
The Effect of Self-Awareness and Self-Regulated Learning on Student Mathematics Learning Outcomes

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Abstract. In this era mathematics is still seen as a frightening subject by students so that it has an impact on mathematics learning outcomes. Internal factors that influence the results of learning mathematics are Self-Awareness and Self-Regulated Learning. This study aims to determine whether there is an effect of Self-Awareness and Self-Regulated Learning on students' mathematics learning outcomes. This research is a quantitative study with multiple regression analysis. The sample in this study were class VII students of SMP N 4 Yogyakarta and SMP N 1 Yogyakarta who were taken by simple random sampling technique as many as 150 students. The instruments used were questionnaires and students' mathematics UTS scores. The results of this study are (1) there is an effect of self-awareness on students' mathematics learning outcomes, (2) there is an effect of self-regulated learning on students' mathematics learning outcomes, (3) there is a significant effect between self-awareness and self-regulated learning on student mathematics learning outcomes with sig SPSS results. > 0.05 ($0.00 > 0.05$).

Keywords: Self-Awareness, Self-Regulated Learning, Mathematics Learning Outcomes

Abstrak. Pada era ini matematika masih dipandang sebagai ilmu pengetahuan yang menakutkan oleh siswa sehingga berakibat pada capaian pembelajaran matematika. Faktor internal yang mempengaruhi capaian akademik matematika adalah Self-Awareness dan Self-Regulated Learning. Tujuan dari kajian ini yaitu untuk mengetahui ada tidaknya pengaruh Self-Awareness dan Self-Regulated Learning terhadap hasil belajar matematika siswa. Penelitian ini merupakan penelitian kuantitatif dengan analisis regresi berganda. Sampel dalam penelitian ini adalah siswa kelas VII SMP N 4 Yogyakarta dan SMP N 1 Yogyakarta yang diampil dengan teknik simple random sampling sebanyak 150 siswa. Instrumen yang digunakan adalah angket dan nilai UTS matematika siswa. Hasil penelitian ini adalah (1) Terdapat pengaruh Self-Awareness terhadap hasil belajar matematika siswa, (2) Terdapat pengaruh Self-Regulated Learning terhadap hasil belajar matematika siswa, (3) Terdapat pengaruh yang signifikan antara Self-Awareness dan Self-Regulated Learning terhadap hasil belajar matematika siswa dengan hasil SPSS sig. $> 0,05$ ($0,00 > 0,05$).

Kata kunci: Self-Awareness, Self-Regulated Learning, Hasil Belajar

INTRODUCTION

Education is a factor that has a major role in this life (Fauziah & Puspitasari, 2022). One of the branches of science in mathematics is mathematics. Mathematics learning is a strategy to channel knowledge to students with structured activities, so that students get competence regarding the mathematical material learned (Ardhiyah & Radia, 2020). Mathematics learning also plays an important role in technological development because it is a universal science (Handayani et al., 2021). Therefore, starting from elementary school to high school level is required to study mathematics. Mathematics is not only applied in the world of education, but also applied in life to facilitate human activities (Sari & Himmi, 2019).

In this era, mathematics is often seen as a frightening scourge (Purnomo, 2017). As a result, the majority of students are reluctant to study mathematics and do not care about the benefits of studying mathematics in real life (Elyana et al., 2022). But on the other hand, many activities in everyday life use mathematical concepts. The reason for studying mathematics at all levels of education (Damas Sadewo et al., 2022; Noor & Abadi, 2022; Sriwahyuni & Maryati, 2022; Sulastri & Sofyan, 2022; Yulianty, 2019; Yusriyah & Noordiyana, 2021) are: 1) mathematics is applied in life, 2) mathematics as the foundation of other sciences, 3) mathematics is defined as a clear, concise, and strong communication tool, 4) mathematics is a way of presenting various information, 5) optimizing the ability, accuracy, and logical mindset, 6) mathematics is able to solve problems and give a sense of satisfaction. All these indicators are contained in mathematics learning outcomes.

Learning outcomes are students' learning skills or achievements from their learning experiences (Sholikhah et al., 2018). Another definition of learning outcomes is the achievement of student learning outcomes levels after carrying out the learning process in an effort to achieve the goals to be achieved (Fane & Sugito, 2019). According to Djalal (Lase, 2018), student learning outcomes are a description of mastery of student material contained in the achievement of assessing student learning outcomes in achieving learning targets. In general, learning outcomes refer to various psychological behaviors, ranging from simple memories of facts to complex models of thinking. The results of student learning outcomes are called

student knowledge about the mathematics content studied. So, students' mathematics learning outcomes can be used as a reference as a benchmark in evaluating the achievement of mathematics learning objectives.

