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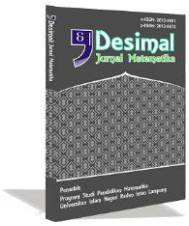

The influence of self-management on the mathematics learning outcomes of students

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ABSTRACT

The purpose of this study was to analyze the effect of self-management on students' mathematics learning outcomes. This research is classified as a quantitative ex post facto type. The instrument used is a self-management questionnaire consisting of 20 statements, as well as odd semester report card data as an indicator to measure students' mathematics learning outcomes. The results of simple linear regression indicate that there is an influence of self-management on the mathematics learning outcomes of eighth-grade students at SMP Negeri 2 Rantau Utara.

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INTRODUCTION

Education is a learning process designed to help students understand, master, and develop critical thinking skills. Education is a systematic means of improving quality towards betterment (Ramadhana & Meitasari, 2023). Education is very important for human life and occurs through the interaction between educators and students in learning. Learning is a deliberate process to transfer knowledge so that students understand the tools being taught (Festiawan, 2020). One of the subjects that students often find difficult to learn is mathematics. Mathematics, the queen of sciences, is very important for education because it is a fundamental science that helps students learn to calculate and think critically (Maulidya & Nugraheni, 2021). Mathematics is a subject taught at all levels of education and plays an important role in developing science and technology (Nisa, 2019). Mathematics is a fundamental science that plays a crucial role in daily activities, as it strives to develop students who are rational, reasonable, critical, and primarily scientific. Hutauruk (as cited in Sudarta, 2022) argues that mathematics is a science that develops from social and cultural interactions and has various functions for thinking about problem-solving, containing several axioms, definitions, theorems, tests, subject

questions, and solutions. Mathematics is a science that develops through social and cultural interactions for various purposes to think about problem-solving and contains several axioms, definitions, theorems, tests, subjects of questions, and solutions (Prastika & Hidayah, 2018). Failure to engage students in learning activities prevents them from developing their maximum creative psychology, resulting in a lack of knowledge and unsatisfactory learning outcomes. Student learning outcomes indicate whether the expected mathematics learning objectives have been achieved.

Thabrani (2023) states that learning outcomes are achievements attained by students through their learning efforts, characterized by behavioral changes in the cognitive, affective, and psychomotor domains. According to Nurhadi (as cited in Nurintiyas, 2020), subject grades function as indicators of the achievements attained by students as a result of the learning process. The results achieved by students during the learning process are known as learning outcomes, and these results can be demonstrated through evaluation exercises led by the teacher (Rafid, 2021). According to Wirda et al. (as cited in Djikilo et al., 2023), learning outcomes are defined as the abilities possessed by students as a result of their learning experiences. Student learning outcomes are achievements at the school level resulting from exams and assignments, questioning activities, and answering questions that can reinforce academic achievement (Somayana, 2020). From the various meanings that have been presented above, the author concludes that learning outcomes are the success of students in the form of acquisition or the level of competence to follow the learning process with changes in behavior and skills, and are evaluated in digital form or declaration. However, in reality, students' academic performance in mathematics is still relatively low.

Based on the observations of researchers from SMP Negeri 2 Rantau Utara, the information indicates that the mathematics learning outcomes are still relatively low. This is because many students perceive mathematics as a frightening subject and often feel frustrated. The next reason is that many students still lack good and optimal self-management, such as being lazy during learning activities, frequently talking during lessons, and even cheating, so the concepts explained by the teacher are not well understood by the students. Therefore, it is necessary to address this issue by implementing self-management among the students. The reason for choosing the implementation of self-management in mathematics learning activities at SMP Negeri 2 Rantau Utara is that self-management is the individual's ability to manage and control aspects within themselves, such as physical, emotional, cognitive, and behavioral aspects, in order to achieve positive and directed goals. In Anggraeni (2022), self-management is the responsible behavior of students to regulate all their behaviors so that students can be more independent and have the ability to predict their own future. According to Rahmadani (as cited in Kholijah et al., 2019), self-management is the process of planning, organizing, activating, and achieving control to reach individually designated goals. Self-management to utilize and organize everything available to achieve specific goals is known as self-management (Setyawan & Mahmudah, 2022). Self-management plays a crucial role in achieving learning goals, especially in difficult subjects that require deep analytical skills, such as Mathematics. To achieve this goal, students must be able to set, plan, and direct themselves to reach their highest objectives (Relifra, Satria, Mardiah, Syaputra, & Desti, 2024). Self-management is the concept of self-examination to adjust and utilize

everything available to achieve goals (Setyawan & Mahmudah, 2022). Managing oneself allows a person to focus on their goals, overcome potential obstacles, and continue moving forward despite various challenges (Relifra et al., 2024). With good self-management, students can control themselves in their actions, as well as face and overcome any challenges that arise. Self-management allows students to monitor their plans for completing homework, studying for exams, and focusing in class.

