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The Role of Mathematics Self-Regulated Learning and Motivation on the Potential of Continuing Education

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Abstrak

Rendahnya rata-rata tingkat pendidikan di Indonesia menyebabkan berbagai masalah seperti kemiskinan yang tinggi, pengangguran, perkembangan ekonomi lambat dan berita Hoax. Proses pembelajaran di kelas hendaknya dapat mendukung potensi siswa melanjutkan pendidikan ke jenjang lebih tinggi. Tujuan dari penelitian ini adalah untuk menganalisis peranan mathematics self-regulated learning (MSRL) dan motivasi terhadap potensi siswa melanjutkan pendidikan ke jenjang yang lebih tinggi. Metode yang digunakan adalah metode penelitian kuantitatif korelasional. Partisipan penelitian sebanyak 111 siswa SMP di semua tingkatan. yang diambil secara acak dengan teknik purposive random sampling. Instrumen penelitian berupa angket tertutup dengan empat pilihan rentang 1–4. Analisis data dilakukan dengan bantuan softwere Smart PLS 3.0. Hasil penelitian menunjukkan bahwa MSRL berpengaruh positif terhadap potensi siswa melanjutkan pendidikan ke jenjang lebih tinggi. Sedangkan motivasi melanjutkan pendidikan tidak perpengaruh secara signifikan terhadap potensi siswa melanjutkan Pendidikan. Dengan demikian sebaiknya guru terus mengembangkan MSRL siswa untuk mendukung potensi siswa melanjutkan Pendidikan semakin tinggi.
Kata Kunci: Mathematics Self-Regulated Learning; Melanjutkan Pendidikan; Motivasi

Abstract

The inadequate educational levels in Indonesia have resulted in various issues, such as high poverty rates, unemployment, sluggish economic growth, and the propagation of false news. To address this issue, it is crucial to design the learning process in the classroom to support students' potential to pursue higher education. The main aim of this study was to investigate the role of mathematics self-regulated learning (MSRL) and motivation in determining students' potential to continue their education at a higher level. This study employed a quantitative, correlational research design. The participants consisted of 111 junior high school students from all grade levels, who were selected using a purposive random sampling technique. The research instrument was a closed-ended questionnaire with four options ranging from 1 to 4. Data analysis was performed using Smart PLS 3.0 software. The findings of the study revealed that MSRL had a positive impact on students' potential to pursue higher education, while motivation to continue education did not significantly influence this potential. Hence, teachers should focus on developing students' MSRL skills to support their potential to pursue even higher levels of education.
Keywords: Continuing Education; Mathematics Self-Regulated Learning; Motivation

I. INTRODUCTION

Developing self-regulated learners is a significant goal in mathematics education, as it helps students effectively manage their thoughts, behaviors, and emotions to achieve learning objectives (Guo & Wei, 2019). Self-regulated learning (SRL) is defined as a dynamic process in which students control their learning strategies and knowledge to reach academic goals (Wang & Sperling, 2020). According to research, SRL plays a vital role in supporting students' academic achievement and long-term learning (Daniel et al., 2016). It is a key educational objective for schools to cultivate self-regulated learners (Sontag & Stoeger, 2015). SRL enables students to manage their learning strategies and knowledge, which is essential for problem-solving, reasoning, and understanding complex topics in mathematics. SRL also promotes critical thinking abilities that contribute to mathematics achievement (Gabriel et al., 2020). Studies have found a strong correlation between SRL and mathematics achievement (Purnomo, 2016). Students with self-regulated learning are actively engaged in their studies and take responsibility for their own learning process (Prasetyaningsih et al., 2014). They are aware of their learning and independently design various learning activities (Suhendri, 2015).

Students who have self-regulated learning will regulate themselves in learning responsibly and consciously without being forced by others. This awareness actualizes a strong determination for students to manage their learning process. Students have a full role in independently designing various forms of learning activities to be undertaken (Hidayati & Kurniati, 2018). Self-regulated learning is often referred to as independent learning, which is also an important part of mathematics learning because one aspect of behavior that can support student success is independent learning. Students who are independent in learning means that they have attitudes and behaviors to perceive, reason, and make decisions according to their own abilities. The success of students in learning mathematics is determined by the independent learning of each individual. Students with high levels of independent learning tend to learn better under their own supervision, able to monitor, supervise, and manage their learning effectively, complete tasks on time, and efficiently. Student independent learning is something that affects the quality of student learning achievement (Fadhillah & Hernawati, 2019). Self-regulated learning (SRL) is a multi-dimensional set of processes, including goal-setting, planning, strategy use, monitoring, and reflection, that enable individuals to manage and control their goal-directed thoughts, actions, and emotions (Callan & Cleary, 2019). Self-regulation is an important predictor of educational outcomes like academic success, lifelong learning, and healthy emotional functioning Self-regulation is defined as an individual's ability to control their thoughts, feelings and actions to achieve goals and respond to environmental stimuli. Individuals who are effective at self-regulating may engage in various processes to maintain optimal levels of emotional, behavioral, cognitive, and motivational arousal (Losenno et al., 2020).

