

How the Intrapersonal Intelligence and Learning Motivation Affect Students' Mathematics Learning Achievement During the Covid-19 Pandemic

*Aswin¹, Dadan Dasari², Chelsi Ariati³

¹ Department of Mathematics Education, Universitas Pendidikan Indonesia

² Department of Mathematics Education, Universitas Pendidikan Indonesia

³ Department of Mathematics Education, Universitas Pendidikan Indonesia

*Corresponding author. Email: aswin@upi.edu

ABSTRACT

This study was conducted to find out how intrapersonal intelligence and learning motivation affect students' math learning achievement during the covid-19 pandemic. This research is an ex post facto casual research with a sample of 112 students from class X IPA SMA at Riau, which were selected using random sampling. Data collecting techniques used the following instruments: (1) questionnaire of intrapersonal intelligence, (2) questionnaire of learning motivation, (3) students' math report cards. The research data were analyzed first by some testing requirements: normality test, heteroscedasticity test, and multicollinearity test. After fulfilling the test requirements, the data were analyzed using multiple linear regression. The result showed that: (1) students' intrapersonal intelligence had a significant influence on students' mathematics learning achievement, (2) students' learning motivation had a significant influence on students' mathematics learning achievement, (3) students' Intrapersonal intelligence and learning motivation simultaneously affect students' mathematics learning achievement. Thus, intrapersonal intelligence and learning motivation are the main factors of students' mathematics learning achievement. It is suggested that students use methods that will increase their intrapersonal intelligence and learning motivation.

Keywords: *Intrapersonal Intelligence, Learning motivation, Students' mathematics learning achievements.*

1. INTRODUCTION

Instruction is a process in which a person's environment is purposefully regulated to encourage pupils to learn [1]. Learning has principles [2]: (1) learning as an effort to obtain a behavior change (2) learning outcomes are characterized by overall behavior, (3) learning is a process, (4) the learning process occurs because something is encouraging, and there is a goal to be achieved, (5) learning is a form of experience. Similarly, mathematics learning has the same principles that Lefudin has revealed.

Pandemic covid-19 condition required every student to do online learning or stay at home. Online learning is important to maximize learning outcomes, especially learning mathematics. However, many teachers have difficulty delivering online learning, which will affect

students' mathematics learning achievement. Moreover, students' internal and external factors also contribute to students' mathematics learning achievement. Internal factors are the factors that come from a student itself, while external factors come from the students' surroundings. Factors to note in mathematics learning are intrapersonal intelligence and student learning motivation.

According to Gardner in [3], intrapersonal intelligence is a person's capacity to comprehend oneself, high awareness in recognizing his mood, emotions, and changes in himself. Whereas according to [4], intrapersonal intelligence is the ability and skills of each individual in creating relationships, building relationships, and even maintaining social relationships so that they are mutually beneficial. Moreover, [5] say that "Intrapersonal intelligence is the most basic factor in

a person because the intelligence determines what the concept of one's understanding of himself is, the form of self-adjustment, feeling, motivation, attitude, and control of the strengths and weaknesses that exist in him."

Any individual with good intrapersonal intelligence will have a good emotional connection with relatives and those around him. According to [6], intrapersonal intelligence has an important role in mathematical learning because learning mathematics is not only the ability to calculate and use formulas but more than that. Based on previous theories, it can be concluded that students who have good intrapersonal intelligence will be better at controlling emotions, relationships with others and have good skills in managing relationships.

Moreover, variable motivation also has a role in improving students' mathematics learning achievement. According to [7], "Motivation refers to a set of internal forces/impulses that guide the behavior of an individual for a specific purpose." Motivation is divided into 2, which are intrinsic and extrinsic motivation. According to [8], Intrinsic motivation is a motivation that comes from within students, and extrinsic motivation is a motivation that comes from the individual environment. According to [1], motivation is defined as the power in a person to do something.

Learning motivation has a very important role in learning [9] because every individual who has good learning motivation will have a good learning spirit even if the learning is carried out online. In addition, [10] says that "Motivation plays a key role in learning; it would largely explain academic performance as it is a construct that integrates both thoughts and feelings." Based on previous theories, it can be concluded that motivation is important for students because motivation will encourage students to do an activity.

Seeing the importance of intrapersonal intelligence and learning motivation, researchers are interested in seeing How intrapersonal intelligence and learning motivation affect students' mathematics learning achievements during the covid-19 pandemic, where all mathematical learning processes are conducted online.

2. METHOD

The type of this research is quantitative research with an Ex post facto approach. There are two variables in this research, which are the independent variable and dependent variable. Variable, independent variables are intrapersonal intelligence and learning motivation, while dependent variables are students' mathematics learning achievement.

This research was conducted at one of the high schools in Riau. Sampling in this study using a random sampling technique. The population in this study was a grade XI IPA student at one of the high schools in Riau.

As for the many samples in this study, there were 112 students. The instrument used in this study is the questionnaire of intrapersonal intelligence, learning motivation, and student report card scores.

