

(Research/Review) Article

Examining the Impact of Learning Motivation on Students' Mathematical Ability at SMPN 1 Mejobo, Indonesia

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Abstract: Learning motivation is a critical factor influencing students' academic achievement, especially in subjects like mathematics, which is often perceived as challenging. Students with high motivation are generally more enthusiastic, engaged, and active in their learning process. They tend to take the initiative in understanding the material and seek additional resources to reinforce their knowledge. On the other hand, students with low motivation are less likely to actively participate, leading to lower engagement and achievement. This study aims to investigate the correlation between students' mathematical aptitude and their motivation to learn, particularly focusing on how motivation influences their performance in mathematics. A quantitative approach using a correlational technique was applied in this study. The sample consisted of 77 seventh-grade students who were selected using simple random sampling. Data were collected through a mathematical aptitude test on algebraic concepts and a questionnaire designed to assess students' learning motivation. The data analysis included normality and linearity tests, followed by Spearman's correlation analysis to determine the relationship between mathematical aptitude and motivation. The analysis revealed that the data followed a normal distribution and had a linear relationship between the variables. The correlation coefficient was found to be 0.544, with a significance value of 0.000, indicating a moderately strong and statistically significant positive relationship. This suggests that students with higher motivation tend to have better mathematical aptitude. The findings emphasize the crucial role of learning motivation in academic success, especially in mathematics. Motivated students are more likely to achieve higher academic performance. Therefore, it is important for schools and teachers to create a supportive and engaging learning environment that fosters motivation, which can ultimately lead to improved mathematical learning outcomes.

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1. Introduction

Education plays a vital role in an individual's life, as it fosters the development of quality human beings. This aligns with the educational goals outlined in Law No. 20/2003 concerning the National Education System. The law defines education as a planned and conscious effort to create a learning environment and stages that enable students to actively develop their potential. Thus, they can acquire spiritual strength, character, self-control, good morals, intelligence, and the skills necessary for themselves, the general public, the state, and the nation (Suryadi et al., 2019).

Learning is the most important activity in school education, the learning process. This means that the success of educational goals is closely linked to how students engage in their learning activities. From a psychological perspective, learning can be defined as a mechanism of change, namely behavioral changes that occur as a result of interactions with the environment to meet life's needs. These changes can be seen through various aspects of student behavior (Lomu & Widodo, 2018).

One of the elements that plays a role in the learning process is the motivation to learn. This motivation is an individual's desire to achieve the best possible success, both through observing others and through assessing their own achievements. Someone with a strong passion for learning will strive to improve their intelligence and hone their skills to complete assigned tasks (Astuti & Zakaria, 2021). Learning motivation is the driving force within a student that drives them to carry out teaching and learning activities. This motivation plays a vital role in maintaining the continuity of learning and providing guidance for learning activities, so that the hope of achieving goals can be realized (Nugroho & Attin Warmi, 2022).

There are two types of motivation: extrinsic and intrinsic. Intrinsic motivation is the drive that comes from within the student to achieve goals and achieve personal satisfaction. In the learning process, this motivation is related to the student's skills, desires, needs, hopes, and goals. Intrinsic motivation can drive students to achieve. It is called intrinsic because the goal of this motivation is related to the learning conditions and fulfills the student's needs and aspirations in understanding the values contained in the subject matter (Desy et al., 2014). Extrinsic motivation is the drive that arises and functions due to external stimuli. For example, someone studies because there is an exam tomorrow, hoping to get a good grade and praise. Therefore, this motivation does not stem from a desire to learn something, but from a desire to achieve a high grade or receive praise (Oktiani, 2017).

Mathematics is a field of study that involves various aspects, including logical thinking, performing calculations, optimizing accuracy, formulating concepts, and strengthening skills to develop new knowledge. Mathematics plays a vital role in creating numerous opportunities for a country; mathematics education prepares society to compete in the economic, educational, and technological sectors. Mathematics teaching is a priority in schools because it is vital for student progress (Utaminingtyas et al., 2021).

Mathematics is knowledge that every individual needs in their daily lives, as many mathematical ideas are frequently encountered. A good understanding of these ideas will facilitate overcoming the various challenges that arise in everyday life. For students in Indonesia, mathematics is a subject taught since elementary school, so all students in this country are expected to have a solid understanding of mathematical concepts. The deeper Indonesian students' understanding of mathematical concepts, the better the quality of mathematics education in the country (Prastyo, 2020).

