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THE INFLUENCE OF STUDENTS' SELF-CONFIDENCE ON MATHEMATICAL PROBLEM-SOLVING ABILITIES IN GRADE V OF ELEMENTARY SCHOOL

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ABSTRACT

This research uses a quantitative approach, with a survey method. The aim of the research is to determine the relationship between mathematical problem solving and students' self-confidence. The research population consisted of 52 students at SD Negeri Taman Kalijaga Permai. The data collection technique was purposive sampling. The instruments used are in the form of test sheets and questionnaires. The research results show that students' self-confidence is 0.105 and the significant value (sig) is 0.632. It can be concluded that there is a strong relationship between self-confidence and problem solving. So it can be concluded that students' self-confidence can influence the results of students' mathematical problem solving, especially in FPB and KPK material.

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1. INTRODUCTION

Education is an effort in the humanist education movement that helps someone achieve their full potential (Sastrawan & Primayana, 2020) . Education is a human effort to change behavior towards independence and maturity through deliberate and planned learning activities involving teachers and students (Masgumelar & Mustafa, 2021) . The purpose of education itself is as an effort to achieve predetermined goals (Hidayat et al., 2022) . Education has a role in preparing the future of community members in accordance with the spirit and values of Pancasila (Hakim & Darojat, 2023) . Because education is always a process and goal of renewal, growth, and change, the efforts of this process and goal must also lead to education so that it can meet the goals that have been set and become

an undeniable education. Therefore, superior human resources can fully contribute and are able to adapt dynamically to changes in the environment from proper learning and teaching.

Learning plays an important role in developing students' competence and character, as well as ensuring the sustainability of society (Wuwur et al., 2023) . In the context of learning, there are many learning activities in education, one of which is mathematics learning. The purpose of learning mathematics in schools is for students to have the ability to understand mathematical concepts, explain the relationships between concepts, and apply algorithmic concepts flexibly, accurately, efficiently, and precisely in problem solving (Nainggolan et al., 2023) . However, many students consider mathematics as a difficult and complicated subject because it is always related to numbers, formulas, and calculations (Amelina, 2023) . Therefore, an interesting and innovative learning approach is needed to increase students' interest and ability in understanding mathematics learning materials.

Mathematics is an academic field that plays an important role in the world of education, so it is a compulsory subject for all students from elementary school onwards (Firdaus et al., 2019) . Mathematics is needed so that students can understand the idea of counting, easier to learn other subjects , and understand the usefulness of mathematics in life everyday . However, in reality, many students experience reluctance, fear, and decreased enthusiasm in mathematics lessons . Mathematics is the basis for the development of science and technology. Technology strengthens the development and application of more complex and realistic mathematics (Yuliantri & Sahono, 2021) . Thus, a good understanding of mathematics can help solve problems, equipped with the ability to think logically, analytically, systematically, critically and creatively, as well as the ability to work together.

One of the important components in learning mathematics is the ability to solve problems (La'ia & Harefa, 2021) . Problem-solving ability is a student's potential so that they can solve problems and implement them in everyday life (Suryani et al., 2020) . Problem-solving ability is important for students because when students are able to solve problems, students will gain experience, use the knowledge and skills they already have to apply in everyday life (Elita et al., 2019) . Problem-solving indicators according to (Polya, 1978) are as follows: 1) Understanding the problem by identifying known elements; 2) Developing a problem-solving plan; 3) Detailing the steps to solve the problem; 4) Interpreting the results obtained back into the context of the initial problem and re-checking whether the solution is correct. Based on this, problem-solving skills must be mastered by students, so that they can

solve problems in learning mathematics (Fadilah & Hakim, 2022) . However, in reality, there are still some students in the problem-solving process from each problem-solving stage indicator that is still classified as low.

Indonesian students' problem solving is still low compared to other countries. According to the 2018 PISA survey released by the OECD in 2019, Indonesia's mathematics ranking was ranked 72 out of 78 countries, with an average mathematics score of only 370, while the OECD average was 489. Facts on the ground also show that students' problem-solving abilities are still low because many are not used to solving specifically designed math exam questions, educators and students have not found the concepts that help solve problems themselves. Given this, problem-solving skills need to be given to students from a young age to provide experience in facing challenges in real life. One of the factors that influences students in solving math problems is self-confidence (Rosmawati & Sritresna, 2021) .

