracy understanding is necessary in mathematics because it is not only related to formulas but also requires logical or critical thinking from students in answering each problem given. However, many students still experience difficulties in solving numeracy problems.

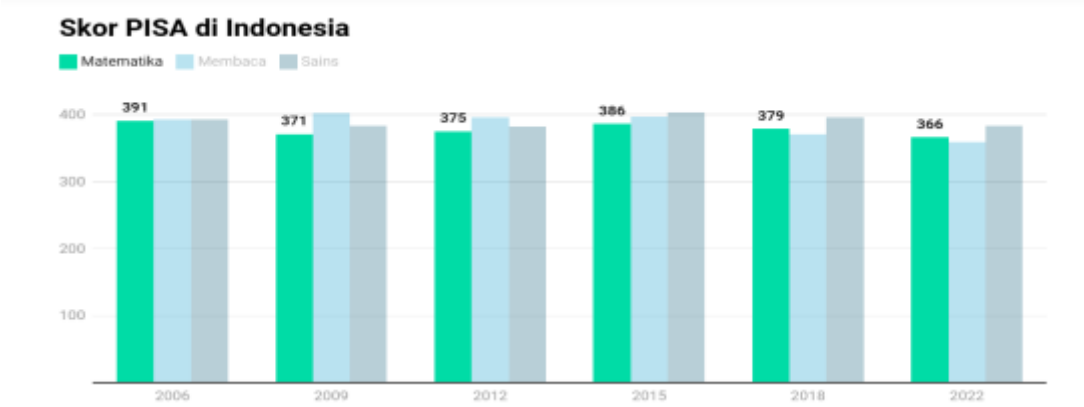

Figure 1. PISA scores for 2022 in the numeracy category

Based on the score results*Programme for International Student Assessment* The 2022 Indonesian National Student Assessment (PISA) showed that students' numeracy skills declined from 379 in 2018 to 366 in 2022, a 13-point decrease. Meanwhile, the government's target for the 2020-2024 National Medium-Term Development Plan (RPJMN) was 388, placing Indonesia 66th out of 81 countries. Therefore, it can be concluded that Indonesia's numeracy score is increasingly falling short of the government's target.

Various factors can influence elementary school students' numeracy, such as a low understanding of questions related to solving numeracy problems. This is due to students' low interest in learning mathematics. This low interest in mathematics learning is due to teachers rarely providing problems related to problem solving, which makes it difficult for students to solve problems that require critical thinking.

Apart from students' low interest in learning, students' level of self-confidence in solving problems also tends to be weak. This level of student self-confidence is also called self-efficacy. Anandari (2013) states that *self-efficacy* is a person's belief in their own abilities. According to Bandura (Hendriana et al., 2017), self-efficacy is a person's confidence in their abilities to perform various activities to achieve specified results. According to Alwilsol (Hendriana et al., 2017), self-efficacy is a person's view of whether something is good or bad, right or wrong, unable or able to be done according to the provisions.

In an educational context, student self-efficacy can influence how they approach and solve problems, including numeracy. Students with high self-efficacy tend to be more confident in solving math problems, while those with low self-efficacy may feel anxious and tend to avoid such problems. By developing self-confidence, students can achieve their desired learning outcomes.

Given the importance of student self-efficacy and learning interest, this study aims to examine the influence of these two factors on students' ability to solve numeracy problems at the elementary school level. Numeracy skills are tested annually in the Computer-Based Computer-Based Test (ANBK) from elementary school to high school. Furthermore, students' numeracy skills also determine the quality of their educational report cards.

Based on the results of observations made by researchers at SDN Bandungan 01 Saradan District, there are 15 out of 25 students in class V who still experience difficulties in solving numeracy problems. The researcher analyzed the student's self-efficacy and interest in learning mathematics is still lacking so it is necessary to take the right steps in numeracy learning. The average grade of elementary school students' numeracy quality report cards tends to be low, so it is necessary to take action to identify its influence in terms of learning interest and self-efficacy.

Based on the background that has been described, the author is interested in conducting research on the influence of interest in learning mathematics on the ability to solve numeracy problems viewed from the self-efficacy of fifth-grade elementary school students in cluster 29, Saradan District, Madiun Regency. The formulation of the problem in this research is as follows, 1) including whether there is an influence of interest in learning mathematics on the ability to solve numeracy problems of fifth-grade elementary school students in cluster 29, Saradan District, Madiun Regency? 2) There is a significant influence of interest in learning mathematics on the ability to solve numeracy problems viewed from the self-efficacy of fifth-grade elementary school students in cluster 29, Saradan District, Madiun Regency?

If the previous research of Rokhima & Pamungkas (2023) which examined the implementation of numeracy literacy in elementary schools, then this study aims to determine the influence of interest in learning mathematics on the ability to solve numeracy problems of fifth-grade elementary school students in cluster 29, Saradan District, Madiun Regency and to determine the significant influence of interest in learning mathematics on the ability to solve numeracy problems in terms of self-efficacy of fifth-grade elementary school students in cluster 29, Saradan District, Madiun Regency.