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There are several factors that support SRL. Interestingly, while interest is generally considered a positive motivational factor, (Bai et al., 2024) found that struggling EFL writers reported a low level of interest, suggesting that interventions to increase interest could be beneficial. Additionally, the perception of task difficulty was significantly affected by task complexity, which has implications for instructional design (Sanajou et al., 2017). Interest, task analysis, perception of task difficulty, self-efficacy, help seeking, self-control, and self-judgment are all integral components of self-regulated learning. These elements interact to influence students' learning processes and outcomes. Educators should consider these factors when designing interventions and instructional strategies to support students' development of SRL skills (Bai et al., 2024); (Callan et al., 2022); (Sanajou et al., 2017)).

More specifically, self-regulated learning in this study is self-regulated learning in mathematics learning, namely mathematics self-regulated learning (MSRL). Thus, MSRL in this study can be defined as a dynamic cycle and process in which learners or students control their thoughts, behaviors, and emotions in an effort to achieve mathematics learning goals.

Motivation is an important part of the learning process, including mathematics learning. Motivation is a phenomenon in the form of effort or strength within a person that creates a drive to engage in activities in order to achieve goals (Rafiola et al., 2020). Motivation is anything that drives someone to perform a particular task. Studies on motivation in learning mathematics have been widely researched by education observers. What distinguishes this study from other studies on motivation is that the motivation in this study focuses more on students' motivation to continue their education to a higher level, from the junior high school level whether to continue to the high school level only or to the university level.

The concept of continuing education as a driving force for lifelong learning has been studied extensively in various research (Afriansyah et al., 2023). These studies provide insights into the various factors that motivate individuals to pursue education throughout their lives. For instance, the importance of lifelong learning in maintaining professional competence and the challenges faced in current educational mechanisms have been highlighted. It is suggested that thoughtful coordination of these mechanisms can enhance the usefulness of continuing education (Taylor & Neimeyer, 2017). Quayson (2019) emphasizes the role of educators in facilitating adult development and transformation through lifelong learning, and highlights the importance of feedback and communication skills in the learning process (Quayson, 2019). Furthermore, Downes (2011) critiques the limited perspective of lifelong learning as simply continuing education, suggesting that it encompasses a broader range of educational activities. Motivation to continue education is linked to the development and maintenance of professional competence, the transformative role of education in adult development, and the recognition of

lifelong learning as a comprehensive approach to personal and professional growth. These factors contribute to the ongoing interest in and pursuit of continuing education (Downes, 2011).

Indonesia's Human Development Index (HDI) in 2021 is 0.705, which is classified as high (Conceição, 2022). However, globally, Indonesia ranks 114th out of 191 countries, with an expected years of schooling of 13.7 and mean years of schooling of 8.6. This means that on average, Indonesians aged 25 and above have less than 9 years of education or have not completed junior high school. The low education index in Indonesia leads to various problems such as high poverty rates, unemployment, slow economic development and growth, and even a society that is easily influenced by fake news or hoaxes. On the other hand, the gross enrollment rate in education in Indonesia in 2022 at the senior high school (SMA) level or equivalent only reached 85.49%, and particularly at the university level, it is still very low nationally, at only 30% (BPS, 2023). This shows that there are some junior high school students who do not continue their education to senior high school, and the majority of senior high school students do not continue to tertiary education. The teaching and learning process in the classroom should be able to encourage students to have a strong desire to continue their education to a higher level so that Indonesia's targets, as outlined in the Indonesian Education Roadmap 2020-2035, which aims for 100% high school enrollment rate (APK SMA) and 50% tertiary education enrollment rate university (Kementrian Pendidikan dan Kebudayaan, 2020), can be achieved.

The percentage of poor people in March 2022 was 9.54 percent. In March 2023 it was 9.36 percent or 25.90 million people. Although there has been a decrease, the poverty rate is still relatively high, namely 25.90 million Indonesians in the poor category (BPS, 2023). This high level of poverty certainly has an impact on slowing economic growth. Low levels of education and high unemployment will have an impact on how easily someone is exposed to fake news. The results of the study show that the lower the level of education and income, the more likely they are to spread hoaxes (Khan & Idris, 2019).

The learning process in the classroom with various innovations and strategies so far should be able to support and increase the potential of students to continue their education to a higher level so that deficiencies that have an impact on unemployment, economic slowdown, and easy exposure to fake news (hoaxes) can be minimized.

Based on the background description above, the aim of this research is to analysis whether mathematics self-regulated learning and motivation to continue education influence the chances of junior high school students continuing their education to higher levels. Indonesia has set a target for 100% high school enrollment and 50% higher education enrollment by 2035. To achieve this target, it is essential to create a learning environment that encourages students to have a strong motivation to continue their education. Previous studies have shown a significant relationship between self-regulated learning and mathematics achievement, as well as the impact of motivation on

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academic performance. Therefore, this research aims to analysis the role of self-regulated learning on students' likelihood of continuing their education and motivation to continue education as a intvening variable.

II. METHOD

To achieve the predetermined goals, the researcher designed a quantitative correlational study to analyze the role of mathematics self-regulated learning (MSRL) in the likelihood of students continuing their education to higher levels. The participants in this study were students from all levels of Junior High School (SMP), including first-year students (grade 7), second-year students (grade 8), and third-year students (grade 9). Schools in the eastern region of Cirebon under the Ministry of Education, Culture, Research, and Technology, as well as schools in the western region under the Ministry of Religion, were included. A total of 111 students were randomly selected as participants using purposive random sampling. This research was conducted in the January – September 2023

The study involved three variables: (1) mathematics self-regulated learning (MSRL) as variable X1, (2) motivation to continue education (MCE) as variable X2, and potential to continue education (PCE) as variable Y. The variables and indicators used in the study can be seen in Table 1 below.