Self-confidence is the belief to take action on something as a personal quality that includes elements of responsibility, self-ability, optimism, rationality, and realism (Edhy Rustan, 2018). A simple problem that arises in mathematics learning is the low self-confidence of students in mathematics learning (Ulfa & Sundayana, 2022) . The factor of students who have not met the criteria for self-confidence during the mathematics learning process, so it can be said that the level of students' self-confidence in the subject is still low (Arofah & Hidayati, 2021) . Students' attitudes towards mathematics also have an impact on their mathematical skills (Sulistyani et al., 2020) . In this case, when faced with a problem that cannot be solved, students may be reluctant to ask, lack confidence in the solution, or give up quickly.

This was also stated based on the percentage of students with mathematical abilities that need to be observed based on the Trends in International Mathematics and Science Study (TIMSS) 2015, only 23% of Indonesian students have a level of self-confidence in learning mathematics (Simbolon et al., 2022) . Self-confidence according to TIMSS has a strong mathematical index, the ability to take concepts quickly and diligently, show confidence in mathematics, and the ability to think realistically. Students who have a self-confident attitude will be more motivated and interested in learning mathematics. Therefore, students are expected to have a self-confident attitude to recognize themselves, take action, and achieve.

One of the factors that is beneficial for the development of students' personalities is also having a self-confident attitude .

The material selected in this study is the material of FPB (Greatest Common Factor) and KPK (Least Common Multiple) in grade V. This material is an integral part of the mathematics curriculum and has applications in everyday life. In addition, many students have difficulty in understanding this concept, so this study aims to identify the obstacles experienced by students in solving problems related to FPB and KPK. Thus, this study is expected to contribute to increasing students' self-confidence and ability in solving mathematical problems related to FPB and KPK.

Based on several relevant studies on problem-solving ability is an important thing for mathematics learning, so this study is intended to measure the relationship between problem-solving ability and students' self-confidence in mathematics learning. So it can be seen that students' problem-solving ability and self-confidence have a significant relationship.

2. METHOD

The method used in this study uses a quantitative method with a survey design . The study population consisted of 52 students enrolled in one of the schools in Harjamukti sub-district. In this study, sampling used the purposive sample technique . The instrument devices in this study consisted of test and non-test instruments. The test instrument is used to measure the level of students' problem-solving abilities in mathematics. Meanwhile, the non-test instrument is used to measure students' self-confidence attitudes in mathematics learning, especially the KPK and FPB materials.

The test instrument for problem solving is in the form of math problems. To assess students' ability to solve math problems, the test questions are in the form of descriptions. The use of the math self-confidence instrument contains 20 statement items equipped with 4 answer choices, namely SS (Strongly Agree), S (Agree), TS (Disagree), and STS (Strongly Disagree). Each answer choice has a score between 1 and 4. The questionnaire was processed using a Likert scale as a measuring tool for analyzing the calculation results. The researcher used a five-point score form with a Likert scale model.

The measurement results were then processed using descriptive statistical methods and analyzed for each parameter as a whole. The Likert scale measurement criteria are presented in Table 1.

Table 1. Likert scale measurement criteria

Criteria	**Point**
Strongly Agree (SS)	4
Agree (S)	3
Disagree (TS)	2
Strongly Disagree (STS)	1

3. RESULT AND DISCUSSION

Basically, mastering the ability to solve mathematical problems is one of the important mathematical abilities that need to be mastered by students. This is stated by several relevant truths, namely according to (Syaiful, 2012) in his journal he stated that problem solving abilities involve methods, procedures, and strategies which are the core and central aspects in the structure of the mathematics curriculum.

To evaluate the extent of the relationship between self-confidence and mathematical problem-solving ability, a Pearson correlation test was conducted with a significance level of $\alpha = 0.05$.

