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CURIOSITY AND LEARNING MOTIVATION TOWARD SELF-REGULATED LEARNING AMONG UNDERGRADUATE STUDENTS

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Abstrak

Di era pandemi, kegiatan pembelajaran *online* menuntut siswa untuk memiliki kemandirian belajar. Beberapa faktor yang mempengaruhi kemandirian belajar adalah rasa ingin tahu dan motivasi belajar. Penelitian ini bertujuan untuk mengetahui pengaruh 1) rasa ingin tahu dan motivasi belajar secara simultan terhadap kemandirian belajar, 2) rasa ingin tahu terhadap kemandirian belajar, dan 3) motivasi belajar terhadap kemandirian belajar. Sampel penelitian ini adalah 45 mahasiswa Pendidikan Matematika. Teknik pengumpulan data menggunakan angket. Data yang diperoleh dianalisis dengan analisis regresi linier berganda. Hasil penelitian ini adalah rasa ingin tahu dan motivasi belajar secara simultan berpengaruh positif terhadap kemandirian belajar. Hubungan antara rasa ingin tahu dan motivasi belajar dengan kemandirian belajar berada pada kategori kuat. Pengaruh rasa ingin tahu dan motivasi belajar terhadap self-regulated learning sebesar 41,4%, sedangkan 58,6% ditentukan oleh variabel lain yang tidak diteliti. Namun, rasa ingin tahu tidak mempengaruhi kemandirian belajar siswa, sedangkan motivasi belajar mempengaruhi kemandirian belajar. Dengan demikian, rasa ingin tahu harus disertai dengan motivasi belajar agar siswa dapat memiliki kemandirian belajar. Pemberian pembelajaran yang meningkatkan rasa ingin tahu siswa harus diserta dengan pemberian motivasi untuk meningkatkan kemandirian belajar siswa.

Kata Kunci: Rasa ingin tahu, Motivasi belajar, Kemandirian belajar

Abstract

In the pandemic era, online learning activities require students to become independent learners. Several factors that influence learning independently are curiosity and motivation to learn. This study aims to see the effect of 1) learners' curiosity and motivation on independent learning, 2) learners' curiosity on independent learning, and 3) learners' motivation on independent learning. The samples of this research include 45 students of Mathematics Education. Questionnaires were to collect the data. The data obtained were analyzed by using multiple linear regression analysis. The results indicate that curiosity and learning motivation have a positive effect on independent learning. The relationship between curiosity and learning motivation with independent learning is in a strong category. The effect of curiosity and learning motivation on self-regulated learning is 41.4%, while 58.6% is determined by other variables which were not examined. However, curiosity does not affect student independent learning, while learning motivation affects independent learning. Thus, curiosity must be accompanied by learning motivation so that students can become independent learners. The provision of learning that increases students' curiosity must be accompanied by the provision of motivation to increase students' independent learning.

Keywords*: Curiosity, Learning motivation, Self-regulated learning*

INTRODUCTION

Covid 19 has occurred and brought changes to the education system in Indonesia from previously offline learning to online or non-face-to-face learning. Online learning usually uses various applications via smartphones and laptops (Permatasari et al., 2021). Students carry out lectures using various applications such as e-learning, google meet, google classroom, zoom, and others. Online learning requires students to have self-regulated learning. It is a self-

awareness to learn without depending on other people and feeling responsible for achieving the desired goals (Hamka & Vilmala, 2019). Students also need it to build the concepts and principles they learn (Yuliati & Saputra, 2020). According to Permatasari et al. (2021), self-regulated learning is a process carried out by a person independently, responsible for achieving goals, and can overcome all problems. In line with the previous statement, it is a learning process carried out by students without depending on educators and other people, and students can solve their learning problems (Muhammad, 2020). Thus, self-regulated learning is a learning process carried out without depending on others and is carried out with full responsibility by overcoming all problems in learning to achieve specific goals.

It is the importance of independent student learning, especially in higher education. Learning must be pursued by implementing learning that can fully involve students, encouraging students to compile their knowledge, find the material being studied and relate it to real-life situations to apply it in daily life. Thus, the students can think creatively, innovatively, and rationally (Sobri et al., 2020). Thus, learning that can increase student self-regulated learning is learning that can generate curiosity. Curiosity can increase student learning motives. It can be caused by contradictions, facing problems that are difficult to solve, discovering new things (Pamungkas et al., 2017). Curiosity is represented by the learning ability and enthusiasm to carry out the investigation that we want students to have (Raharja et al., 2018). It is the desire to learn, investigate, get new information or knowledge to solve problems (Arends, 2012). Thus, curiosity is a learning ability and enthusiasm to study, investigate, obtain information to solve problems.