There are two factors that affect how well students learn mathematics, namely internal and external. Internal factors come from the individual himself, while external factors come from the individual's environment or from sources other than oneself. External factors include the accuracy of the methods applied by teachers in teaching activities, learning facilities, teacher abilities in teaching, teachers, curriculum and student learning environment. These factors affect the achievement of student success in the mathematics learning process (Fadillah, 2016). Of these factors, internal factors tend to be more dominant in influencing student learning outcomes (Handayani et al., 2021). Internal factors and external factors must be considered to support the achievement of good learning outcomes (Purnomo, 2017). Internal factors include learning independence, learning awareness, learning motivation, self-confidence, students' emotional intelligence, level of intelligence, students' study habits. This research focuses on the factors to be analyzed, namely self-awareness and self-regulated learning.

Self-Awareness (SA) / self-awareness is a basic requirement in achieving success in all things and aspects of emotional intelligence (Maharani & Mustika, 2016).). In the aspect of personality, Self-Awareness is very important to identify students' achievements in understanding and understanding a situation, and attitudes on how to accept everything that happens in life. Self-awareness of one's behavior includes shortcomings, advantages, abilities possessed, thoughts, interests, beliefs, feelings and motivations (Nu'man, 2019). According to Goleman (Lontoh et al., 2021), there are three characteristics of Self-Awareness, including controlling feelings, recognizing emotions, and confidence. Based on some of the expert views above, it can be concluded that self-awareness is the ability to understand feelings, sort out the causes of these feelings, and control feelings. The next factor is Self-Regulated Learning.

Self-Regulated Learning is the self-awareness of each individual to do independent learning, get various self-study reference sources, compile their own

study schedules and conduct self-evaluation and improvement in the independent learning process (Abror, 2022). Self-Regulated Learning is also called learning independence is the ability to control actions and thoughts (Ruswana, 2018). According to Winata et al. (2021) can optimize students' academic achievements because with Self-Regulated Learning students are able to manage and monitor their learning effectiveness, manage deadline times in completing their homework, and get maximum scores in mathematics subjects. Therefore, it can be concluded that Self-Regulated Learning is the ability to actively participate students in the learning process, both metacognitive, behavioral and motivational. Therefore, self-study plays a major role in learning activities. According to Zimmerman (Al Mulhim, 2020), there are seven self-regulation strategies in learning, including (1) memory strategies; (2) goal setting; (3) self-assessment; (4) seek solutions; (5) environmental management; (6) learning responsibilities; and (7) settings. Among strategic factors, one with another factor correlates with each other to form strong educational regulatory learning indicators.

In Self-Regulated Learning, students play an active role in finding learning resources from any media and teachers are only as facilitators of students in learning (Abror, 2022). Students can use several learning resources including books, e-books, social media, internet, environment in life, environment in society and others. Self-Regulated Learning has three stages (Carden et al., 2022), namely the Planning Stage, Students determine learning procedures, namely, (1) reviewing learning tasks, (2) determining learning outcomes, (3) developing learning strategies. The second stage is the analyzing stage, students practice the arrangement of strategies and validate goals to stay directed. At the end of the determination stage, students assess the level of good and bad strategies that have been carried out in achieving goals. According to (Abror, 2022; Makur et al., 2021; Ruswana, 2018), there are nine Self-Regulated Learning indicators applied, namely (1) learning initiatives, (2) prediction of learning needs, (3) determination of learning objectives, (4) regulation and control of learning, (5) organizing. and control cognition, motivation, and action (Self), (6) perceive adversity as challenging, (7) obtain and use relevant material guidelines, (8) sort out and apply

methods appropriate learning, and (9) assess the progress and achievement of learning competencies. The relationship between Self-Awareness and Self-Regulated Learning.

Self-Awareness and Self-Regulated Learning are two of the internal factors in achieving students' mathematical competence. Self-Awareness and Self-Regulated Learning are related. Learning independence is mentioned as an important factor in learning mathematics (Abror, 2022). So it is with learning awareness. Learning independence must be based on self-awareness first. If self-awareness has been formed, then automatically you will carry out learning activities independently so that learning goals are achieved. For this reason, it is necessary to build self-awareness, then proceed with the preparation of learning strategies that are designed in such a way as to achieve learning objectives. From research (Handayani et al., 2021) revealed that the output of mathematics learning outcomes of grade VIII students of At-Tawwabiin Junior High School is influenced by emotional taste, aspects of self-awareness in learning. Based on research (Fajriah et al., 2019) shows the mathematical thinking competence of junior high school students on the subject of SPLDV which is influenced by the effectiveness of independent learning. Likewise, research (Bungsu et al., 2019)) results in learning independence have a positive effect on students' achievement of mathematical competence. The relationship between Self-Awareness and Self-Regulated Learning is closely related to the achievement of students' mathematical competence (Atmojo et al., 2020). Based on the output of the research carried out (Atmojo et al., 2020),), it was stated that students who apply independent learning and effective learning awareness, then the learning outcomes are good.

