



Analysis of Students' Self-Efficacy on Biology Learning Outcomes in Grade X at SMA Negeri 1 Jakenan in the Implementation of the Merdeka Curriculum

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Abstract

The purpose of this study was to analyze students' self-efficacy in relation to their Biology learning outcomes in Grade X at SMA Negeri 1 Jakenan during the implementation of the *Merdeka Curriculum*. This research is correlational in nature and employs a quantitative approach. The research method used was a survey in the form of a questionnaire. The sampling technique applied was purposive sampling, with a total sample of 72 tenth-grade students from SMA Negeri 1 Jakenan. Learning outcome data were collected through summative assessments, while self-efficacy data were obtained via a questionnaire. The self-efficacy questionnaire consisted of 40 statement items using a Likert-type scale. The correlation between variables was tested using the Pearson Product Moment correlation test, and the strength of the relationship was measured using a simple linear regression analysis. The result of the Pearson Product Moment correlation test was 0.242, indicating a positive relationship between students' self-efficacy and their Biology learning outcomes in Grade X at SMA Negeri 1 Jakenan during the implementation of the *Merdeka Curriculum*, with a low correlation impact of 5.9 percent. Self-efficacy contributes only 5.9 percent to the learning outcome scores, suggesting that other factors also influence students' academic performance.

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INTRODUCTION

Education is one of the most important factors in determining the quality of human resources and the progress of a nation. The curriculum holds a vital position in the educational process (Fakih Khusni et al., 2022). The importance of a quality curriculum encouraged the Minister of Education and Culture, Nadiem Makarim, to launch the Merdeka Belajar (Freedom to Learn) movement, which emphasizes intellectual independence (Hutabarat et al., 2022). The concept of Merdeka Belajar is closely related to commitment, independence, and the ability to apply these principles, all of which are interconnected and inseparable (Amalia, 2022).

The success of curriculum implementation can be seen through students' learning outcomes. Learning outcomes refer to the skills or competencies acquired by individuals through the learning process (Ardhiyah & Radia, 2020). These outcomes can be influenced by various factors, one of which is self-efficacy. Self-efficacy plays a critical role in learning activities and helps foster motivation (Adicondro & Purnamasari, 2011). Self-efficacy is especially important for students in adapting to the demands of a modern era and curriculum changes. Therefore, it is necessary to examine the relationship between self-efficacy and learning outcomes during the implementation of the Merdeka Curriculum.

Based on random interviews conducted with tenth-grade students at SMA Negeri 1 Jakenan in the 2023/2024 academic year, it was revealed that the implementation of the Merdeka Curriculum has had an impact on students' levels of self-efficacy. In this curriculum, students are required to be more active in self-exploration and are burdened with numerous individual and group projects. Most students reported feeling exhausted due to the volume of self-development assignments. This exhaustion has led to a decline in the effectiveness of the learning process and a decrease in students' self-efficacy. Low self-efficacy is reflected in the results of summative assessments that do not meet the minimum learning achievement criteria.

Based on the summative assessment on the topic of environmental changes in Grade X at SMA Negeri 1 Jakenan, it was found that 127 students, or 70.56 percent, did not achieve mastery, as they scored below the KKTP (Minimum Criteria for Learning Achievement). The low learning outcomes obtained are influenced by internal factors, one of which is self-efficacy. When students have high self-efficacy, they tend to be more optimistic about the learning outcomes they achieve. On the other hand, one of the external factors that influence learning outcomes is the curriculum itself. The curriculum used in school-based learning affects the achievement of students' learning outcomes.

Based on this background, a study was conducted to analyze students' self-efficacy in relation to their Biology learning outcomes in Grade X at SMA Negeri 1 Jakenan during the implementation of the Merdeka Curriculum. The Biology learning outcomes were measured through a summative assessment on the topic of environmental changes using the Problem-Based Learning (PBL) model.

RESEARCH METHOD

The research was conducted at SMA Negeri 1 Jakenan from March to May 2024. This study employed a correlational design with a quantitative approach. The research method used was a survey in the form of a questionnaire. The sampling technique applied was purposive sampling, with a sample consisting of 72 tenth-grade students. Data on learning outcomes were collected through summative assessments, while self-efficacy data were obtained through a questionnaire. The self-efficacy questionnaire consisted of 40 statement items using a Likert-type scale. The validity of the questionnaire was assessed through construct validity (expert judgment) and empirical validity. The correlation between variables was tested using the Pearson Product Moment correlation test, and the magnitude of the relationship was measured using a simple linear regression analysis.