Through curiosity, students do not need to be encouraged in such a way to learn (Raharja et al., 2018) thus that in the end, it can lead to student self-regulated learning. They can experience learning on their own. Therefore, arousing student curiosity is something essential. In addition, curiosity is an indicator of self-regulated learning (Sumarni & Sumarmo, 2016). Thus, curiosity is one indicator of self-regulated learning. It is reinforced by previous research (Guay et al., 2010; Tariq et al., 2013; von Stumm et al., 2011), there is a relationship between self-regulated learning and curiosity. On the other hand, self-regulated learning relates to several factors, such as perceptions of the environment, maturity, self-control, self-monitoring, and achievement motivation (du Toit-Brits & van Zyl, 2017). Achievement motivation has a strong relationship with self-regulated learning (Fitriani et al., 2020). Similar to research conducted by David et al. (2014), learning motivation has a positive and significant relationship with self-regulated learning. Another study was also conducted by Chairani (2017) that motivation directly affects self-regulated learning because motivation is related to choosing one's strategy and actions. Motivation is needed that arises within oneself to make someone more enthusiastic about learning (Isnawati & Samian, 2010). Thus, achieving self-regulated learning requires learning motivation.

Online learning often needs learning motivation and related characteristics, like curiosity and self-regulated learning to involve the learning process (Selvi, 2010). Based on the previous study (du Toit-Brits & van Zyl, 2017; Fitriani et al., 2020; Guay et al., 2010; Tariq et al., 2013; von Stumm et al., 2011), curiosity and learning motivation are a variable that affects self-regulated learning. However, no studies try to determine the effect of curiosity and learning motivation simultaneously toward self-regulated learning. Thus, this study aims to determine 1) the effect of curiosity and learning motivation simultaneously toward self-regulated learning, 2) the effect of curiosity toward self-regulated learning, and 3) the effect of learning motivation toward self-regulated learning. By examining the relationship between the two variables, it is hoped that later it can become input and consideration for lecturers in instilling self-regulated learning in students.

METHOD

The research is survey research with a quantitative approach. It is a correlational study to determine the relationship between the measured variables: curiosity, learning motivation, and self-regulated learning. This study is intended to determine whether or not there is an influence and relationship of curiosity, learning motivation toward self-regulated learning. The research was conducted at the Mathematics Education in one university in Yogyakarta. The population was all active students of the Mathematics Education. The sampling technique used was a simple random sampling technique. It is a technique that takes sample members by providing equal opportunities to members of the population to become samples (Arieska & Herdiani, 2018). From the results of distributing questionnaires, it was found that 45 students had filled in the data, so the sample of this study was 45 students.

The data collection instrument was a questionnaire of curiosity, learning motivation, and self-regulated learning. The data was processed and analyzed using SPSS version 25 to find descriptive statistics and hypothesis testing using correlation analysis. Descriptive statistics describe or analyze research results without making generalizations (Sugiyono, 2012). The data description includes the amount of data, the mean value, maximum, minimum, standard deviation, variance, and ideal score. Furthermore, the classical assumption test was carried out: the normality, linearity, multicollinearity, and heteroscedasticity test. If it meets the classical assumption test, it will analyze with multiple regression analysis. The multiple regression test will be obtained whether or not there is an influence between curiosity and learning motivation on self-regulated learning. If there is a relationship, how much is the relationship coefficient by looking at the R-value. The classification of the R-value is shown in Table 1.

Table 1. Classification of R values (Permatasari et al., 2021)

Relationship Category	Score
Very Weak	$0.0 \leq R < 0.2$
Weak	$0.2 \leq R < 0.4$
Medium	$0.4 \leq R < 06$
Strong	$0.6 \leq R < 0.8$
Very Strong	$0.8 \leq R \leq 1.0$

Furthermore, the R square value on the correlation coefficient is used to find the coefficient of determination which helps measure the variables of curiosity and learn motivation on student self-regulated learning. Researchers determined a significant level of 5% (p = 0.05) to test the correlation results of this research data.

RESULT

Data on curiosity, learning motivation, and self-regulated learning obtained from the questionnaire results were processed by descriptive statistical analysis with the SPSS version 25. The descriptive analysis is presented in Table 2.