Self-Awareness has an important role in the process of teaching mathematics so that students understand things that happen when mathematics learning activities take place so that students can capture the material optimally (Nu'man, 2019). The framework needed in forming Self-Awareness in oneself has five elements (Maharani & Mustika, 2016),), including: Attention, Wakefulness, Architecture, Recall and self knowlwdge. The awareness of student learning will be a provision to behave independently and know what has been studied, what is

being studied, and what will be studied so that it affects the achievement of academic competence (Masrura & Murtafiah, 2018). Thus, students' understanding of mathematics learning material will affect whether or not students can solve mathematical problems in the form of problems or in the real world. Indirectly, this is closely related to learning outcomes. So, Self-Awareness affects the high and low achievement of students' mathematics learning.

In addition, Self-Regulated Learning also affects the achievement of students' mathematical competence (Purnomo, 2017). This can be observed based on existing problems, for example, students do not consider that learning is in their own interests (Elyana et al., 2022). As for the other problem, students learn not because of their own desires, students are pessimistic about their abilities so they cannot solve problems on their own. Because of such thinking, students become dependent on the help of others (Siagian et al., 2021). Therefore, learning skills are needed so that students take the initiative to learn independently so that students are better prepared to face problems in learning mathematics. Thus, independent learning affects the optimal achievement of student competence in understanding mathematics subject matter.

These problems will be the material of this research, yesto investigate whether there is an influence between Self-Awareness and Self-Regulated Learning on the achievement of student competence. The benefit of this study is that educators can find out aspects of Self-Regulated Learning and Self-Awareness that can improve student learning competencies as an effort to improve student learning outcomes. Thus, referring to the problem formulation that has been described, it is interested to examine the Effect of Self-Awareness and Self-Regulated Learning on Student Mathematics Learning Outcomes.

RESEARCH METHODS

This research is a quantitative research with a correlational approach. The purpose of this study is to determine whether there is an influence between the independent variable and the dependent variable. In this study the independent variables used were Self-Awareness (X_1) and Self-Regulated Learning (X_2), and the dependent variable was student mathematics learning outcomes (Y). This study

design used correlation research with multiple regression analysis. This research was conducted on students of SMP N 4 Yogyakarta and SMP N 1 Yogyakarta for the 2022/2023 academic year. The population in this study was all grade VII students of SMP N 4 Yogyakarta and VII SMP N 1 Yogyakarta as many as 322 students. The sample used was taken by Simple Random Sampling technique, where the sample was randomly selected without observing and considering the average in all students in the two schools (Ningsih et al., 2019). The sample taken was 155 students, with 62 students of SMP N 4 Yogyakarta and 93 students of SMP N 1 Yogyakarta.

This study used data collection techniques in the form of questionnaire questionnaires and data on student mathematics learning outcomes based on mathematics UTS scores. UTS material includes coordinate systems, number patterns, relaxation and functions, straight-line equations and two-variable linear equation systems. The Self-Awareness questionnaire amounted to 36 questions, while the Self-Regulated Learning questionnaire amounted to 33 questions. The questionnaire scaling practiced is a Likert scale with five alternative answers, namely: Very Inappropriate, Inappropriate, Less Appropriate, Appropriate, Very Appropriate. The analytical technique used in this study is a simple correlation analysis with the aim of knowing the relationship between independent variables, namely Self-Awareness and Self-Regulated Learning with dependent variables, namely students' mathematical academic achievements. Multiple regression analysis is a step to examine the effect between Self-Awareness and Self-Regulated Learning simultaneously with the achievement of mathematical competence and students. The calculation of the analysis in this study uses the help of an application in the form of SPSS 21.0 for windows.

The Non-Test Self-Awareness and Self-Regulated Learning questionnaire instruments were measured from several aspects in the questionnaire statement.

Aspect	Indicator
Self-Regulated Learning	Goal setting Planning <i>Self-efficacy</i> <i>Self-control</i> Self-monitoring Consideration Rself-action
Self-Awareness	Accurate self-recognition Confidence Self-ability

Table 1. Questionnaire indicator

Self-Awareness and Self-Regulated Learning questionnaires use positive and negative question items. The score scale used is as follows:

Answer Score Categories					
Question	Fits Perfec	Appropriate	Less Suitable	Not Compliant	Very Incompatible
Positive	5	4	3	2	1
Negative	1	2	3	4	5

Table 2. Scoring Scale

RESULTS AND DISCUSSION

In this study, Self-Awareness, Self-Regulated Learning and students' mathematics learning outcomes were categorized into 5 levels. Below is a table of categories and percentages of Self-Awareness, Self-Regulated Learning and mathematics competency achievements of students of SMP N 1 Yogyakarta and SMP N 4 Yogyakarta.