Mathematical ability is a student's ability to think, make decisions, and solve problems in solving math problems. Critical thinking skills are a vital element in mathematics. Critical thinking processes must be organized, open, and grounded in reality. A critical thinker must be able to explain the reasons behind their choices, provide answers to questions about those reasons, be open to different choices and perspectives from others, and listen to the arguments underlying their differing views. To optimize critical thinking skills, one must learn to ask questions about oneself, the problem at hand, other people, and the choices made by others (Rachmantika & Wardono, 2019).

Decision-making is the process of choosing from various available alternatives, considering various possible outcomes. In this process, individuals or groups analyze information and consider the impact of each option. This process ultimately reaches a final choice, a decision made to achieve a specific goal through a course of action. This process is crucial in many aspects of life, including personal, educational, and professional contexts, as decisions can influence desired outcomes (Sari, 2020).

Problem-solving is a vital part of the mathematics learning process. This indicates that problem-solving is an integral part of the teaching and learning process. In mathematics learning, problem-solving serves not only as a learning objective but also as a means of navigating the learning process itself. This means that through problem-solving, students not only learn to find solutions but also optimize critical thinking and analytical skills, which are essential in mathematics (Fajri, 2017).

Mathematical ability also refers to a student's ability to understand the mathematical concepts they have learned (Marfu'ah et al., 2022). However, many students dislike or are reluctant to understand mathematics. They tend to feel bored, and their motivation to learn it decreases. For some students, mathematics is perceived as difficult and complicated. However, mathematics is not just about learning formulas and numbers; it encompasses much more. This contributes to low mathematical ability (Said, 2021).

Research conducted by Utami & Prihatiningtyas (2020) focused on identifying the correlation between learning motivation and students' mathematical ability in algebra. The results showed a correlation between learning motivation and students' mathematical ability. A limitation of this study was the limited sample size, with only 30 students at SMPN 8 Singkawang.

Considering the background described above, the author conducted a study on the relationship between learning motivation and mathematical skills with an adequate number of participants. After speaking with teachers at SMPN 1 Mejobo, the researcher was convinced that this school was a suitable location for the research.

2. Proposed Method

A research location is an area where researchers can access information related to the issue being studied. The location chosen for this research is SMPN 1 Mejobo. This decision was made after conducting an interview with one of the school's teachers, and the researcher found the location suitable. The research timeframe covers the period required to complete the research, from the title submission stage to the final writing. This research is scheduled to be conducted in December 2024.

This research is quantitative using correlational methods. Correlational methods are typically used to understand how variables in the data interact, whether the interaction is positive (when one variable increases, the other also increases), negative (when one variable increases, the other decreases), or no interaction at all (Nurhayati & Nasution, 2022). This research is classified as descriptive research because it aims to explain the correlation between two variables. These variables are learning motivation, which serves as the independent variable, and students' math ability, which serves as the dependent variable. The population used in the following research was seventh grade students from SMPN 1 Mejobo, with a total of 320 students.

3. Results and Discussion

A. Results

Normality Test

Tabel 1. Uji Normalitas

	Kolmogorov-Smirnov
Statistik	0,074
Signifikansi	0.200

- a) Based on Table 1 above, the significance value OBTAINED THROUGH the Kolmogorov-Smirnov test is 0.200, resulting in the conclusion that the data from the population is normally distributed.

Uji Linieritas

Tabel 2. Uji Linieritas

Nilai F	Sig.
1,097	0,373

Based on Table 2 above, the findings of the linearity test show that the significance or probability score is 0.373, which means it exceeds 0.05, so it can be concluded that the relationship between learning motivation and students' mathematical abilities is linear.

Uji Korelasi

Table 3. Relationship between Learning Motivation and Mathematical Ability

Analisis Korelasi	Kemampuan Matematis				Total	Koefisien Korelasi	<i>P-Value</i>
	Baik		Kurang Baik				
	n	%	n	%			
Motivasi Belajar							
Baik	30	61,2	19	38,8	49	0,544	0,000
Kurang Baik	7	25,0	21	75,0	28		

Referring to Table 3, the Spearman correlation test results show a P-value of 0.000. Since this value is below 0.05, it can be concluded that there is a correlation between learning motivation and students' mathematical abilities. Furthermore, the correlation coefficient was 0.544, indicating a fairly strong correlation.