The accumulated data of intrapersonal intelligence and learning motivation are transformed using the method of successive interval (MSI). The research data were analyzed first by some testing requirements: normality test, heteroscedasticity test, and multicollinearity test [11]. After fulfilling the test requirements, the data were analyzed using multiple linear regression.

2.1. Research Design

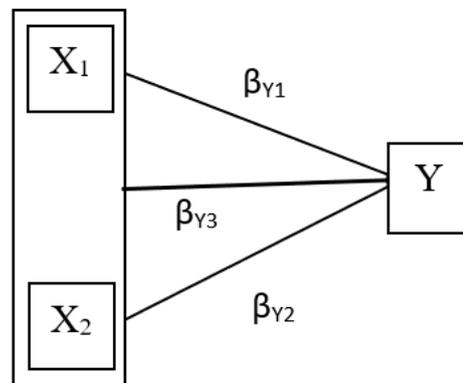


Figure 1 Research design

X₁ is intrapersonal intelligence, X₂ is learning motivation, Y is students' mathematics learning achievement, β_{Y1} is coefficient regression of X₁ to Y, β_{Y2} is coefficient regression of X₂ to Y, and β_{Y3} is coefficient regression of X₁ and X₂ to Y.

2.2. Hypothesis

The hypothesis of this research:

1. Intrapersonal intelligence influences students' mathematics learning achievement.
2. Learning motivation influences students' mathematics learning achievement.
3. Intrapersonal intelligence and learning motivation simultaneously affect students' mathematics learning achievement.

3. RESULT

3.1. Classical Assumption Test

3.1.1. Normality Test

Table 1. Normality test result

Variable	Significance
X ₁	0,116
X ₂	
Y	

Table 1 illustrates the normality test result with Kolmogorov Smirnov significance value 0.116 greater than 0.05. So that residual values are normally distributed.

3.1.2. Multicollinearity Test

Table 2. Multicollinearity test result

Variable	Tolerance	VIF
X ₁	0,946	1,058
X ₂	0,946	1,058

Table 2 illustrates that the tolerance value of each variable is more than 0.1, and the Variance Inflation Factor (VIF) value of each variable is less than 10. So that between independent variables do not occur symptoms of multicollinearity.

3.1.3. Heteroscedasticity Test

Table 3. Heteroskedasticity test result

Variable	Significance
X ₁	0,227
X ₂	0,544

Table 3 illustrated that the heteroscedasticity test result obtained a significance value of each variable greater than 0.05 so that the regression model does not contain heteroscedasticity.

3.2. Hypothesis Test

Table 4. Hypothesis test results 1 and 2.

Variable	Coefficient Regression	t	Significance
Constant	58,879		
X ₁	0,259	2,078	0,04
X ₂	0,123	2,098	0,038

3.2.1. Hypothesis Testing 1

Table 4 shows that the value of t for intrapersonal intelligence on student mathematics learning achievement is 2,078, and 112 and 3 variables are obtained t table 1,982. So obtained the value of $t > t$ table ($\alpha=0,05$) means there is an influence between intrapersonal intelligence variables on students' mathematics learning achievements. In addition, based on table 4, intrapersonal intelligence variables significantly affect students' mathematics learning achievement of 0.04.

3.2.2. Hypothesis Testing 2

Table 4 shows that the value of t for learning motivation on student mathematics learning achievement is 2,098, and if samples are 112 and 3 variables are obtained t table 1,982. So obtained the value of $t > t$ table ($\alpha=0,05$) means there is an influence between learning motivation on students' mathematics learning achievements. In addition, based on table 4, learning motivation variables significantly influence students' mathematics learning achievement of 0.038.

3.2.3. Hypothesis Testing 3

Table 5. Hypothesis test result 3.

Variable	Coefficient Regression	F	R ²	Significance
Constant	58,879			
X ₁	0,259	3,534	0,061	0,033
X ₂	0,123			

Based on table 5, obtained regression equation:

$$Y = 58.879 + 0.259 X_1 + 0.123 X_2 \tag{1}$$

This means that increasing one unit X₁ will increase the Y by 0.259, and the increase of one unit X₂ will raise the Y by 0.123. Moreover, based on table 5, the value of f is 3,534, and if many samples 112 and many variable 3 obtained f table 3.08, so that $f > t$ table variables due to intrapersonal intelligence and learning motivation of simultaneous significantly affect students' mathematics learning achievement of grade X IPA in Riau, which is 6.1% (R²= 0.061.), while the rest was influenced by other variables not observed in the study. Thus learning achievements can be predicted by intrapersonal intelligence and learning motivation.

4. DISCUSSION

This study aims to see how intrapersonal intelligence and learning motivation affect students' mathematics learning achievement during the covid-19 pandemic. According to the results of the data analysis, students' mathematics learning achievement is influenced by intrapersonal intelligence and learning motivation.

Intrapersonal intelligence significantly affects students' mathematics learning achievement, which means that intrapersonal intelligence contributes to students' mathematics learning achievement. This is similar to research conducted by [4], [6], [3], and [12] that intrapersonal intelligence influences students' mathematics learning achievement. A student with high intrapersonal intelligence will have high achievement in learning mathematics because students who have high intrapersonal intelligence will have a high awareness so that they will be responsible for the task given. Still, a student who has low intrapersonal intelligence will have low mathematics learning achievement. Through this research, it is very important to note the improvement of students' intrapersonal intelligence in mathematics learning to improve mathematics learning achievement.