RESULTS AND DISCUSSION

The purpose of this study is to examine students' self-efficacy based on the dimensions of magnitude, generality, and strength in Biology subject among tenth-grade students at SMA Negeri 1 Jakenan in the 2023/2024 academic year during the implementation of the *Merdeka Curriculum*; to identify students' learning outcomes through summative assessment on the topic of Environmental Change; and to analyze the relationship between students' self-efficacy and their Biology learning outcomes in Grade X at SMA Negeri 1 Jakenan within the context of the *Merdeka Curriculum*.

Assumption Tests for Analysis

The prerequisite tests for analysis include the normality test and linearity test, which are required before conducting the Pearson Product Moment correlation test and simple linear regression analysis. The data are considered to be normally and linearly distributed if the significance value is greater than 0.05. The normality test is used to determine whether the data follow a normal distribution. Based on the results of the normality test, the significance value was 0.200, which is greater than 0.05, indicating that the data are normally distributed. The linearity test is conducted to determine whether the relationship between the variables is linear (Aulia et al., 2024). Based on the results, the significance value of the linearity test was 0.363, which is greater than 0.05, indicating that the relationship between the two variables is linear.

Students' Self-Efficacy

The dimensions of self-efficacy as proposed by Bandura include magnitude, strength, and generality. Each item in the instrument is categorized according to its respective dimension. Subsequently, the percentage of achievement for each dimension is calculated using the following procedure:

Table 1. Percentage of Positive Scores in Self-Efficacy Dimensions

Dimension	Indicator	Percentage (%)	Additional Information
<i>Magnitude</i>	Confidence in the ability to overcome difficulties in learning.	65,37	Moderately High
<i>Strength</i>	Ability to master material and obtain good learning outcomes.	62,15	Moderate
<i>Generality</i>	Able to perform different tests/tasks in various activities and situations.	68,25	Moderately High

From Based on Table 1, it is known that students' self-efficacy level in the magnitude dimension falls into the moderately high category. This indicates that students' confidence in their ability to complete tasks of varying difficulty levels in Biology learning—particularly on the topic of *Environmental Change* during the implementation of the *Merdeka Curriculum*—is positive. Students are not only confident in completing simple tasks but also demonstrate confidence when facing more challenging assignments. In the strength dimension, the percentage of positive scores falls into the moderate category, indicating that students' level of confidence in their endurance when completing tasks, mastery of learning material, and expectation of achieving good academic performance in Biology—especially in the topic of *Environmental Change*—is positive. This shows

that students have a reasonably strong and steady sense of expectation, which motivates them to persist and make a sufficient effort to complete tasks effectively (Yoni Sunaryo, 2017).

In the generality dimension, the percentage of positive scores is at a moderately high level, meaning that students are confident in their ability to complete various types of tasks, perform well in different activities, and manage their study time effectively—particularly in the topic of *Environmental Change* in Biology during the implementation of the *Merdeka Curriculum*. Students are not pessimistic and show a moderate level of optimism. They make sufficient efforts to complete different tasks and seek appropriate strategies to do so (Yoni Sunaryo, 2017). These dimensions of self-efficacy were then used as the basis for developing indicators in the self-efficacy questionnaire. The questionnaire items were structured around the three dimensions: magnitude, strength, and generality.

Based on the self-efficacy scores of students in grade X-1 and X-5, the highest self-efficacy score was 131; the lowest score was 54; the mean score was 104.18; and the standard deviation was 14.79. Using the average score and standard deviation, score intervals were established to gradeify students' levels of self-efficacy. The categorization of self-efficacy scores (x) is presented in Table 2 below:

Table 2. Level and Percentage of Student Self-Efficacy

No.	Self-Efficacy Levels	Interval	Students'	Percentage (%)
1	Very High	$x \geq 126$	5	7,0
2	High	$126 < x \leq 112$	16	22,2
3	Moderate	$112 < x \leq 97$	34	47,2
4	Low	$97 < x \leq 82$	11	15,3
5	Very Low	$x < 82$	6	8,3
Total			72	100

Based on Table 2, it is known that 16 students fall into the "High" category, and 5 students are in the "Very High" category. The internal factors contributing to students' high self-efficacy include emotional intelligence, which is defined as the ability to motivate oneself (Meriyati, 2015). Another internal factor is a strong interest in biology, which leads students to feel confident in achieving good academic results. External factors also contribute to students' high self-efficacy. One such factor is the implementation of the *Merdeka Curriculum*, which has had a positive impact. This is supported by questionnaire results showing that 70% of students felt confident in adapting to the new curriculum. This finding indicates that curriculum design and teaching methods provide strong stimuli for the development of self-efficacy (Saragih, 2022). Another external factor, according to (Altermatt, 2019), is peer support, which plays a role in enhancing students' self-efficacy.