There are seven elements that make up the Self-Regulated Learning (SRL) variable, including: (1) Interest in the context of self-regulated learning is closely tied to motivational beliefs that can impact students' engagement and persistence in learning tasks (Callan et al., 2022); (2) Task analysis, a component of SRL, involves setting goals and devising strategies to achieve them, which is crucial for effective learning (Fauzi & Widjajanti, 2018); (3) Perception of task difficulty can affect learners' motivation and the strategies they employ, as demonstrated in a study where task complexity influenced EFL learners' perceptions (Sanajou et al., 2017); (4) Self-efficacy, or the belief in one's abilities, is a vital motivational construct that predicts the use of various SRL strategies (Teng, 2024); (5) Help seeking is an SRL strategy that students with lower online learning self-regulation may struggle with, indicating a need for development in this area (Swafford, 2018); (6) Self-control, which encompasses attention focus and task strategies, is part of the volitional control phase of SRL (Fauzi & Widjajanti, 2018); (7) Lastly, self-judgment, which is a reflective phase of SRL, allows learners to evaluate their performance and outcomes (Fauzi & Widjajanti, 2018).

There are five indicators that make up the Motivation to Continue Education (MCE) variable, including: (1) Parental encouragement, which is a significant factor in motivating individuals to pursue continuing education. Studies have shown that parental support and encouragement can directly influence academic achievement and the motivation to continue education (Iosr et al., 2015); (2) Encouragement from friends, or peers, also plays a role in continuing education. Peer environment and attachment have been found to significantly predict academic motivation (Moradi & Mardani, 2023); (3)

The cost factor is a significant consideration in the decision to pursue continuing education. Economic factors, such as study fees and career prospects, can influence school-leavers' decisions to enroll in higher education (Eidimtas & Juceviciene, 2014); (4). Encouragement from educators can significantly impact an individual's decision to pursue further education. The influence of teachers and recommendations from career counselors are crucial educational factors that can affect the decision-making process of students who have completed high school (Eidimtas & Juceviciene, 2014). Choosing school over employment is a decision that is influenced by various motivational factors, particularly for adult learners. Personal development has been identified as a strong predictor of academic success, indicating that intrinsic motivation can influence the decision to prioritize education over immediate employment (Pang & Lee, 2013).

The Potential to Continue Education (PCE) variable consists of five indicators, including: (1) Completing high school education, which is essential for practical skill development (McLnerny, 2003). Baumann & Keimer (2023) examined the benefits of pursuing higher education for working professionals, emphasizing the importance of lifelong learning and career development (Baumann & Keimer, 2023). (2) Continuing education without being influenced by parents' attitudes. (3) Continuing education under any circumstances, which is a self-motivated endeavor to acquire additional knowledge or skills for personal or professional development. (4) Continuing education by one's own will. Self-directed learning is a crucial aspect of continuing education, allowing individuals to tailor their learning experiences to their specific needs and interests. This approach is particularly relevant in professions where ongoing education is essential to maintain competency and keep abreast of new developments, as seen in librarianship, healthcare, and education (Katz, 2019; Plastinina et al., 2022).

The indicators and number of items used in this study for each variable can be seen in Table 1 below.

Tabel 1.
Variable and Reseach Indicators

Variables	Indicators	Item:
X_1: Mathematics Self-Regulated Learning (MSRL)	1. Interset	1,2
	2. Task Analysis	3,4
	3. Perception of task dificulty	5,6
	4. Self-efficacy	7,8
	5. Help seeking	9,10,11
	6. Self-control	12,13,14,15
	7. Self judgement	16,17
X_2: Motivation to Continue Education (MCE)	1. Parental encouragement	1
	2. Encouragement from friends	2
	3. The cost factor	3
	4. Encouragment from techer	4
	5. Choosing school over work	5
Y: Potetial to Continue Education (PCE)	1. Continuing school until high school level	1
	2. Continuing school until the university level	2
	3. Continuing school without being influenced by parents' attitudes.	3
	4. Will continue school under any circumstances	4
	5. Continuing school by one's own will	5

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A research instrument in the form of a questionnaire was developed to obtain quantitative data for this study by analyzing the indicators of the variables in Table 1. The questionnaire used a Likert scale ranging from 1 to 4 for positive and negative statements. For positive statements, a score of 1 indicated a condition that was highly unsuitable for students, while a score of 4 indicated a condition that was highly suitable. Conversely, for negative statements, a score of 1 indicated a condition that was highly suitable, while a score of 4 indicated a condition that was highly unsuitable. The data collected through the questionnaire was then analyzed using Smart PLS 3.0 software, which is one of the alternative methods of structural equation modeling (SEM).