Interval	Category	Frequency	Percentage
$X \geq 147$	Very High	10	6%
$129 \leq X < 147$	High	38	25%
$112 \leq X < 129$	Medium	64	41%
$94 \leq X < 112$	Low	33	21%
$X < 94$	Very Low	10	6%

Table 3. Self-Regulated Learning Category

According to table 3, it can be observed that students located in the interval with the very high and very high groups are the same as much as 6%, the high category as much as 25%, the most frequency lies in the interval with medium categories which is 64 students with a percentage of 41%, while those located in the low category are 21%. Since the majority of students are in the interval of $112 \leq X < 129$, this means that the Self-Regulated Learning level of SMP N 4 Yogyakarta and SMPN 1 Yogyakarta students is in the medium category.

Interval	Category	Frequency	Percentage
$X \geq 150$	Very High	14	9%
$134 \leq X < 150$	High	34	22%
$117 \leq X < 134$	Medium	55	35%
$100 \leq X < 117$	Low	43	28%
$X < 100$	Very Low	9	6%

Table 4. Self-Awareness Category

From table 4 of the results of the questionnaire data analysis, it was obtained that the highest frequency was in the medium category with an interval of $117 \leq X < 134$ as many as 55 students with a percentage of 35%. The smallest frequency is located in the interval with a very low category of 9 students with a percentage of 6%. Thus, it can be said that the Self-Awareness level of students of SMP N 4 Yogyakarta and SMPN 1 Yogyakarta for the 2022/2023 school year in mathematics learning is in the medium category.

Interval	Category	Frequency	Percentage
$X \geq 78$	Very High	14	9%
$62 \leq X < 77$	High	34	22%
$46 \leq X < 62$	Medium	55	35%
$30 \leq X < 46$	Low	43	28%
$X < 30$	Very Low	9	6%

Table 5. Category of Mathematics Learning Outcomes

Based on table 5 above, the most frequency lies in medium criteria with a percentage of 43%. This shows that the level of mathematics learning outcomes of SMPN 4 Yogyakarta and SMPN 1 Yogyakarta students is in the medium category.

For more details, the results of Self-Awareness, Self-Regulated Learning and student mathematics learning outcomes can be observed in the histogram figure below:

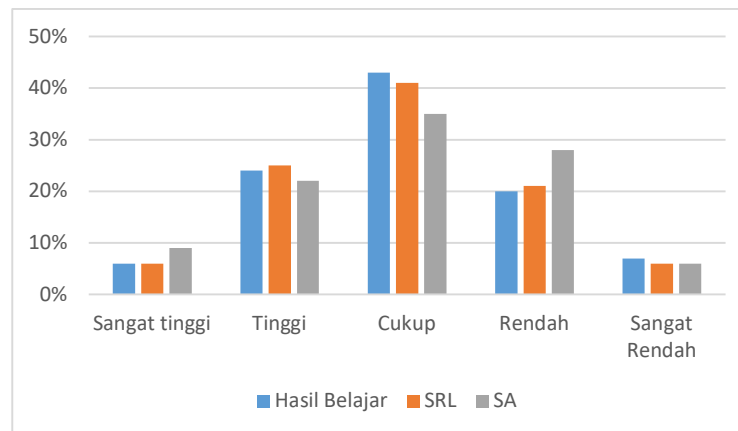


Figure 1: Questionnaire analysis histogram graph

Before a simple regression test analysis is carried out, it is necessary to perform a prayarat test. The prerequisite tests that must be met are normality tests, linearity tests and multicollinearity tests on Self-Regulated Learning questionnaire data, Self-Awareness questionnaire data and student mathematics learning outcomes data. Data testing is carried out by utilizing SPSS 21.0 for windows.

The purpose of the normality test is as the first test of the prerequisite tests that must be met to carry out a series of analyses in research. By conducting a normality test we can find out information whether the residual variables are normally distributed. Some experts state that in statistical analysis if a lot of data is obtained > 30 , then the data is assumed to be normally distributed. With the Kolmogorov-Smirnov test normally distributed data are characterized by a significance output result of > 0.05 , and vice versa if the significance output < 0.05 then the data are not normally distributed. In conducting normality testing, researchers utilize a software application in the form of SPSS 21.0 for windows, so that research outputs are obtained as below:

Tests of Normality							
	Kelompok Uji	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Self	SMP N 4 Yogyakarta	.078	62	.200 ^a	.940	62	.004
Regulated Learning	SMP N 1 Yogyakarta	.087	93	.079	.960	93	.007
Self	SMP N 4 Yogyakarta	.065	62	.200 ^a	.990	62	.901
Awareness	SMP N 1 Yogyakarta	.090	93	.063	.975	93	.075
Hasil Belajar	SMP N 4 Yogyakarta	.089	62	.200 ^a	.976	62	.251
	SMP N 1 Yogyakarta	.086	93	.087	.961	93	.007