According to Santoso & Prapunoto (2024), students with good self-management tend to be able to optimize their abilities, take responsibility for their behavior, and reduce the stress they experience. In the context of education, self-management of students is very important because it plays a significant role in determining their learning success. Mohammed's results show that students who are able to manage themselves well tend to achieve better school performance (Al-Abyadh & Abdel Azeem, 2022). This is in line with Anggraeni (2022), entitled "The Influence of Learning Motivation and Self-Management on the Economic Learning Outcomes of Class XI IPS Students at SMA Negeri 1 Muaro Jambi," which shows that the calculated F Value = 29.488 > Table F Value = 3.15. That means self-management and motivation affect the success of learning. The research titled "The Impact of Self-Management on Learning Achievement with Self-Motivation as an Intervening Variable" conducted by Setiani & Miranti (2021), proves that self-management has a significant influence on learning success with motivation as an intermediary. Various aspects that can influence self-management include environmental aspects, as indicated by Projosaksono (as cited in Ardini, 2017), Important factors that can influence self-management are the environment. A person's attitude will be influenced by their social environment, their own attitude, or pleasant environmental reactions.

Besides environmental factors, according to Pedler and Boydell (Dhamayanti, Sumanggala, & Sastrosupadi, 2021). There are other factors that influence self-management, namely:

1. Health

Physical health is the most important asset in self-management because with a healthy body, we can perform our tasks better.

2. Skills

Skills also become a factor that influences self-management because if we have more than one skill, we can decide to focus on just one skill.

3. Activity (Action)

Activity becomes sensitive to various perspectives and has a strong moral imagination, so the abundance of activities influences decision-making about what to do, or considering two things at once.

4. Identity

One of the terms for self-identity is self-concept. The extent to which a person knows, understands, and evaluates themselves affects the way they act.

According to The Liang Gie (as cited in Mustika et al., 2017), there are four aspects of self-management, namely: automatic, organized, self-control, and personal development.

1. Self-motivation

Intrinsic motivation is a personal drive to achieve goals, which is more effective in sparking interest and enthusiasm compared to external influences.

2. Self-organization

Self-organizing is the optimal management of thoughts, energy, time, environment, and other resources so that students can achieve personal effectiveness in life.

3. Self-control

Self-control is the individual's ability to regulate desires, maintain motivation, and direct energy in completing school tasks,

despite often facing temptations such as laziness, procrastination, and external distractions.

4. Self-development

Comprehensive development includes the utilization of the full potential and personal resources of each student.

To be able to directly control oneself, individuals can create or modify cues in the form of objects, items, or belongings around them to influence their behavior. the characteristics of individuals with self-management are:

1. Setting Goals (Goal Setting)

The initial step in self-management while studying is to determine goals, behavioral targets, and achievements to be attained. The determination of these goals serves as a guide to direct individuals in achieving the desired outcomes.

2. Conducting Self-Monitoring

One form of self-monitoring application is by analyzing data that individuals frequently observe, such as summarizing or creating graphs. This can serve as continuous feedback as well as a form of self-reinforcement.

3. Conducting Self-Evaluation

This process includes reviewing personal development based on the plan that has been made, determining whether the targets have been achieved, and identifying aspects that need improvement to reach the goals.

4. Providing Self-Reinforcement

Another characteristic of self-management is giving appreciation as a form of positive recognition for the efforts and achievements that have been made. (Dhamayanti et al., 2021),

Based on the aforementioned explanation, it can be concluded that this research is important to conduct to determine the potential of self-management in influencing students' mathematics learning outcomes.

METHOD

This study uses quantitative methods and is classified as ex post facto research. The purpose of ex post facto research is to analyze cause-and-effect relationships by tracing other factors that influenced them in the past (Hutahean, Siregar, & Pasaribu, 2024). The variables in the study are the independent variable (X) and the dependent variable (Y). The independent variable (X) is in the form of self-management, and the dependent variable (Y) is in the form of learning outcomes for students. Here is the research design table used.

Table 1. Ex Post Facto Research Design

	Prior Event	**Inventigation Period**
Group 1	Experience	Observation

This research was conducted at SMP Negeri 2 Rantau Utara on January 10, 2025. The sample in this study consists of 25 students, who were selected using a simple random sampling technique. The instrument used in this study is a self-management questionnaire consisting of 20 statements covering four aspects of self-management, namely time management, self-motivation, stress and emotion management, and self-control. Here is the table categorizing self-management.

Table 2. Likert Scale Interval

Category	**Account**
Very good	$4.2 \leq X \leq 5$
Good	$3.4 \leq X \leq 4.2$
Pretty good	$2.6 \leq X \leq 3.4$
Not good	$1.8 \leq X \leq 2.6$
Very bad	$1 \leq X \leq 1.8$

RESULTS AND DISCUSSION

Based on the analysis that has been conducted, it can be concluded that the classification criteria for self-management scoring of students at SMP Negeri 2 Rantau Utara, the results are as shown in Table 3.

Table 3. Student Self-Management Statistics

Statistics	Statistics account
High value	4.1
Low value	3.05
Average	3.522

Based on the results in Table 3, it can be seen that the maximum score achieved by the students is 4.1, and the minimum score is 3.05, with an average score of 3.522. Next, the categorization of self-management is presented in Table 4.