There are three stages in data analysis using the SEM method:

1. Outer model

The outer model is conducted to ensure that the measurement instrument used in the research is suitable for measurement (valid and reliable). There are four calculations in this analysis: (a) convergent validity/outer loading, which is the factor loading value on latent variables with their indicators; (b) discriminant validity, which is the cross-loading value of factors to determine whether the constructs have adequate discrimination; (c) composite reliability/construct reliability and validity, which is a measurement where reliability value > 0.5 indicates high construct reliability; and (d) Cronbach alpha, which is a calculation to prove the composite reliability result, where the minimum value is 0.6. A research instrument indicator will not be used if three or more indicators meet the invalid criteria, while if two or more indicators meet the valid criteria, they will be used (Sousa & Rojjanasrirat, 2011).

2. Inner model

The aim of this analysis is to investigate the connection between latent constructs. To achieve this, several calculations are involved, including: (a) R Square, which is the coefficient of determination for the endogenous construct. Chin (1998) in Sarwono (2015) classified the R Square values as follows: 0.67 for substantial, 0.33 for moderate, and 0.19 for weak. (b) Effect size (F square) is used to gauge the model's goodness. The following interpretations for F square values: 0.02 for a small effect, 0.15 for a moderate effect, and 0.35 for a large effect at the structural level. (c) Prediction relevance (Q square), also known as Stone-Geisser's, is used to assess the predictive capability and quality of the generated values. Ghazali (2016) stated that the obtained values of 0.02 (small), 0.15 (moderate), and 0.35 (large) indicate the prediction capability for endogenous constructs with reflective indicators (Ghazali, 2016).

3. Hypothesis testing

In hypothesis testing, a significance level of 5% is often used, with a t-statistic value of 1.96. Consequently, the hypothesis can be accepted or rejected based on the following criteria: if the t-statistic > 1.96, Ha is accepted, and H0 is rejected. Alternatively, Ha can be accepted if the p-value is less than 0.05.

III. RESULT AND DISCUSSION

A. Result

1. Analysis Outer Model Result

The analysis of the outer model using Smart PLS 3.0 resulted in values for Outer Loading, Discriminant Validity, Construct Reliability and Validity, and Cronbach's Alpha for each indicator of the research instrument, as shown in Table 2.

Tabel 2.
Results of the Outer Model Analysis

I	OL	DV	CRV	CA
MSRL1	V	V	V	V
MSRL2	V	V	V	V
MSRL3	V	V	V	V
MSRL4	V	V	V	V
MSRL5	V	V	V	V
MSRL6	V	V	V	V
MSRL7	UV	V	V	V
MSRL8	V	V	V	V
MSLR9	V	V	V	V
MSRL10	V	V	V	V
MSRL11	V	V	V	V
MSRL12	V	V	V	V
MSRL13	V	V	V	V
MSRL14	V	V	V	V
MSRL15	V	V	V	V
MSRL16	V	V	V	V
MSRL17	V	V	V	V
MMP1	UV	UV	UV	V
MMP2	UV	V	UV	V
MMP3	V	UV	UV	V
MMP4	V	UV	UV	V
MMP5	UV	UV	UV	V
PMP1	V	UV	V	V
PMP2	V	UV	V	V
PMP3	UV	UV	V	V
PMP4	V	UV	V	V
PMP5	V	UV	V	V

Information:
I : Indicator
OL : Outer Loading
DV : Discriminant validity
CRV : Construc Reability and Validity
CA : Cronbach Alpha
V : Valid
UV : Unvalid

From Table 2, it can be understood that there are indicators that are not valid in 3 criteria of the outer model validity, namely indicators MMP1 and MMP5 are not valid in terms of outer loading, discriminant validity, and construct reliability and validity. Therefore, indicators MMP1 and MMP5 are not used for further analysis, while the other indicators are used.

2. Analysis Strctural Model Result

The results of the structural model analysis using Smart PLS 3.0 software with their values are presented in Figure 1 below.

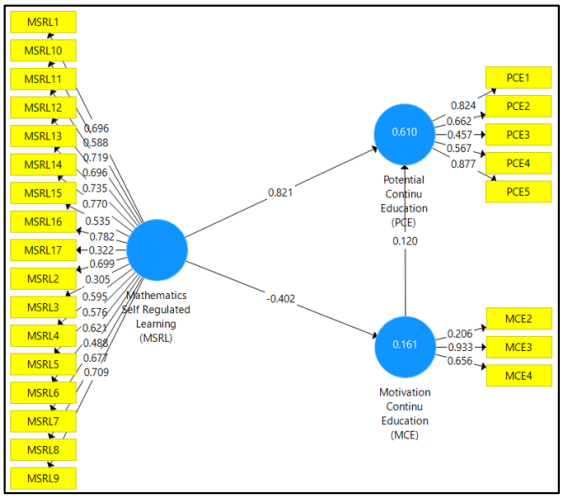

Figure 1. Results of Structural Model Analysis

Based on Figure 1, it can be explained that the MSRL latent variable relationship to the PCE variable of 0.821 is substantial, the MSRL relationship to the MCE variable 0.402 is not substantial, and the MCE relationship to PCE 0.120 is not significant. To test the significance of the relationship between these latent variables, the following R Square test is carried out.