There are 34 students (47.2%) whose level of self-efficacy falls into the "Moderate" category. This indicates that, within the *Merdeka Curriculum* learning environment, tenth-grade students at SMA N 1 Jakenan generally possess a fair level of self-efficacy. These students are not pessimistic, yet they are not fully confident in their ability to complete various academic tasks. On the other hand, 11 students are in the "Low" category, and 6 students fall into the "Very Low" category of self-efficacy. Internal factors that contribute to low self-efficacy include a lack of enthusiasm for learning. This is evident in questionnaire item number 22, where many students selected the option indicating a lack of motivation to study. External factors contributing to low self-efficacy include the influence of academically stronger and more active peers, which may lower students' self-confidence (Miranda, 2017). Overall, internal factors that influence students' self-efficacy include emotional intelligence, motivation, interest, self-confidence, and preparedness. Meanwhile,

external factors include environmental conditions (learning context), social support (from peers and teachers), and teaching strategies.

The impact of the *Merdeka Curriculum* can also be analyzed through affective assessments (attitude assessments) during the completion of student worksheets (*LKPD*) and grade discussions on the topic of Environmental Change. The assessment rubric consists of three indicators, namely: the magnitude, strength, and generality dimensions of self-efficacy. The following is a table of affective assessment groupings for gradees X-1 and X-5:

Table 3. Affective Assessment Grouping for Grade X-1

	Total Score of Affective Assessment	Category	Students'	Percentage (%)	Magnitude (%)	Strength (%)	Generality (%)
1.	1-4	Poor	4	11,1	72,2	50	0
2.	5-8	Fair	30	83,4	25	33,3	16,7
3.	9-12	Good	2	5,5	2,8	16,7	83,3
4.	13-16	Very Good	0	0	0	0	0
Total			36	100	100	100	100

Table 4. Affective Assessment Grouping for Grade X-5

No.	Total Score of Affective Assessment	Category	Students'	Percentage (%)	Magnitude (%)	Strength (%)	Generality (%)
1.	1-4	Poor	0	0	75	50	0
2.	5-8	Fair	35	97,2	16,7	0	16,7
3.	9-12	Good	1	2,8	8,3	50	83,3
4.	13-16	Very Good	0	0	0	0	0
Total			36	100	100	100	100

Based on Table 3 and Table 4, the majority of students fall into the "Fair" category, with most scores ranging between 5 and 8. This indicates that students' participation in learning activities is adequate but still needs improvement. The lowest affective assessment score was found in the Magnitude dimension. A lack of enthusiasm or interest during discussion sessions resulted in low self-efficacy in this dimension. In the Strength dimension, the affective assessment for students in Grade X-1 falls into the "Poor" category, while in Grade X-5 it ranges between "Poor" and "Good". The difference between the two gradees may be due to various factors, including learning conditions and differences in student quality. In the Generality dimension, most students' affective assessment scores fall into the "Good" category. This is reflected in their behavior, such as submitting the student worksheets (*LKPD*) on time and maintaining a quiet atmosphere during *LKPD* completion.

Students' Learning Outcomes

Based on the students' learning outcomes, Grade X-1 and Grade X-5 have different mean scores and standard deviations. The average score for Grade X-1 is 64.47, while the average score for Grade X-5 is 62.38. The standard deviation for Grade X-1 is 15.92, and for Grade X-5 it is 14.33. The categorization of learning outcome scores (Y) for Grade X-1 and Grade X-5 is as follows:

Table 5. Grouping of Biology Learning Outcome Data for Grade X-1

No.	Biology Learning Outcome	Interval	Students'	Percentage (%)
1	Very High	$y \geq 88$	1	2,8
2	High	$88 < y \leq 72$	15	41,7
3	Moderate	$72 < y \leq 57$	9	25
4	Low	$57 < y \leq 41$	8	22,2
5	Very Low	$y < 41$	3	8,3
Total			36	100