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 6. Normality Test

When viewed in the table, the significance value of learning outcomes, Self-Awareness and Self-Regulated Learning of the two junior high schools in Yogyakarta was obtained. Based on the table in Kolmogorov-Smirnov, Self-Regulated Learning Output in both junior high schools in Yogyakarta sig scores. > 0.05 , precisely SMP N 4 Yogyakarta $0.200 > 0.05$ and SMP N 1 Yogyakarta $0.079 > 0.05$ which shows normal distributed data. Similarly, the Self-Awareness of the two junior high schools has a significance of > 0.05 , namely $0.200 > 0.05$ and $0.065 > 0.05$, so it is said that the data is normal. The learning outcomes of SMP N 4 Yogyakarta students have a significance of $0.200 > 0.05$ and the learning outcomes of SMP N 1 Yogyakarta have a significance of $0.087 > 0.05$. Second, the significance of learning outcomes is more than 0.05 , which means the data is normally distributed. The output of Self-Awareness is $0.200 > 0.05$ which proves the data is normally distributed as well. Similarly, with Self-Regulated Learning whose results are $0.200 > 0.05$, the data is normally distributed.

The linearity test was carried out to identify the linearity relationship between the 2 variables. The results of the linearity test are based on the output significance of Deviation from Linearity. The basis for making the decision is that if the output Significance > 0.05 then the correlation data is linear, whereas if the output Sig. < 0.05 , the data correlation is said to be non-linear. In this study, two linearity tests were carried out, namely Self-Regulated Learning on learning outcomes and Self-Awareness on mathematical competence achievements.

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Hasil Belajar * Self-Regulated Learning	Between Groups	(Combined) Linearity	26841.173	61	440.019	5.729	.000
		Deviation from Linearity	20732.991	1	20732.991	269.919	.000
			6108.182	60	101.803	1.325	.110
Within Groups			7143.498	93	76.812		
Total			33984.671	154			

Table 7. Test Linearity Self-Regulated Learning with Achievements Study

Based output table of the Self-Regulated Learning linearity test and the competency achievements above, the Significance Deviation from Linearity value is $0.110 > 0.05$. In accordance with the basis for decision making above that if the significance of Deviation from Linearity > 0.05 is linear, so the data from this analysis is linear.

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Hasil Belajar * Self Awareness	Between Groups	(Combined) Linearity	21747.588	58	374.958	1.995	.001
		Deviation from Linearity	12628.786	1	12628.786	67.196	.000
			9118.803	57	159.979	.851	.743
	Within Groups			18042.321	96	187.941	
Total			39789.910	154			

Table 8. Self-Awareness Linearity Test and Mathematics Learning Outcomes

Based output table of the Self-Awareness linearity test and the learning outcomes above, it is obtained that the Significance of Deviation from Linearity is $0.743 > 0.05$, so the data is linear.

The multicollinearity test was carried out so that the researcher could determine whether or not there were independent variables that had the same characteristics in one regression. The regression model is said to have a multicollinearity problem if there is a correlation. Multicollinearity test is used as a

basis for decision making. If the tolerance value is <0.10 then the data experiences multicollinearity, while data that does not experience multicollinearity is if the tolerance value is > 0.10 .

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-22.746	8.039		-2.830	.005		
	Self Regulated Learning	.305	.061	.374	4.982	.000	.684	1.462
	Self Awareness	.348	.074	.353	4.700	.000	.684	1.462

a. Dependent Variable: Hasil Belajar Matematika

Table 9. Multicollinearity Test

If seen from the table, the tolerance value for Self-Regulated Learning and Self-Awareness is $0.684 > 0.10$, so the data is not multicollinearity. This can be interpreted that there is no correlation between the variables Self-Regulated Learning and Self-Awareness. So that it can be used for regression analysis, because a good multiple regression model does not occur multicollinearity.

Multiple regression tests are conducted to test whether there is an influence between two or more independent variables on one dependent variable. The basis for making a decision on the multiple regression test is if the Sig. <0.05 then indicates that there is a relationship or influence between the independent variables on the dependent variable. And vice versa, if the value of Sig. > 0.05 , it means that there is no influence between the independent variables on the dependent variable.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-69.286	1.756		-39.459	.000
	Self Regulated Learning	.761	.033	.808	23.069	.000
	Self Awareness	.155	.029	.190	5.412	.000

a. Dependent Variable: Result Study

Table 10. Multiple Regression Test

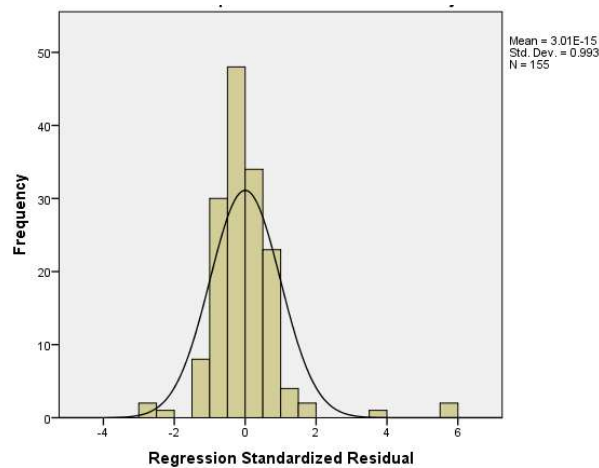


Figure 2: Graph of data normality

Based on the table and picture graph, obtained Sig Self-Regulated Learning and Self-Awareness values of $0.000 < 0.05$ so that it can be said that there is a relationship or influence between Self-Regulated Learning and Self-Awareness on the achievement of students' mathematical competence. Based on the calculation output using inferential analysis assisted by the SPSS application in table 7, it shows that there is a significant influence of Self-Awareness and Self-Regulated Learning on the achievement of the mathematics competence of class VII students at the two Public Middle Schools in Yogyakarta for the 2022/2023 academic year. This is shown through the results of a significance of more than 0.05.