Tabel 3.
R Square Result

Konstruk	R Square	R Square Adjusted
Potential to Continue Education (PCE)	0,610	0,602
Motivation to Continue Education (MCE)	0,161	0,154

Based on the R-Square table, it can be concluded that the value of 0.610 for the

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latent variable of continuing education potential signifies that the model is categorized as substantial. This suggests that mathematics self-regulated learning has the potential to influence the potential for continuing education by 61%, while the remaining 39% is accounted for by other factors. In contrast, the value of 0.161 for the variable of motivation for continuing education indicates that the model is categorized as weak. This means that mathematics self-regulated learning can impact motivation for continuing education by 16.1%, while the remaining 84% is influenced by other factors.3) Hypothesis testing

Hypothesis testing using the PLS-SEM method is performed by conducting bootstrapping using the Smart PLS 3.0 software. The analysis results show the relationship and influence of exogenous variables on the endogenous variable. The table presents the original sample estimate (O), sample mean (M), standard deviation (STDV), T statistics (TS), and p-value (PV) for each variable.

Tabel 4.
Boostrapping Result

	O	(M)	STDV	TS	PV
MSLR -> PCE	,821	,835	,046	17,918	,000
MSLR -> MCE	-,40	-,43	,081	4,946	,000
MCE -> PCE	,120	,119	,065	1,835	,067
MCE mediate MSLR and PCE	-.05	-.05	.027	1,748	,081

The critical t-value for a 95% confidence level (α = 5%) and degrees of freedom (df) = n - 2 = 111 - 2 = 109 is 1.659. The hypothesis testing for each latent variable relationship is as follows:

H1: There is no influence of Mathematics Self-Regulated Learning on the potential for continuing education.

H2: There is no influence of Mathematics Self-Regulated Learning on motivation for continuing education.

H3: There is no influence of motivation for continuing education on the potential for continuing education.

H4: Motivation for continuing education mediates the relationship between Mathematics Self-Regulated Learning and the potential for continuing education.

The results of each hypothesis testing are explained as follows:

a. Hypothesis testing for the Mathematics Self-Regulated Learning Influence Variable

Based on the output of Table 4, the t-statistic for the variable MSLR on the variable PMP is 17.918 > T-table (1.659) with a probability of error of 0.000 < 0.05. The original sample estimate value shows a positive value of 0.821, indicating that the direction of the relationship between the MSLR variable and the PMP variable is positive. Therefore, H0 in this research is rejected. This means that in this research, the latent variable Mathematics Self-Regulated Learning and its indicators significantly influence the latent variable of the potential to continue education to a higher level.

b. Hypothesis Testing Variable The influence of Mathematics Self-Regulated Learning (MSRL) on the

Variable Potential to Continue Education (PCE)

Based on the output of Table 4, the t-statistic for the variable MSRL on the variable PCE is 1.835 > t-table (1.659) and P value 0.067 > alpha = 0.05. Therefore, H_0 in this study is accepted. This means that in this study, the latent variable Influence of motivation to continue education with its indicators influences the latent variable PCE. The original sample estimate value shows a negative value of -0.402, indicating that the direction of the relationship between the MSRL variable and the PCE variable is negative. Thus, MSRL does not significantly influence the PMP variable.

c. Hypothesis Testing Variable the Influence of Motivation to Continue Education (MCE) on the Variable Potential to Continue Education

Based on the output of Table 4, the t-statistic for the variable MSRL on the variable PCE is 4.946 > t-table (1.659) and P value 0.000 < alpha = 0.05. Therefore, H0 in this study is accepted. This means that in this study, the latent variable MMP with its indicators does not influence the latent variable PCE. The original sample estimate value shows a positive value of 0.120, indicating that the direction of the relationship between the MCE variable and the PCE variable is very weak. Thus, MMP does not significantly influence the PMP variable.

d. Hypothesis Testing of Motivation to Continue Education Mediating Mathematics Self-Regulated Learning and Potential to Continue Education

Based on the output of Table 4, the t-statistic for the mediator variable 1.748 > t table (1.659) and P value 0.081 > α (0.05). Therefore, H0 in this study is accepted. This means that in this study, the variable motivation to continue the education does not mediate the relationship between mathematics self-regulated learning and potential to continu the education

B. Discussion

The research on mathematics self-regulated learning (MSRL) indicates that it has a positive impact on students' potential to pursue higher education. Therefore, MSRL can be considered a prerequisite for increasing students' potential to pursue higher education. To align with the research findings (Saputri et al., 2022), classroom learning should foster students' mathematics self-regulated learning that enhances their motivation in learning and develops positive values. Several studies support the relationship between MSRL and students' potential to pursue higher education. Xu et al. (2022) found that self-regulated learning strategies, including those applied to mathematics, are positively correlated with academic performance, as evidenced by GPA scores. This suggests that MSRL can enhance students' academic success, which is a critical factor in their ability to pursue higher education (Xu et al., 2022). Singh et al. (2019) further explored the relationship between MSRL and students' achievements in mathematics, which is a core component of STEM-related fields in higher education. Although the study found no significant relationship between MSRL and attitudes towards mathematical thinking, it implies that MSRL is still an essential skill for academic success in mathematics (Singh et al., 2019). Rintari et al. (2020) reported on an intervention

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aimed at enhancing students' mathematical problem-solving abilities and MSRL through realistic mathematics education, which could potentially improve their readiness for higher education by fostering better problem-solving skills (Rintari et al., 2020).