Table 2. Correlation test results

		Problem solving skills	Self confidence
Solution to problem	Pearson Correlation	1	.105
	Sig. (2-tailed)		.632
	N	52	52
Self confidence	Pearson Correlation	.105	1
	Sig. (2-tailed)	.632	
	N	52	52

From table 2, the correlation result between problem solving ability and students' self-confidence is 0.105 and the significant value (sig) is 0.632 . The correlation obtained is 0.105 which is a strong correlation level. The significance value of the results of the mathematical problem solving ability obtained is $0.105 > \alpha$ (for $\alpha = 0.05$) meaning accepting H0, which means the data is normally distributed. Furthermore, the significance value of students' self-confidence is obtained as $0.632 > \alpha$ then accepting H0, which means that the data is normally distributed. Thus, there is a significant relationship between problem solving ability and students' self-confidence .

This is in line with the journal article entitled "The Role of Self-Confidence in Students' Mathematics Learning Achievement" stating that low self-confidence can affect problem-solving abilities to be low as well. Self-confidence is a part of a person's personality that is related to self-confidence, so that it can produce positive thinking in solving various situations (Vandini, 2016) .

All 52 samples were used, which means that self-confidence and problem-solving ability have a strong relationship. Based on the data obtained from respondents, it shows a significant positive correlation between students' self-confidence levels and their performance in solving mathematical problems. Specifically, students who have high levels of self-confidence tend to show better mathematical problem-solving abilities compared to those who have low levels of self-confidence (Yulinawati & Nuraeni, 2021) . Statistical analysis confirms this relationship with a reliable level of significance.

There is a positive relationship between students' mathematical problem-solving ability and self-confidence . The results of the study showed that the higher the level of students' self-confidence , the better their mathematical problem-solving ability. This shows that self-confidence can affect students' ability to solve mathematical problems. Other studies have also found that there is a correlation between students' mathematical problem-solving ability and self-confidence , where the higher the level of self-confidence , the better their mathematical problem-solving ability. In addition, the results of the study showed that there was a fairly strong relationship between self-confidence and students' mathematical communication skills, which shows that self-confidence can affect students' ability to communicate mathematically.

Based on the results of this study, it shows that self-confidence can play an important role in improving students' mathematical problem-solving abilities, so it needs to be considered and developed in the context of mathematics learning. This also highlights the psychological aspect (Ituga & Alman, 2023) . Students who are confident in their abilities are more likely to face mathematical challenges with a positive attitude and confidence (Hasibuan et al., 2023) . This can increase their courage to take risks and try more complex problem-solving approaches. High levels of self-confidence can also contribute to students' learning motivation (Rohmah et al., 2023) . Students who believe in their abilities tend to be more motivated to learn and develop their mathematical skills. This can create a positive learning environment and have a long-term impact on academic development.

These findings have practical implications in developing learning strategies in mathematics classrooms. Teachers can pay attention to and facilitate the development of students' self-confidence through teaching methods that support exploration, provide positive feedback, and emphasize the problem-solving process. This study emphasizes that mathematics education is not only about understanding mathematical concepts but also involves students' psychological aspects. Therefore, a holistic approach that includes students' psychological aspects needs to be considered in designing mathematics curriculum and learning strategies. Thus, this study provides insight into the important role of self-confidence in improving students' mathematical problem-solving abilities, providing a foundation for developing more effective learning approaches in this area.

4. CONCLUSION

Based on the description in the previous chapter, it can be concluded that there is a significant influence between the level of student self-confidence and the ability to solve mathematical problems. This finding shows that the higher the level of student self-confidence, the better their ability to overcome and solve mathematical problems. Therefore, increasing student self-confidence can be considered a critical factor in improving mathematical problem-solving skills. The implications of this study can help develop learning strategies that focus on increasing student self-confidence, so that they can make a positive contribution to their ability to face and solve mathematical challenges. In addition, this study also highlights the importance of the role of psychological aspects, such as self-confidence, in the context of mathematics learning. This conclusion is expected to contribute to the development of more effective and sustainable mathematics learning.

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