In table 7 it can be observed that the significance value of Self-Awareness is $0.00 > 0.05$, which means that Self-Awareness has an effect on students' academic achievement in mathematics. As for output Self-Regulated Learning shows $0.00 > 0.05$ as well which means Self-Regulated Learning has a significant influence on students' academic achievement in mathematics. In addition, from the results of the T-test, it was obtained that the T-value of Self-Awareness was 5.412 and the T-table was -39.459. Because $T\text{-value} > T\text{-table}$ ($5.412 > -39.459$) this shows that there is a significant relationship between self-awareness and students' academic achievement in mathematics. T-value Self-Regulated Learning also shows a relationship with students' learning outcomes in mathematics, namely $T\text{-value} > T\text{-table}$ ($23.069 > -39.459$). Thus the data says that Self-Awareness and Self-Regulated Learning have a significant influence on students' learning achievement

in mathematics. This is similar to the study conducted (Handayani et al., 2021) namely that there is a significant effect of the aspect of self-awareness on emotional skills on the achievement of the mathematics competence of At-Tawwabiin Middle School students. The research conducted (Ruswana, 2018) showed that there was a correlation between Self-Regulated Learning and the math skills of Galuh University students, specifically the Mathematics Education Study Program. Research (Masrura & Murtafiah, 2018) also shows that there is a high influence between motivation and awareness of learning metacognition on student academic achievement. In addition, it is reinforced by the results of research (Ansori & Herdiman, 2019) which state that the results of students' independent learning are routine, so their math skills also increase. As well as (Winata et al., 2021) which suggests that there is an influence of independent learning and learning discipline on the achievement of students' mathematical academic competence when studying online.

Based on the results of the categorization analysis of Self-Awareness, Self-Regulated Learning and students' mathematics learning achievements, it shows that the highest frequency of Self-Awareness, Self-Regulated Learning and students' mathematical competency achievements is in the medium category. Self-Awareness indicators such as 1) accurate self-recognition including self-assessment, recognizing one's own condition, strengths and weaknesses, 2) self-confidence which includes responsibility, decision making, planning for the future, 3) self-ability which includes managing emotions, adapting with the students of the two public junior high schools in Yogyakarta being at a fairly good level. The Self-Regulated Learning indicators in the components of planning, implementation and self-reflection are also measured quite well. In the planning component there are indicators of task analysis (including setting goals, planning learning strategies) and Self-Motivational Beliefs (Self-Efficacy, intrinsic motivation, self-esteem, self-expectations). In the implementation component there are two indicators, namely Self-Control and monitoring which include self-instruction, effort to learn, strategies for completing assignments, seeking appropriate assistance, monitoring in carrying out plans, self-records, and self-experimentation. In the self-reflection

component there are two indicators, namely self-consideration and self-reaction which includes self-evaluation, realizing the causes of plan failure, self-satisfaction or rewards, environment and defensiveness. Based on the results of the questionnaire analysis, it can be concluded that the level of awareness of students in learning is quite good and the level of independence of students in learning is also quite good so that the output of mathematics learning outcomes obtained is quite good. Therefore, teachers should always remind and motivate students to study independently at home. In addition, it is also recommended to give homework, thus students will study independently at home. This can be an effort to increase students' Self-Awareness and Self-Regulated Learning as well as students' mathematics academic achievements. This proves that Self-Awareness and Self-Regulated Learning have a significant relationship to students' academic achievement in mathematics. It can be seen in the histogram image above, the frequency between Self-Awareness, Self-Regulated Learning and students' mathematics learning achievement is directly proportional. Between the percentages of Self-Awareness, Self-Regulated Learning and the achievements of students' mathematical competence in the very high, high, medium, low and very low categories are almost the same or only slightly differ. Thus it can be said that whether or not the optimal achievement of students' mathematics learning is influenced by Self-Awareness and Self-Regulated Learning .

CONCLUSION

Based on the results of the analysis above, it can be concluded that there is a significant influence between Self-Awareness and Self-Regulated Learning on the mathematics learning outcomes of students at SMP N 4 Yogyakarta and SMP N 1 Yogyakarta. The self-awareness and Self-Regulated Learning levels of the students of the two public junior high schools in Yogyakarta are in the pretty good category. The frequency and percentage between Self-Awareness and Self-Regulated Learning is directly proportional to the results of students' mathematics learning. This proves that the higher the Self-Awareness and Self-Regulated Learning, the higher the output of students' mathematics competence.