Table 6. Grouping of Biology Learning Outcome Data for Grade X-5

No.	Biology Learning Outcome	Interval	Students'	Percentage (%)
1	Very High	$y \geq 84$	3	8,3
2	High	$84 < y \leq 70$	8	22,2
3	Moderate	$70 < y \leq 56$	13	36,1
4	Low	$56 < y \leq 41$	11	30,6
5	Very Low	$y < 41$	1	2,8
Total			36	100

In Grade X-1, the highest percentage of learning outcomes falls into the "High" category, reaching 41.7 percent. This indicates that learning using the *Merdeka Curriculum* has a positive effect on student achievement. In Grade X-5, the largest percentage of learning outcomes is in the "Moderate" category, accounting for 36.1 percent. This shows that the implementation of the *Merdeka Curriculum* influences learning outcomes, but the results are less than optimal. The difference in score intervals between Grade X-1 and Grade X-5 is influenced by variations in mean scores and standard deviations. The disparity in student learning outcomes between the sample gradees X-1 and X-5 may be due to differences in how the *Merdeka Curriculum* is received by students in each grade. In Grade X-1, the *Merdeka Curriculum* positively impacts learning, with 44.4 percent of students exceeding the Minimum Learning Achievement Criteria (KKTP). In Grade X-5, although the curriculum also has a positive effect, it is less effective, as only 30.6 percent of students exceed the KKTP.

The learning outcomes in Grade X-1 tend to be in the high range because students with high self-efficacy influence their peers to achieve similar results in learning, which enhances students' perseverance. This is shown by the highest score in Grade X-1 reaching 98, while in Grade X-5 the highest score is only 89. High perseverance in mastering the learning material and achieving good results will increase students' self-efficacy (Sasmita and Rustika, 2015). Based on the KKTP set, only 28 students scored above the KKTP, while 44 students scored below it. Learning outcomes below the KKTP indicate that students' understanding and analytical skills are not yet optimal. This relates to the strength dimension of self-efficacy, where each student's level varies based on the strength of their belief in their competence and ability to master the learning material (Arsanti et al., 2022). This aspect is connected to students' confidence in their ability to understand and analyze summative assessment questions. Learning outcomes below the KKTP show that students'

confidence tends to be weak. Several students still struggle to understand the learning material delivered by the teacher through the implementation of the *Merdeka Curriculum*. Students' comprehension of the learning material during teaching and learning activities is still uneven. The models and teaching methods used in implementing the *Merdeka Curriculum* need to be given more attention and adjusted to students' needs. This aligns with the statement by Aji et al. (2023) that although the implementation of the *Merdeka Curriculum* is fairly good, all aspects still need to be reconsidered carefully.

Correlation Between Self-Efficacy and Student Learning Achievement

To determine whether there is a relationship between self-efficacy (X) and learning outcomes (Y), the Pearson Product Moment correlation test was conducted. The results of the normality and linearity tests showed that the data are normally distributed and linear. Normally distributed and linear data meet the requirements for proceeding with the Pearson Product Moment correlation test (Fitriani, 2018). An overview of the correlation test results between self-efficacy and learning outcomes can be seen in the following table:

Table 7. Correlation Between Self-Efficacy and Student Learning Achievement

Aspect	n	rvalue	rtable	Significance	Additional Information
Correlation Between Self-Efficacy and Student Learning Achievement	72	0,242	0,235	0,05	Normal

Based on Table 7, the results of the Pearson Product Moment correlation test show that the calculated r value (rhitung) of 0.242 is greater than the critical r value (rtabel) of 0.235. This means that the null hypothesis (H_0) is rejected, while the alternative hypothesis (H_1) is accepted, indicating a relationship between self-efficacy (X) and learning outcomes (Y) of tenth-grade students at SMA Negeri 1 Jakenan in the low category. The relationship is positive, which means that the higher the students' self-efficacy scores, the higher their learning outcomes. The magnitude of the effect of self-efficacy on learning outcomes is measured by a simple linear regression test. The criterion for the simple linear regression test is that if the significance value is less than 0.05, it indicates that there is a relationship between the variables. Conversely, if the significance value is greater than 0.05, it indicates that there is no relationship between the variables.