Based on the results of data analysis, learning motivation has a significant influence on students' mathematics learning achievement; this is similar to research that has been done by [8], [13]. Learning motivation is very important to pay attention to in learning because motivation will encourage students to learn. Students who have high motivation will have high attention to learning. Conversely, students who have low motivation will have low attention to learning, so that it will have an impact on their learning achievement.

5. CONCLUSION

Based on the study's result, intrapersonal intelligence and learning motivation directly affect students' mathematics learning achievement. Moreover, intrapersonal intelligence and learning motivation simultaneously affect students' mathematics learning achievement. Thus intrapersonal intelligence and learning motivation are among the main determinants of students' mathematics learning achievement. It is recommended that students be taught to use methods that will improve intrapersonal intelligence and learning motivation.

AUTHORS' CONTRIBUTIONS

Aswin and Chelsi Ariati compile questionnaires, carry out research and compile articles. Dadan Dasari as a guide in the implementation and preparation of articles.

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REFERENCES

- [1] A. Haling and Pattaufi, *Belajar dan Pembelajaran*, Edisi Empa. Makassar: Badan Penerbit Universitas Negeri Makassar, 2017.
- [2] Lefudin, *Belajar dan Pembelajaran*, Edisi dua. Yogyakarta: deepublish, 2017.
- [3] N. Mahmud and R. Amaliyah AR, "Pengaruh Kecerdasan Intrapersonal Terhadap Prestasi Belajar Matematika Siswa Ditinjau Dari Tingkat Akreditasi Sekolah SMA Negeri di Kabupaten Polewali Mandar," *Mat. dan Pembelajaran*, vol. 5, no. 2, pp. 153–167, 2017, doi: <https://doi.org/10.24252/mapan.v5n2a1>.
- [4] U. Mulbar, F. Arwadi, and S. F. Assagaf, "The Influences of Intrapersonal Intelligence and Interpersonal Intelligence towards Students' Mathematics Learning Outcomes," 2018, pp. 219–221, doi: <https://dx.doi.org/10.2991/icamr-18.2019.54>.
- [5] A. W. Abdi, M. Desfandi, and Islamiati, "Visual-Spatial and Intrapersonal Intelligence: Identification Its Role in The Learning Outcomes of Students in Islamic Schools," *Int. J. Pedagog. Soc. Stud.*, vol. 5, no. 1, pp. 112–121, 2020, Doi: <https://doi.org/10.17509/ijpos.v5i1.26699>.
- [6] F. Zefanya, "Pengaruh Kecerdasan Intrapersonal dan Kedisiplinan Belajar Terhadap Prestasi Belajar Matematika," *Kaji. Pendidik. Mat.*, vol. 3, no. 2, pp. 135–144, 2018, Doi: <http://dx.doi.org/10.30998/jkpm.v3i2.2772>.
- [7] M. Ferreira, A. P. Cardoso, and J. L. Abrantes, "Motivation and Relationship of the Student with the School as Factors Involved in the Perceived Learning," *Procedia - Soc. Behav. Sci.*, vol. 29, no. 2011, pp. 1707–1714, 2011, Doi: 10.1016/j.sbspro.2011.11.416.
- [8] A. Riswanto and S. Aryani, "Learning motivation and student achievement: description analysis and relationships both," *Int. J. Couns. Educ.*, vol. 2, no. 1, pp. 42–47, 2017, Doi: 10.23916/002017026010.
- [9] H. Tambunan, "The Dominant Factor of Teacher's Role as A Motivator of Students' Interest and Motivation in Mathematics Achievement," *Int. Educ. Stud.*, vol. 11, no. 4, pp. 144–151, 2018, doi: [doi:10.5539/ies.v11n4p144](https://doi.org/10.5539/ies.v11n4p144).

- [10] J. Gasco, A. Goni, and J. D. Villarroel, "Sex differences in mathematics motivation in 8th and 9th grade," *Procedia - Soc. Behav. Sci.*, vol. 116, no. 2014, pp. 1026–1031, 2013, Doi: 10.1016/j.sbspro.2014.01.340.
- [11] W. Mendenhall, R. J. Beaver, and B. M. Beaver, *Introduction to Probability and Statistics*, 13th edition. USA: Brooks/Cole, 2009.
- [12] R. Sholikhati, Maridyana, and D. R. S. Saputro, "Students' Thinking Level Based on Intrapersonal Intelligence," 2017, Doi: doi :10.1088/1742-6596/943/1/012007.
- [13] A. Tella, "The Impact of Motivation on Student's Academic Achievement and Learning Outcomes in Mathematics among Secondary School Students in Nigeria," *Eurasia J. Math. Sci. Technol. Educ.*, vol. 3, no. 2, pp. 149–156, 2017, [Online]. Available: http://www.ejmste.com/v3n2/EJMSTE_v3n2_Tella.pdf.