Table 4. Self-Management Categories

Category	Account	Frequency of Statements	Percentage
Very good	$4.2 \leq X \leq 5$	1	
Good	$3.4 \leq X \leq 4{,}2$	11	55%
Pretty good	$2.6 \leq X \leq 3{,}4$	7	35%
Not good	$1.8 \leq X \leq 2{,}6$	1	5%
Very bad	$1 \leq X \leq 1{,}8$	0	0%

Based on the data in Table 4, the self-management of eighth-grade students at SMP Negeri 2 Rantau Utara is categorized as good. This can be seen from the total of 20 statements in the questionnaire, where 1 statement (5%) falls into the very good category, 11 statements (55%) fall into the high category, 7 statements (35%) fall into the fairly good category, 1 statement (5%) falls into the less good category, and there are no statements (0%) that fall into the very poor category. Next, a normality test was conducted using SPSS software and presented in Table 5.

Table 5. Results of the Normality Test

One-Sample Kolmogorov-Smirnov Test			Unstandardized Residual
N			25
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		5.33659108
The Most Dramatic Disparities	Absolute		.091
	Positive		.071
	Negative		-.091
Test Results			.091
2-tailed [c] Asymptotic Sig.			.200[d]
Two-tailed Monte Carlo Sig. [e]	Sig.		.857
	99% Confidence Interval	Lower Bound	.848
		Upper Bound	.866

a. It is a normal test distribution.
b. based on data calculations.
c. The significance correction of Lilliefors.
d. The genuine significance is at least this much.
e. Lilliefors' strategy based on 10000 Monte Carlo tests with beginning seed 2000000.

The results of the normality test show that the Asymp. Sig. (2-tailed) value obtained is 0.200, which is greater than α = 0.05. Therefore, it can be concluded that the data distribution is normal. In addition, a linear test is conducted to determine whether there is a linear relationship between the independent variable and the dependent variable. The linear test was conducted using the

deviation from linearity in SPSS. The results of the linear test are presented in Table 6.

Table 6. Results of the Linearity Test

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Learning Outcomes * Self-Management	Between Groups	(Combined)	920.833	15	61.389	1.678	.218
		Linearity	566.499	1	566.499	15.489	.003
		Deviation from Linearity	354.334	14	25.310	.692	.741
	Within Groups		329.167	9	36.574		
	Total		1250.000	24			

The results of the linear test show that the value of 0.741 is greater than 0.05, Thus, it can be concluded that there is a linear relationship between the independent variable and the dependent variable.

Table 7. Model Summary Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.673[a]	.453	.429	5.451
a. Predictors: (Constant), Self-Management				

The analysis results indicate that self-management plays a significant role in influencing learning outcomes, with a contribution of 45.3%. In addition, the R value of 0.673 indicates a strong relationship between both variables.

Table 8. Results of Simple Linear Regression Test

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	26.172	13.518		1.936	.065
	Self management	.731	.167	.673	4.366	<.001
a. Dependent Variable: study result						

The obtained regression equation is $Y = 26.172 + 0.673X$, with a relevance value of $0.001 < 0.05$, indicating that self-management influences the mathematics learning outcomes of eighth-grade students at SMP Negeri 2 Rantau Utara.

The results obtained from the conducted research indicate that the application of self-management influences the mathematics learning outcomes of eighth-grade students at SMP Negeri 2 Rantau Utara. Data analysis indicates that the obtained R value is 0.673, indicating a strong relationship between self-management and students' learning outcomes. Additionally, the R-squared value reached 0.453, which means self-management contributes 45.3% to math learning outcomes, while the remaining 54.7% is influenced by other factors. The resulting regression equation is Y = 26.172 + 0.673X, with a significance value of 0.001, which is less than 0.05, confirming a significant influence between self-management and students' mathematics learning outcomes. This finding aligns with research conducted by (Utami, 2017) on the influence of self-management and the utilization of learning resources on

students' learning outcomes, with an F-statistic of 43.408 > F-table of 3.16.

CONCLUSIONS AND SUGGESTIONS

Self-management has a significant and positive impact on students' mathematics learning outcomes at SMP Negeri 2 Rantau Utara. These findings were obtained from a simple linear regression analysis, which showed that self-management, including time management, self-motivation, stress management, and self-control, contributes 45.3% to students' mathematics learning outcomes. Meanwhile, the remaining portion is influenced by various other factors. Every improvement in self-management skills has the potential to significantly enhance students' mathematics learning outcomes, as evidenced by a regression coefficient value of 0.731 and a significance level of 0.001. This emphasizes the importance of self-management skills in supporting academic success, particularly in mathematics learning.

It is recommended for future researchers to add mediating variables, such as learning motivation or emotional regulation, to see how self-management influences learning outcomes through these variables. Additionally, moderating variables such as learning styles or parental support can also be considered to examine whether the influence of self-management differs among groups of students with different characteristics.

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