REFERENCE

- Abror, M. H. (2022). Self-regulated learning terhadap hasil belajar matematika siswa. *Plusminus: Jurnal Pendidikan Matematika*, 2(2), 233–242. <https://doi.org/10.31980/plusminus.v2i2.1676>
- Al Mulhim, E. N. (2020). Flipped learning, self-regulated learning and learning retention of students with internal/external locus of control. *International Journal of Instruction*, 14(1), 827–846. <https://doi.org/10.29333/IJI.2021.14150A>
- Ansori, Y., & Herdiman, I. (2019). Pengaruh kemandirian belajar terhadap kemampuan pemecahan masalah matematis siswa SMP. *Journal of Medives : Journal of Mathematics Education IKIP Veteran Semarang*, 3(1), 11. <https://doi.org/10.31331/medivesveteran.v3i1.646>
- Ardhiyah, M. A., & Radia, E. H. (2020). Pengembangan media berbasis adobe flash materi pecahan matematika untuk meningkatkan hasil belajar. *Jurnal Penelitian Dan Pengembangan Pendidikan*, 4(3), 479. <https://doi.org/10.23887/jppp.v4i3.28258>
- Atmojo, S. E., Muhtarom, T., & Lukitoaji, B. D. (2020). The level of self-regulated learning and self-awareness in science learning in the covid-19 pandemic era. *Jurnal Pendidikan IPA Indonesia*, 9(4), 512–520. <https://doi.org/10.15294/jpii.v9i4.25544>
- Bungsu, T. kurniawan, Vilardi, M., Akbar, P., & Bernard, M. (2019). Pengaruh kemandirian belajar terhadap hasil belajar matematika di smkn 1 cihampelas. *Journal on Education*, 01(02), 382–389.
- Carden, J., Jones, R. J., & Passmore, J. (2022). Defining self-awareness in the context of adult development: a systematic literature review. *Journal of Management Education*, 46(1), 140–177. <https://doi.org/10.1177/1052562921990065>
- Damas Sadewo, Y., Dheni Purnasari, P., Muslim, S., Universitas Negeri Jakarta, P., & Shanti Bhuana, I. (2022). Philosophy of mathematics: the position, role, and perspective of problems in the study of mathematics. *Jurnal Kelitbangan*, 10(1).
- Elyana, D., Wulandari, A. A., & Mulyani, O. B. T. (2022). Peningkatan prestasi belajar matematika siswa dalam pembelajaran jarak jauh berbasis video. *Plusminus: Jurnal Pendidikan Matematika*, 2(1), 77–86. <https://doi.org/10.31980/plusminus.v2i1.1540>
- Fadillah, A. (2016). Analisis minat belajar dan bakat terhadap hasil belajar matematika siswa. *Mathline : Jurnal Matematika Dan Pendidikan Matematika*, 1(2), 113–122. <https://doi.org/10.31943/mathline.v1i2.23>
- Fajriah, L., Nugraha, Y., Akbar, P., & Bernard, M. (2019). Pengaruh kemandirian

belajar siswa SMP terhadap kemampuan penalaran matematis. *Journal on Education*, 1(2), 288–296.

Fane, A., & Sugito, S. (2019). Pengaruh keterlibatan orang tua, perilaku guru, dan motivasi belajar terhadap prestasi belajar matematika siswa. *Jurnal Riset Pendidikan Matematika*, 6(1), 53–61. <https://doi.org/10.21831/jrpm.v6i1.15246>

Fauziah, R., & Puspitasari, N. (2022). Kesulitan belajar matematika siswa SMA pada pokok bahasan persamaan trigonometri di kampung pasanggrahan. *Plusminus: Jurnal Pendidikan Matematika*, 2(2), 324–334. <https://doi.org/10.31980/plusminus.v2i2.1876>

Handayani, D., Septhiani, S., Matematika, P., & Pgri, U. I. (2021). Pengaruh kecerdasan emosional aspek kesadaran diri terhadap prestasi belajar matematika. *Jurnal Cendikia: Jurnal Pendidikan Matematika*, 05(02), 1352–1358.

Lase, S. (2018). Hubungan antara motivasi dan kebiasaan belajar terhadap prestasi belajar matematika siswa SMP. *Jurnal Warta Edisi*, 56(April).

Lontoh, F. O. L., Oktavianus, J., Juanda, Laras, L., Tumbel, D., & Permana, S. (2021). Impact of sense of belonging and self-awareness on professionalism of teachers. *Turkish Journal of Computer and Mathematics Education*, 12(9), 1156–1160.