Some relevant previous studies include research by Aulia Yogi Septia et al. examined the influence of learning interest and critical thinking on numeracy literacy in fifth-grade elementary school students in Laweyan District. The results showed a joint influence between learning interest and critical thinking on numeracy literacy, with a significance value (2-tailed) of 0.000 < 0.005 for fifth-grade elementary school students in Laweyan District. Furthermore, an R-square value of 0.299 indicates a 29.9% effect of critical thinking on student numeracy literacy. The positive regression coefficient indicates that learning interest has a positive effect on numeracy literacy, so that increased learning interest will be followed by increased numeracy literacy. This is in line with Arjun Yoga Pratama's research (2023) entitled "The Influence of Self-Efficacy and Learning Motivation on Students' Mathematical Critical Thinking Skills." The results of this study indicate a significant joint influence of self-efficacy and learning motivation on mathematical critical thinking, with a contribution of 20.3%, with the remaining 79.7% being influenced by other factors.

Thematic synthesis was used to analyze the selected studies, allowing key themes and patterns to be identified across the literature (Gunawan et al., 2025; Sharma & Panja, 2025). Each article was reviewed to extract details such as the authors, year of publication, journal, methodology, and main findings regarding the role of local wisdom in digital learning. The results were presented both narratively and in tabular format to support clarity and comparison (Citariani et al., 2025).

METHOD

This study applied a Systematic Literature Review (SLR) approach to identify, evaluate, and synthesize scholarly articles related to the development and implementation of interactive e-modules that incorporate local wisdom in primary education. The SLR method was selected because of its structured, transparent, and replicable nature, making it well-suited for exploring the integration of cultural elements within digital learning environments (Sharma & Panja, 2025; Snyder, 2019). The research procedure was designed based on the guidelines developed by Kitchenham (2007), which include three main stages: planning, implementation, and reporting. This research was conducted in cluster 29 of Saradan District, Madiun Regency with research subjects of grade 5 of elementary school.

RESULTS AND DISCUSSION

In the initial stage of this study, the researchers selected research articles to find literature published in several scientific journals. This study involved analysing and summarising the findings from articles found in the Google Scholar, Sinta, Scopus, and DOAJ databases related to learning about Interest in Learning Mathematics on the Ability to Solve Numeracy Problems Reviewed from the Self-Efficacy . To begin the data search process, the researcher read the abstracts of each literature to evaluate their relevance to the research topic.

Students' ability to think and learn academically is greatly influenced by numeracy skills, which are a fundamental element in elementary education (Yonanta et al., 2024). Motivation and interest in learning not only impact numeracy mastery but also play a crucial role in developing pedagogical skills that prospective teacher students will apply when teaching at the elementary school level in the future (Aini et al., 2024; Rokhima & Pamungkas, 2023; Suciyati et al., 2022). Motivation and interest in learning are two key elements in educational psychology that play a significant role in determining the success and efficiency of the teaching and learning process (Almia, 2019). Although often used interchangeably, the two have distinct meanings and make unique contributions to an individual's learning experience (Endres et al., 2024; Maulani et al., 2022). Learning motivation refers to the internal or external drive that influences an individual to engage in learning activities and strive to achieve educational goals. Learning motivation can be influenced by various factors, including intrinsic motivation, which is the drive that comes from within a person to learn due to interest, personal satisfaction, or a sense of achievement (Dharma, 2020). In addition to motivation, learning interest plays a role in determining student engagement in the learning process (Radhiatul Ashaf et al., 2021).

Interest in learning is an individual's tendency to feel engaged and active in learning activities. This interest can be specific to a particular subject or topic and is influenced by various factors, one of which is the relevance of the material being studied. Furthermore, environmental influences, in this case external factors such as support from teachers, family, and friends, can also influence interest in learning. A supportive and stimulating environment often helps increase interest in learning.

Interest can be defined as a fascination or desire. Interest is a focused attention that involves emotional aspects, joy, tendencies, and an active and unconscious desire to obtain something from the surrounding environment (Muhammad Furqon, 2024). According to Rusydi Ananda and Fitri Hayati (2020), interest is a feeling of preference and attachment to something or an activity, without being told to do so. From the above opinion, it can be concluded that interest is a desire or feeling of preference for something or an activity that is focused and involves emotions, joy, and tendencies without any external factors or without being told to do so.