B. Discussion

In general, motivation is crucial in the teaching and learning process to improve student learning outcomes. Even if teachers employ excellent methods, if students lack or even lack motivation, they will not learn effectively or learn little. Ultimately, they will not achieve their set goals.

Mathematics skills are students' capabilities to understand the content of a mathematics lesson. Several factors can influence these skills, one of which is enthusiasm for learning. Enthusiasm for learning is the all-encompassing force within students that drives them to learn, keeps the learning process ongoing, and provides guidance in learning, thus enabling students to achieve their desired goals. This desire to learn can come from within the student or from external factors. Motivation can come from many factors, one of which is interest in learning. According to Anita (2018), students who enjoy mathematics tend to be more enthusiastic about learning than those who dislike it.

Research findings also show that 61.22% of students have both good learning motivation and mathematical abilities, while 38.78% have good learning motivation but poor mathematical abilities. This is in line with Prasetyo & Dasari (2023) who stated that the better the learning motivation, the better the mathematical abilities. Furthermore, Lestari et al. (2022) revealed that students' level of understanding of mathematical problem solving is strongly influenced by their learning motivation. When students have high and maximum learning motivation towards the mathematics learning process, it is expected to be a strong driving force in supporting and improving their mathematical abilities. High motivation encourages students to be more enthusiastic in participating in learning, strive to understand the concepts taught, and not give up easily when faced with challenging problems. Thus, good learning motivation not only contributes to improving the ability to solve mathematical problems but also encourages students to be more active, diligent, and oriented towards achieving better learning outcomes.

Furthermore, the results of the study also showed that 75% of students had poor learning motivation and mathematical abilities, while 25% had poor learning motivation but good mathematical abilities. These results indicate a tendency that good mathematical abilities

are almost always accompanied by high learning motivation. This is in line with Lestari (2017) who stated that good mathematical abilities are generally always accompanied by high learning motivation, because individuals who have a strong understanding of mathematical concepts tend to feel more confident and motivated to continue learning and developing their knowledge. Therefore, if someone has poor mathematical abilities, this is often followed by low motivation in learning, because feelings of difficulty and not understanding the material can lead to feelings of frustration, lack of confidence, and decreased enthusiasm to follow the learning process optimally.

The results of the study indicate a significant relationship between learning motivation and mathematical ability of students at SMPN 1 Mejobo, indicating that learning motivation is important in supporting students' academic abilities, especially in mathematics. This is in line with Waritsman (2020) who stated that in implementing learning, it is important not to focus solely on one aspect, but rather to view all aspects involved as a complete and complementary unit. An effective learning process should include attention to the cognitive, affective, and psychomotor aspects simultaneously, because all three play an important role in shaping a comprehensive learning experience for students. In other words, these three aspects are expected to run in tandem and support each other in efforts to achieve learning objectives. Specifically in the context of this study, this is demonstrated through the close relationship between learning motivation (affective aspect) and mathematical ability (cognitive aspect), where high learning motivation tends to contribute positively to improving the ability to understand and solve mathematical problems.

Research by Marianah & Hali (2020) supports this finding, which indicates that students with low learning motivation have low mathematical abilities. Higher learning motivation indicates better mathematical abilities, while lower motivation indicates lower mathematical abilities. Purwaningrum (2016) revealed that a lack of motivation in students to achieve high achievement, especially in mathematics, is one factor contributing to underachievement.

Furthermore, according to Zebua et al. (2022), students sometimes lack motivation when learning mathematics because they feel less confident when they get below average

grades in mathematics. This lack of confidence causes students to fear failure, be reluctant to try to solve difficult problems, and ultimately choose not to be actively involved in learning. When previous learning experiences produce less than satisfactory results, students tend to form negative beliefs about their abilities in mathematics, which then has an impact on decreasing learning motivation. Irawan et al. (2023) explain several factors that make it difficult for students to solve mathematical problems, including students not understanding the questions given, so students determine the wrong way to solve them. In addition, when working on math problems they lack accuracy and caution, which results in errors in working and answering the questions.