MSRL has a positive impact on students' math academic performance, which is crucial for future success. Though MSRL's direct influence on higher education pursuit is not explicitly stated, improved academic performance through effective SRL strategies can enhance students' potential for educational advancement (Xu et al. (2022), Rintari et al. (2020), Singh et al. (2019).

However, motivation to pursue higher education does not significantly influence potential to pursue higher education. This aligns with Meiliati et al. (2018) research findings, which state that motivation does not directly affect learning achievement. This means that students with the motivation to pursue higher education may not necessarily have the potential to do so, as factors such as financial constraints or lack of parental support can hinder their educational progress. However, several studies offer insights into factors that influence motivation to pursue higher education (Meiliati et al., 2018). For example, identify cost, cultural exposure, personal and professional growth, quality of education, academic reputation, and career prospects as significant factors influencing students' preference for international education. Slobodin et al. (2021) discuss how perceived discrimination can positively relate to personal/career motivation to pursue higher education among ethnic minority students, with ethnic identity playing a moderating role (Slobodin et al., 2021). Hunter-Johnson (2021) highlights the challenges international students face, yet they remain motivated to pursue higher education in the United States. Contradictions or interesting facts emerge when considering the socio-cultural factors and resilience of students (Hunter-Johnson, 2022). Gopinath (2014) delves into the intricate decision-making process that Indian students encounter when opting to study abroad, which is influenced by both domestic and international educational provisions (Gopinath, 2015). Soraya and Chen (2022) highlight that migrant workers are highly motivated to pursue higher education to change stereotypes and enhance their lives (Soraya & Chen, 2022). Umoro (2023) suggests that socio-cultural factors, including day-to-day living experiences, significantly impact Indonesian students' motivation to study in Japan (Umoro, 2023). Nkansah & Ikbal (2024) emphasizes the resilience of First-Generation College Students in Ghana, driven by personal, societal, family, and institutional factors. Nashwan et al. (2022) indicates that professional goals are a primary motivator for nurses and midwives to pursue higher education, despite barriers such as cost (Nashwan et al., 2022).

Similarly, using the motivation to continue education to a higher level as a mediator between the latent variable mathematics self-regulated learning and the potential to continue education to a higher level, the mediator variable cannot mediate the relationship between the latent variables MSRL and PCE.

IV. CONCLUSION

Based on the analysis and discussion, the following conclusions can be drawn: Mathematics Self-Regulated Learning (MSRL) has a positive influence on students' potential to continue education in higher level. Students' motivation to continue education in higher level does not significantly affect their potential to continue education in higher level. Mathematics self-regulated learning does not have a positive influence on students' motivation to continue education in higher level. Motivation to continue education in higher level cannot mediate the relationship between mathematics self-regulated learning and students' potential to continue higher level.

In this research, it was found that mathematics self-regulated learning plays an important role and has a positive impact on the potential of students to continue their education to a higher level. Consequently, the researcher recommends that educators and teachers incorporate reinforcement of MSRL in their classroom instruction to enhance students' potential for higher education, ultimately contributing to an elevated national average educational level and human development index in Indonesia.

REFERENCES

Afriansyah, E. A., Luritawaty, I. P., Puspitasari, N., Sundayana, R., Mulyadi, R., Hidayat, A., & Damayanti, D. (2023). Training to Submit Scientific Articles in Accredited National Journals. *Indonesian Journal of Community Empowerment (IJCE)*, *4*(01), 33-47.

Bai, B., Guo, W., & Wang, C. (2024). Relationships Between Struggling EFL Writers' Motivation, Self-Regulated Learning (SRL), and Writing Competence in Hong Kong Primary Schools. *Applied Linguistics Review, 15*(1), 135–159. https://doi.org/doi:10.1515/applirev-2020-0131

Baumann, S., & Keimer, I. (2023). Individual Benefits of Continuing Higher Education. The Case of a Swiss Business School*. Journal of Adult and Continuing Education, 29*(2), 343-359. https://doi.org/10.1177/14779714231160707

Callan, G. L., & Cleary, T. J. (2019). Examining Cyclical Phase Relations and Predictive Influences of Self-Regulated Learning Processes on Mathematics Task Performance. *Metacognition and Learning, 14*(1), 43–63. https://doi.org/10.1007/s11409-019-09191-x

Callan, G. L., DaVia Rubenstein, L., Barton, T., & Halterman, A. (2022). Enhancing motivation by developing cyclical self-regulated learning skills. *Theory into Practice*, *61*(1), 62–74. https://doi.org/10.1080/00405841.2021.1932153

Conceição, P. (2022). *Human Developmnet Report 2021-2022: Uncertain Times, Unsettled Lives. Shaping our future in a transformation world*. UNDP

Daniel, G. R., Wang, C., & Berthelsen, D. (2016). Early School-Based Parent Involvement, Children's Self-Regulated Learning and Academic Achievement: An Australian Longitudinal Study. *Early Childhood Research Quarterly*, *36*, 168–

177. https://doi.org/https://doi.org/10.1016/j.ecresq.2015.12.016

Downes, S. (2011). *Innovation, Continuing Education and Lifelong Learning*. *In S. Jeschke, I. Isenhardt, F. Hees, & S. Trantow (Eds.), Enabling Innovation: Innovative Capability - German and International Views* (pp. 81–83). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-24503-9_9

Eidimtas, A., & Juceviciene, P. (2014). Factors Influencing School-leavers Decision to Enrol in Higher Education. *Procedia - Social and Behavioral Sciences*, *116*, 3983–3988. https://doi.org/10.1016/j.sbspro.2014.01.877

Fadhillah, F. M., & Hernawati, E. (2019). Analysis of Mathematical Communication Ability and Self-Regulated Learning Mathematics Students of IX Grade Smp Negeri 2 Cilamaya Kulon. *Journal of Innovative Mathematics Learning*, *2*(1).