Table 2. Descriptive analysis

	N	Mean	Maks	Min	Std. Deviation	Variance
Curiosity	45	23.1778	31	15	3.61367	13.059
Learning motivation	45	58.0889	71	48	4.48139	20.083
Self regulated learning	45	36.9778	48	28	4.84997	23.522

The next stage is hypothesis testing to determine how much curiosity and learning motivation influence student self-regulated learning. Hypothesis testing in this study used multiple linear regression. Before that, it is necessary to fulfill the classical assumptions as a

condition so that the multiple linear regression analysis models are valid as an estimation tool. The classic assumption tests are normality, linearity, multicollinearity, and heteroscedasticity. First, the normality test determines whether the residual value of the curiosity, learning motivation, and self-regulated learning is normally distributed. The results of the data normality test by using the Kolmogorov Smirnov test are presented in table 3.

Table 3. Normality Test

	Asymp. Sig. (2-tailed)
Kolmogorov Smirnov test	.200

The results in Table 3 show that the *Sig*. (2-tailed) value is 0.200. Because of the significant value of 0.200 > 0.05, the data is normally distributed. The following classical assumption test is the linearity test. The linearity test for the variables of curiosity, learning motivation, and self-regulated learning are presented in table 4.

Table 4. Linearity Test

	Sig.
Self-regulated learning * Curiosity	.270
Self-regulated learning * Learning motivation	.823

The significance value of the linearity test for self-regulated learning and curiosity shown in table 4 is 0.270 and for self-regulated learning and learning motivation is 0.823. Because the significance value is more than 0.05, there is a significant linear relationship between curiosity (X1) and self-regulated learning (Y) and between the learning motivation variable (X2) and self-regulated learning (Y).

The following classical assumption test is the multicollinearity test. The results of the multicollinearity test are presented in table 5.

Table 5. Multicollinearity Test

Model	**Tolerance**	**VIF**
Curiosity	.667	1.500
Learning Motivation	.667	1.500

Table 5 shows the tolerance value for the curiosity variable (X1) and learning motivation (X2) is 0.667 more than 0.05, so there are no multicollinearity symptoms in the regression model.

The following classical assumption test is the heteroscedasticity test. This test is performed using the Glejser test. The Glejser test's result is presented in table 6.

Table 6. Heteroscedasticity Test

Model	**t**	**Sig.**
Curiosity	-1.073	.289
Learning Motivation	.582	.563

Based on table 6, the significance value (Sig.) of the curiosity (X1) is 0.289 and learning motivation (X2) is 0.563, where both are more than 0.05, so there is no heteroscedasticity in the regression model so that it meets the classical assumption test. Thus, the simple linear regression model from the data is valid as a measuring tool because it has fulfilled the four classical assumption tests. Therefore, hypothesis testing can be done with multiple linear regression analysis.

Multiple linear regression analysis in this study used the SPSS version 25. The analysis results are presented in tables 7, 8, and 9.

Table 7. Regression Analysis Output (Model Summary)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.664	.441	.414	3.71160

The summary regression test table shows that the R-value is 0.664. Hence, the relationship between curiosity and learning motivation simultaneously with self-regulated learning is positive and is included in the strong relationship category based on table 1. The coefficient of determination (R Square) is 0.414, which means that curiosity and learning motivation simultaneously on self-regulated learning is 41.4%, while 58.6% is influenced by other factors not examined. The accuracy level of the regression prediction of this study is 3,71160.

The results of the regression significance test are shown in Table 8.

Table 8. Regression Analysis Output (Anova)

Model	F	Sig.
Regression	16.565	.000
Residual		
Total		

Based on table 8, it is found that the value of F is 16.565 with a significance value (Sig.) is 0.000. Because the Sig. is 0.000 less than 0.05, then curiosity and learning motivation simultaneously affect self-regulated learning. Table 9 is the result of regression test data coefficients to determine the regression equation model.

Table 9. Regression Analysis Output (Coefficients)

Model	t	Sig.
Curiosity	-.316	.754
Learning Motivation	4.875	.000

Furthermore, the t-test is carried out. The t-test was used to determine the effect of curiosity and learning motivation. The significance value of curiosity is obtained equal to 0.745. Because the significance value is greater than 0.05, it can be concluded that curiosity does not affect student self-regulated learning. The significance value is obtained in the learning motivation variable, amounting to 0,000. Because the significance value is smaller than 0.05, it can be concluded that learning motivation affects students' self-regulated learning.

From Table 9, a regression equation model between curiosity, learning motivation, and self-regulated learning. The equation is $Y = -4.937 - 0.060X_1 + 0.745X_2$, where Y is self-regulated learning, X_1 is curiosity, and X_2 is learning motivation. Thus, if there is no curiosity and learning motivation in the regression equation, then the consistent value of self-regulated learning is -4,937. Meanwhile, the value of -0.60 indicates that with every addition of curiosity value, self-regulated learning decreases by 0.060. The value -0.745 indicates that for each additional one value of learning motivation, self-regulated learning increases by 0.745.