According to Sholeha et al. (2022), motivation to learn acts as a driving force in the individual's mind as a whole, which can create a desire to encourage students to participate in learning activities. This way, they can achieve their desired goals. Motivation to learn is one of the important elements in achieving the expected learning outcomes, to encourage students to achieve results in accordance with learning objectives. However, many students actually dislike mathematics. Therefore, most students who love mathematics are those who have a strong drive to learn. Various sources, including teachers responsible for learning activities at school, can provide this motivation. According to Ulya et al. (2014), students need teacher attention to help develop their abilities, especially mathematical ones. A teacher should be able to create customized learning activities so that students have good abilities.

Furthermore, research shows a significant correlation between learning motivation and students' mathematical abilities. This is evident in the correlation coefficient obtained, which is 0.544. This finding aligns with Utami & Prihatiningtyas (2020) who stated that the drive to learn is closely related to students' mathematical abilities. When students' motivation to learn increases, their chances of improving their skills in understanding and solving mathematical problems also increase. According to Robbani & Sumartini (2023), increased learning motivation in students will positively impact their mathematical abilities. This is because high motivation makes students more enthusiastic, diligent, and committed to participating in learning activities, thus making them better prepared to overcome academic challenges, especially in mathematics.

The correlation coefficient of 0.544 indicates a moderate positive relationship between learning motivation and students' mathematical abilities. This value, when squared, produces $R^2 = 0.296$, which means that learning motivation contributes 29.6% to students' mathematical abilities. Thus, there are still 70.4% of other variables that influence mathematical abilities. Several other factors that may play a role include learning interest, teacher learning strategies, learning environment, anxiety towards mathematics, discipline and study habits, basic mathematical abilities, learning facilities, and peer influence. This finding is in line with research by Aminah et al. (2023) which states that motivation in learning has a positive influence on student achievement in mathematics, with a correlation level of 0.436. Therefore, it is important to improve students' mathematical abilities as a whole, not only in terms of learning motivation.

The following research has several shortcomings, including a limited sample size, as it was conducted at only one school, SMPN 1 Mejobo. This situation limits the generalizability of the research results to other schools or wider areas. Furthermore, the study did not use Aiken's validity test or expert testing, so there was no measurement of the relevance of the instrument items according to experts, and the item quality may have been low. Furthermore, there were obstacles encountered during the research process, one of which occurred when completing the questionnaire. Some students appeared to have difficulty understanding some statements, requiring the researcher to assist them directly by being near them to provide brief explanations if needed. This direct assistance could have influenced the students' responses, as they may have felt monitored or pressured to respond according to the researcher's expectations rather than based on their actual situation.

This section presents the method of collecting information, the period and location of the research, and the results of the information analysis (which must be supported by illustrations such as images or tables, not in the form of raw data, and not in the form of screenshots of the analysis results), an explanation of the relationship between the results and basic concepts, and the results of hypothesis testing (if any), as well as whether the results are in accordance with or contradict previous research, complete with their respective interpretations. In addition, this section can include the impact of the research findings, both

in theory and practice. Each table and figure displayed must be referred to and explained in the text, complete with numbering and reference sources. Below are examples of how to write subtitles, sub-sub.

4. Conclusions

A. Conclusion

Based on the research results and discussions conducted by the researcher to answer the research questions, a conclusion was reached regarding the relationship between learning motivation and students' mathematical abilities at SMPN 1 Mejobo. The following can be summarized in detail:

- a. Students' learning motivation and mathematical abilities at SMPN 1 Mejobo are generally quite good. Of the 77 students, 63.6% have good learning motivation, and 48.1% have good mathematical abilities.
- b. There is a significant relationship between learning motivation and students' mathematical abilities at SMPN 1 Mejobo. The stronger the learning motivation, the better their mathematical abilities. Conversely, the lower the learning motivation, the lower their mathematical abilities.
- c. The correlation between learning motivation and students' mathematical abilities at SMPN 1 Mejobo is quite strong, indicating that learning motivation is closely related to students' mathematical abilities.

B. Recommendations

Based on the research conducted, the researcher can provide the following recommendations:

- a. Student learning motivation needs to be improved to support their academic abilities, especially in mathematics.
- b. Further research can analyze the factors influencing learning motivation in order to further explore the potential for improving students' academic abilities.

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