Fauzi, A., & Widjajanti, D. B. (2018). Self-Regulated Learning: The Effect on Student's Mathematics Achievement. *Journal of Physics: Conference Series*, *1097*(1). https://doi.org/10.1088/1742-6596/1097/1/012139

Gabriel, F., Buckley, S., & Barthakur, A. (2020). The Impact of Mathematics Anxiety on Self-Regulated Learning and Mathematical Literacy. *Australian Journal of Education*, *64*(3), 227–242. https://doi.org/10.1177/0004944120947881

Ghazali, N. H. M. (2016). A Reliability and Validity of an Instrument to Evaluate the School-Based Assessment System: A Pilot Study. *International Journal of Evaluation and Research in Education (IJERE)*, *5*(2), 148–157.

Gopinath, D. (2015). Characterizing Indian Students Pursuing Global Higher Education: A Conceptual Framework of Pathways to Internationalization. *Journal of Studies in International Education*, *19*(3), 283–305. https://doi.org/10.1177/1028315314563783

Guo, W., & Wei, J. (2019). Teacher Feedback and Students' Self-regulated Learning in Mathematics: A Study of Chinese Secondary Students. *Asia-Pacific Education Researcher*, *28*(3), 265–275. https://doi.org/10.1007/s40299-019-00434-8

Hidayati, D. W., & Kurniati, L. (2018). The Influence of Self-Regulated Learning to Mathematics Critical Thinking Ability on 3D-Shapes Geometry Learning using Geogebra. *JIPM: Jurnal Ilmiah Pendidikan Matematika*, *7*(1), 40. https://doi.org/10.25273/jipm.v7i1.2965

Hunter-Johnson, Y. (2022). A Leap of Academic Faith and Resilience. *Journal of International Students*, *12*(2), 283–301. https://doi.org/10.32674/JIS.V12I2.1986

Katz, B. (2019). *Continuing Education of Reference Librarians* (1st ed., Vol. 1). Routledge.

Kementrian Pendidikan dan Kebudayaan. (2020). *Peta Jalan Pendidikan Indonesia 2020 - 2035*.

Khan, M. L., & Idris, I. K. (2019). Recognise misinformation and verify before sharing: a reasoned action and information literacy perspective. *Behaviour and Information Technology*, *38*(12), 1194–1212. https://doi.org/10.1080/0144929X.2019.1578828

Losenno, K. M., Muis, K. R., Munzar, B., Denton, C. A., & Perry, N. E. (2020). The dynamic roles of cognitive reappraisal and self-regulated learning during mathematics problem solving: A mixed methods investigation. *Contemporary Educational Psychology*, *61*. https://doi.org/10.1016/j.cedpsych.2020.101869

McLnerny, P. M. (2003). The student-Managed Investment Fund at the High School Level. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *76*(5), 252–254. https://doi.org/10.1080/00098650309602014

Meiliati, R., Darwis, M., & Asdar, A. (2018). Pengaruh Motivasi Belajar, Self-Efficacy, dan Self-Regulated Learning Terhadap Hasil Belajar Matematika. *IMED: Issuess in Mathematics Eduvation*, *2*(1), 81–91.

Moradi, S., & Mardani, F. (2023). The Impact of Peer Attachment on Academic Motivation: A Quantitative Analysis. *KMAN Counseling & Psychology Nexus*, *1*(2), 4–9. https://doi.org/10.61838/KMAN.PSYCHNEXUS.1.2.2

Nashwan, A. J., Villar, R. C., Mathew, R. G., Al-Lobaney, N. F., Nsour, A. T., Abujaber, A. A., & Leighton, K. (2022). Intention and motivation to pursue higher education among registered nurses and midwives: a cross-sectional study during COVID-19. *International Journal of Nursing Education Scholarship*, *19*(1). https://doi.org/10.1515/ijnes-2021-0152

Plastinina, N. A., Анатольевна, П. Н., Bogdanova, S. Yu., Юрьевна, Б. С., Dimova, I. V., & Вадимовна, Д. И. (2022). Edutech in continuing education. *Bulletin of Nizhnevartovsk State University*, *59*(3), 111–121. https://doi.org/10.36906/2311-4444/22-3/10

Prasetyaningsih, A., Chamdani, M., & Warsiti. (2014). Hubungan Kemandirian Belajar dan Interaksi Edukatif Dengan Hasil Belajar IPS Siswa Kelas IV SD Sekecamatan Purworejo. *Kalam Cendikia PGSD KEBUMEN*, *2*(3), 16–23.

Purnomo, Y. (2016). Pengaruh Sikap Siswa Pada Pelajaran Matematika dan Kemandirian Belajar Siswa Terhadap Prestasi Belajar Matematika. *JKPM: Jurnal Kajian Pendidikan Matematika, 2*(1).