DISCUSSION

Online learning activities require innovation to answer the challenges in the pandemic era. Because of that, the teacher needs to make innovations in the teaching and learning process. The success innovations depend on the student's characteristics. It was disclosed by Nakayama

et al. (2014) not all students can adapt and will be successful in online learning. It is due to differences in learning environmental factors and student characteristics. In online learning, the teaching and learning process requires being more motivating and improving curiosity and self-regulated learning (Selvi, 2010). Thus, curiosity and learning motivation simultaneously affect self-regulated learning. Giving learning that provokes student curiosity and motivation can increase student self-regulated learning.

The relationship between curiosity and learning motivation toward self-regulated learning is positive and strong. The higher the curiosity and learning motivation, the higher self-regulated learning. The effect of curiosity and learning motivation on self-regulated learning is 41.4%, while 58.6% is determined by other variables not examined. Briley et al. (2009) stated that it is necessary to increase curiosity and motivation to improve student learning so that students can have self-regulated learning. However, after the t-test was carried out, it was found that curiosity did not affect self-regulated learning, while motivation affected self-regulated learning. It is different with some previous research (Guay et al., 2010; Tariq et al., 2013; von Stumm et al., 2011) that state there is a relationship between self-regulated learning and curiosity. It is because with the high curiosity of students, students can manage their own learning strategies in obtaining information to solve the problems they face or in the other words, they have good self-regulated learning (Kusuma et al., 2013). However, the research also shows that the percentage of the influence of scientific attitudes, one of which is curiosity about self-regulated learning, is 0.36 or 36%. Several factors that may cause there is no significant effect between curiosity and self-regulated learning, such as limited sampling, research instruments used, or research time. Curiosity is essential in the learning process because it will encourage students to find what they want to know (Fauzi et al., 2017). However, according to Schunk & Usher (2012), learning motivation can influence how we learn, what we learn, and when we choose to learn. When motivation affects what we learn, it means that learning motivation affects curiosity. In other words, curiosity is influenced by learning motivation. Curiosity is a powerful driving force in learning and motivation that leads students to learn more effectively (Shin et al., 2019).

Several other studies (Aprilia et al., 2017; Baars & Wijnia, 2018; Chairani, 2017) also reveal that high learning motivation will also have self-regulated learning. Students who are motivated like to do activities that are actively involved, challenging, enjoy the process of learning activities, and also show increased learning outcomes, creativity, and persistence (El-Seoud et al., 2014). Then, designing a learning environment that motivates students to attract students' attention (Keller, 2010). This statement follows the opinion of (Santrock, 2010) that motivation will provide enthusiasm, direction, and persistence in doing something. Thus, curiosity must be accompanied by learning motivation so that students can have self-regulated learning because Shin et al. (2019) state that curiosity affects learning motivation. Suppose students have attitudes and actions that are always trying to find out more deeply and broadly about something. It will make it easier for students to learn activities. In that case, students will show active behavior in learning activities, such as students like to read, ask questions, or discuss in the learning process with student activity (Arini et al., 2020). It will make it easier to understand the lesson. It is supported by the opinion of Jirout & Klahr (2012), which states that curiosity is something that teachers can use to grow, improve, and use to motivate children to learn. Thus, if there is motivation without curiosity, there is no effort to find out more deeply and broadly about something. Whereas, it will make it easy for the students to learn and understand the lesson if they also have curiosity and motivation.

CONCLUSION

Based on the study results, it was found that curiosity and learning motivation simultaneously had a positive effect on self-regulated learning. Furthermore, there is a strong

relationship between curiosity and learning motivation and students' self-regulated learning. The effect of curiosity and learning motivation on independent learning is 41.4%, while 58.6% is determined by other variables not examined. However, curiosity does not affect student self-regulated learning, while learning motivation affects self-regulated learning. Thus, curiosity must be accompanied by learning motivation so that students can have independence in learning. Giving learning that provokes student curiosity and motivation can increase student self-regulated learning.

Self-regulated learning should be something that needs to be considered, considering that this ability is one of the aspects that universities want to achieve to produce graduates who are ready to compete in the world of work. A significant contribution of achievement motivation to independent learning should be one of the considerations for lecturers to contribute to student curiosity accompanied by learning motivation in students. Given the many factors associated with independent learning, it is suggested for further research to examine other variables related to student self-regulated learning. Conclusions can be a generalization of findings according to research problems. It can also be in the form of recommendations for the next steps.

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