Interest when linked to learning then Interest in learning is usually related to a student's interest or desire to learn something that comes from within themselves without any external coercion or encouragement. According to Muhammad Furqon (2024),

interest in learning is an element that drives students to seek knowledge, which is rooted in their sense of interest, joy, and desire to gain knowledge. Interest in learning is one of the motivational elements that emerges as a result of the relationship and participation of students in carrying out learning activities (Ricardo & Meilani in Muhammad Furqon, 2024). Furthermore, according to Safari in Rusydi Ananda and Fitri Hayati (2020), interest in learning is a choice of pleasure in carrying out activities and can arouse a person's passion to fulfill their willingness to learn. Slameto in Nurlina Aryani, et al. (2022) states that the definition of interest in learning is a form of activeness of a person that encourages them to carry out a series of mental and physical activities to obtain a change in behavior as a result of individual experiences in interactions within their environment that involve cognitive, affective and psychomotor. Based on the opinions above, it can be concluded that interest in learning is an element that encourages students to enjoy studying and carrying out activities that arouse passion or interest in learning.

While interest and motivation to learn are distinct, they are interrelated. Motivation tends to focus on the reasons that drive a person to learn and the efforts made during the learning process. Interest relates to a person's sense of attraction and desire to engage in a particular subject or learning activity (Almia, 2019; Zulfiah et al., 2023). The relationship between motivation and interest is evident when a deep interest in a topic can lead to increased motivation to be more active in learning. Conversely, high motivation can also foster greater interest in a particular field.

Students' self-confidence in their abilities (self-efficacy) makes them more confident in facing assignments, thus positively impacting their ability to solve numeracy problems in the learning process. This shows that self-efficacy is an important aspect that students need to possess in learning. The greater the self-confidence (self-efficacy), the better a person's ability to solve numeracy problems. This statement is in line with the results of research by Kholivah et al. (2020), which shows a positive relationship between self-efficacy and the ability to solve numeracy problems. Self-efficacy plays a significant role for students, because their confidence in learning numeracy can influence their learning outcomes (Pratiwi et al., 2019). Self-efficacy plays a role in supporting students during the learning process and completing various tasks given during learning activities. In addition, the presence of self-efficacy also has a positive influence on students' understanding and mastery of numeracy concepts (Akuba et al., 2020). This positive relationship arises because a person's self-efficacy can encourage a persistent attitude when facing difficulties in solving problems. Therefore, the higher a person's self-efficacy, the greater their effort in solving problems. This underlies the belief that high self-efficacy can contribute to improved problem-solving abilities. Individuals with high self-efficacy tend to persist with certain tasks, even if they are considered difficult (Sunaryo, 2017).

According to (Zagoto, 2019) self-efficacy can cause behavioral differences between individuals with equal abilities, because it plays a role in determining choices, goals, ways of solving problems, and perseverance in trying. The results of research conducted by Alifia (2018) and Akuba (2020) self-efficacy has a positive impact on students' ability to solve mathematical problems. Meanwhile, research conducted by (Zakyah et al., 2018) shows that the level of problem-solving ability and understanding of mathematical concepts of students does not entirely depend on their self-efficacy. The differences in findings in this study encourage researchers to directly re-examine the relationship between self-efficacy and students' ability to solve mathematical problems.

Problem solving is one of the important skills that students must possess (Nurhayati et al., 2020). Widodo et al. (2019) stated the reasons for the importance of problem solving as a skill that students must possess, including that problem solving can train students in formulating concepts and developing ideas based on existing problems, and that problem solving is also one of the standards of the thinking process and the main goal in mathematics learning.

Numeracy is more than just mastering mathematics in school; it also involves the ability to connect it to various situations outside of school that also require problem-solving, critical thinking, and understanding in non-mathematical contexts. Numeracy problem solving focuses on the use of basic mathematical skills in everyday life contexts. Students' numeracy skills can be influenced by various factors, including self-efficacy and critical thinking skills. Research by Gersten et al. (2014) shows that students with good numeracy skills have a strong foundation in critical thinking and believe in their own ability to solve mathematical problems.

CONCLUSION

Based on the results of the literature review in this study, it can be concluded that interest in learning mathematics has a positive effect on the ability to solve numeracy problems of fifth-grade elementary school students. Students who have a high interest in learning mathematics tend to be more active, motivated, and confident in facing numeracy problems, resulting in better performance in solving numerical problems.

Furthermore, students' self-efficacy, or self-confidence, has been shown to be a factor that strengthens the relationship between learning interest and numeracy problem-solving ability. Students with high self-efficacy demonstrate greater persistence and tenacity in the face of difficulties, even when faced with complex numeracy problems. This suggests that self-efficacy plays a significant role as a moderating factor that strengthens the influence of learning interest on student learning outcomes, particularly in the context of mathematical problem-solving.

Thus, this study confirms that improving students' numeracy skills requires not only mastery of the material but also fostering a strong interest in learning and building strong self-efficacy. Therefore, teachers and schools are expected to create a learning environment that is enjoyable, challenging, and supportive of developing students' self-confidence in learning mathematics**.**

Students' interest in learning mathematics and self-efficacy need to be developed to improve their numeracy problem-solving skills. Increasing students' interest in learning mathematics and high self-efficacy can improve their numeracy problem-solving skills.

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