Maharani, L., & Mustika, M. (2016). Hubungan self awareness dengan kedisiplinan peserta didik kelas VIII di SMP wiyatama bandar lampung. *Konseli : Jurnal Bimbingan Dan Konseling (E-Journal)*, 3(1), 17–31. <https://doi.org/10.24042/kons.v3i1.555>

Makur, A. P., Jehadus, E., Fedi, S., Jelatu, S., Murni, V., & Raga, P. (2021). Kemandirian belajar mahasiswa dalam pembelajaran jarak jauh selama masa pandemi. *Mosharafa: Jurnal Pendidikan Matematika*, 10(1), 1–12. <https://doi.org/10.31980/mosharafa.v10i1.862>

Masrura, S. I., & Murtafiah, M. (2018). Kontribusi kesadaran metakognisi dan motivasi belajar matematika terhadap prestasi akademik mahasiswa FMIPA universitas sulawesi barat. *Saintifik*, 4(1), 74–82. <https://doi.org/10.31605/saintifik.v4i1.146>

Ningsih, S., Haryaka, U., & Watulingas, J. R. (2019). Pengaruh motivasi, lingkungan belajar, dan sikap siswa terhadap hasil belajar matematika siswa kelas VII SMP negeri 22 samarinda. *Primatika: Jurnal Pendidikan Matematika*, 8(1), 43–54. <https://doi.org/10.30872/primatika.v8i1.140>

Noor, P. P., & Abadi, A. P. (2022). Kemampuan berpikir tingkat tinggi dalam perkembangan pembelajaran matematika SMA. *Jurnal Educatio FKIP UNMA*, 8(2), 466–473. <https://doi.org/10.31949/educatio.v8i2.1986>

- Nu'man, M. (2019). Self awareness siswa madrasah aliyah dalam pembelajaran matematika. *Jurnal Pengembangan Pembelajaran Matematika*, 1(1), 51–58. <https://doi.org/10.14421/jppm.2019.11.51-58>
- Purnomo, Y. (2017). Pengaruh sikap siswa pada pelajaran matematika dan kemandirian belajar siswa terhadap prestasi belajar matematika. *JKPM (Jurnal Kajian Pendidikan Matematika)*, 2(1), 93. <https://doi.org/10.30998/jkpm.v2i1.1897>
- Ruswana, A. M. (2018). Korelasi antara self -regulated learning dengan kemampuan pemahaman matematis mahasiswa. *Mosharafa: Jurnal Pendidikan Matematika*, 7(3), hlm. 381-388.
- Sari, N. K., & Himmi, N. (2019). Pengaruh kedisiplinan, rasa percaya diri, dan kecerdasan logis matematis terhadap hasil belajar matematika siswa. *Pythagoras: Jurnal Program Studi Pendidikan Matematika*, 8(1), 49–59. <https://doi.org/10.33373/pythagoras.v8i1.1784>
- Sholikhah, Z., Kartana, T. J., & Utami, W. B. (2018). Efektifitas model pembelajaran open-ended terhadap prestasi belajar matematika ditinjau dari kreativitas siswa. *Jes-Mat (Jurnal Edukasi Dan Sains Matematika)*, 4(1), 35–46. <https://doi.org/10.25134/jes-mat.v4i1.908>
- Siagian, H., Pangaribuan, J. J., & Silaban, P. J. (2021). Pengaruh kemandirian belajar terhadap hasil belajar matematika siswa di sekolah dasar. *Jurnal Basicedu: Research & Learning in Elementary Education*, 4(4), 1363–1368.
- Sriwahyuni, K., & Maryati, I. (2022). Kemampuan pemecahan masalah matematis siswa pada materi statistika. *Plusminus: Jurnal Pendidikan Matematika*, 2(2), 335–344. <https://doi.org/10.31980/plusminus.v2i2.1830>
- Sulastri, E., & Sofyan, D. (2022). Kemampuan komunikasi matematis ditinjau dari self regulated learning pada materi sistem persamaan linear dua variabel. *Plusminus: Jurnal Pendidikan Matematika*, 2(2), 289–302. <https://doi.org/10.31980/plusminus.v2i2.1875>
- Winata, R., Friantini, R. N., & Astuti, R. (2021). Kemandirian belajar dan kedisiplinan belajar terhadap prestasi mahasiswa pada perkuliahan daring. *Jurnal E-DuMath*, 7(1), 18–26. <https://doi.org/10.52657/je.v7i1.1343>
- Yulianty, N. (2019). Kemampuan pemahaman konsep matematika siswa dengan pendekatan pembelajaran matematika realistik. *Jurnal Pendidikan Matematika Raflesia*, 4(1), 60–65. <https://doi.org/10.33449/jpmr.v4i1.7530>
- Yusriyah, Y., & Noordiana, M. A. (2021). Kemampuan representasi matematis siswa SMP pada materi penyajian data di desa bungbulang. *Plusminus: Jurnal Pendidikan Matematika*, 1(1), 47–60. <https://doi.org/10.31980/plusminus.v1i1.1025>