Quayson, F. (2019). The Continuing Education of Adult Development and Lifelong Transformation: A Multidisciplinary Approach to Promote Adult Learning. *The Interdisciplinary Journal of Advances in Research in Education*, *2*(1), 1–8. https://doi.org/10.55138/sq104284qoa

Rafiola, R. H., Setyosari, P., Radjah, C. L., & Ramli, M. (2020). The Effect of Learning

p-ISSN: 2086-4280
e-ISSN: 2527-8827

Motivation, Self-Efficacy, And Blended Learning on Students' Achievement in The Industrial Revolution 4.0. *International Journal of Emerging Technologies in Learning*, *15*(8). https://doi.org/10.3991/ijet.v15i08.12525

Rintari, R., Sumarmo, U., & Kustiana, A. (2020). Enchancing Student's Mathematical Problem-Solving Ability and Self-Regulated Learning by Using Realistic Mathematics Education. *JIML: Journal of Innovative Mathematics Learning*, *3*(3), 169–177. https://doi.org/10.22460/JIML.V3I3.P169-177

Sanajou, N., Zohali, L., & Zabihi, F. (2017). Do Task Complexity Demands Influence the Learners' Perception of Task Difficulty? *International Journal of Applied Linguistics and English Literature*, *6*(6), 71. https://doi.org/10.7575/aiac.ijalel.v.6n.6p.71

Saputri, V., Juandi, D., Herlina, S., & Anwar, V. N. (2022). Self-Regulated Learning dan Motivasi Belajar dalam Pembelajaran Matematika Secara Online: Systematic Literature Review. *ANARGYA: Jurnal Ilmiah Pendidikan Matematika*, *5*(1). https://doi.org/10.24176/anargya.v5i1.7208

Singh, P., Abd Moin, M. A. A. B., Veloo, P. K., Han, C. T., & Hoon, T. S. (2019). The Relationship between Self-Regulated Learning and Mathematics Attitude towards College Students Development of Mathematical Thinking. *Universal Journal of Educational Research*, *7*(10A), 48–53. https://doi.org/10.13189/UJER.2019.071709

Slobodin, O., Icekson, T., Herman, L., & Vaknin, O. (2021). Perceived Discrimination and Motivation to Pursue Higher Education in Ethiopian-Origin Students: The Moderating Role of Ethnic Identity. *Frontiers in Psychology*, *12*, 647180. https://doi.org/10.3389/FPSYG.2021.647180/BIBTEX

Sontag, C., & Stoeger, H. (2015). Can Highly Intelligent and High-Achieving Students Benefit from Training in Self-Regulated Learning in a Regular Classroom Context? *Learning and Individual Differences*, *41*, 43–53. https://doi.org/https://doi.org/10.1016/j.lindif.2015.07.008

Soraya, S. Z., & Chen, M.-Y. (2022). Identifying Struggles and Challenges Faced by Indonesian Migrant Workers Pursuing Higher Education in Taiwan. *Journal of Education and Learning (EduLearn)*, *16*(1), 35–42. https://doi.org/10.11591/edulearn.v16i1.20093

Sousa, V. D., & Rojjanasrirat, W. (2011). Translation, Adaptation and Validation of Instruments or Scales for Use In Cross-Cultural Health Care Research: A Clear And User-Friendly Guideline. *Journal of Evaluation in Clinical Practice*, *17*(2), 268–274. https://doi.org/10.1111/J.1365-2753.2010.01434.X

Suhendri, H. (2015). Pengaruh Metode Pembelajaran Problem Solving

terhadap Hasil Belajar Matematika Ditinjau dari Kemandirian Belajar. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *3*(2). https://journal.lppmunindra.ac.id/index.php/Formatif/article/view/117

Swafford, M. (2018). The Relationship Between Motivation and Online Self-Regulated Learning. *Journal of Human Sciences and Extension*. https://doi.org/10.54718/awij9321

Taylor, J. M., & Neimeyer, G. J. (2017). Continuing Education and Lifelong Learning Strategies. *Handbook of Private Practice*, 602–619. https://doi.org/10.1093/MED:PSYCH/9780190272166.003.0046

Teng, L. S. (2024). Individual differences in self-regulated learning: Exploring the Nexus of Motivational Beliefs, Self-Efficacy, and SRL strategies in EFL writing. *Language Teaching Research*, *28*(2), 366–388. https://doi.org/10.1177/13621688211006881

Umoro, A. L. (2023). Indonesian Students' Motivation to Pursue Tertiary Education in Japan. *Japanese Research on Linguistics, Literature, and Culture*, *5*(2), 118–127. https://doi.org/10.33633/jr.v5i2.8282

Wang, Y., & Sperling, R. A. (2020). Characteristics of Effective Self-Regulated Learning Interventions in Mathematics Classrooms: A Systematic Review. *Frontiers in Education*, 5. https://doi.org/10.3389/feduc.2020.00058

Xu, L., Duan, P., Padua, S. A., & Li, C. (2022). The Impact of Self-Regulated Learning Strategies on Academic Performance for Online Learning During COVID-19. *Frontiers in Psychology*, *13*, 1047680. https://doi.org/10.3389/FPSYG.2022.1047680/BIBTEX

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