Table 8. Uji Regresi Linier Sederhana

Model	Not Standardized Coefficient		Standardized Coefficient	T	Significance
	B	Std. Error	Beta		
(Constant)	37.981	12.425		3.057	0.003
Self-efficacy	0.246	0.118	0.242	2.087	0.041

Based on Table 8, the simple linear regression test shows that the significance value is 0.041, which is less than 0.05, indicating that self-efficacy has an effect on learning outcomes. Based on the simple linear regression formula, the equation obtained is $y = 37.981 + 0.246x$. The constant value of 37.981 represents the biology learning outcome score when the self-efficacy variable is zero. Meanwhile, the regression coefficient for x is 0.246, indicating that for every 1 percent increase in self-efficacy, the learning outcome score increases positively. Therefore, the direction of the effect of variable x on y is positive (Azia Bertha and Budi Santoso, 2022).

To determine the contribution of self-efficacy (x) to learning outcomes (y), the R-square value is observed. The R-square value is obtained by squaring the standardized coefficient. The R-square value is 0.059, indicating that the contribution of the self-efficacy variable (x) to the learning outcome variable (y) is 5.9 percent. This shows that self-efficacy has a weak influence on learning outcomes, and there are various other factors that can affect learning achievement. According to Hair et al. (2011), an R-square value of 0.75 is considered strong, 0.50 is moderate, and 0.25 is weak. The weak influence found in this study is due to the gap between the lowest and highest scores. This gap reflects unsatisfactory results in the learning process. Score gaps may occur due to various factors explained in the discussion of students' self-efficacy levels, such as motivation or interest, student readiness in learning, and obstacles during the learning process. The mismatch between what is taught in the curriculum and the real needs in the field can lead to discrepancies in student competencies.

This study aligns with research conducted by Ayllón et al. (2019), which found a positive relationship between self-efficacy and learning outcomes. The importance of self-efficacy in learning enables students to determine the appropriate steps to achieve success, while allowing teachers to understand students' psychological conditions and develop effective and engaging teaching methods or strategies (Jeong et al., 2019). Understanding students' self-efficacy is expected to help them complete tasks or exams at school and encourage them to maintain a positive attitude towards their abilities (Astuti & Purwanto, 2014). Students' self-efficacy in biology refers to their belief in their ability to understand, absorb, and master biology learning materials. The importance of self-efficacy in learning at SMA Negeri 1 Jakenan not only enables students to take the right steps to achieve success but also allows teachers to comprehend the psychological condition of the students.

CONCLUSION

The research results indicate that the self-efficacy of tenth-grade students at SMA Negeri 1 Jakenan during the 2023/2024 academic year, under the implementation of the Merdeka Curriculum, generally falls into the moderate category with a percentage of 47.2%. Meanwhile, the students' Biology learning outcomes are categorized as high and moderate, which indicates a weakness in the strength dimension of self-efficacy, where students tend to have difficulties in understanding and analyzing summative assessment questions. There is a relationship between students' self-efficacy and their Biology learning outcomes in the tenth grade at SMA Negeri 1 Jakenan. This is based on the correlation test result showing a calculated r value of 0.242. Self-efficacy influences 5.9% of the learning outcome scores, while other factors also affect the learning outcomes.

REFERENCES

- Adicondro, N., & Purnamasari, A. (2011). Efikasi Diri, Dukungan Sosial Keluarga dan *Self Regulated Learning* pada Peserta Didik Kelas VIII. *Humanitas: Indonesian Psychological Journal*, 8(1), 17. <https://doi.org/10.26555/humanitas.v8i1.448>
- Aji, K., Purnamaningsih, I. R., & Dimiyati, A. (2023). Analysis of Student Learning Achievement in Corner Learning with Independent Curriculum at Vocational School 1 Jayakarta. *Jurnal Pendidikan Olahraga*, 6, 109–117.
- Altermatt, E. R. (2019). Academic Support from Peers as a Predictor of Academic Self-Efficacy Among College Students. *Journal of College Student Retention: Research, Theory & Practice*, 21(1), 21–37. <https://doi.org/10.1177/1521025116686588>
- Amalia, M. (2022). Inovasi Pembelajaran Kurikulum Merdeka Belajar di Era Society 5.0 untuk Revolusi Industri 4.0. *Seminar Nasional Sosial Sains, Pendidikan, Humaniora (SENASSDRA)*, 1(1), 1–6.
- 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>

- Arsanti, R., Lubis, F. Y., & Cahyadi, S. (2022). Peran *Academic Self-Efficacy* terhadap *Academic Adjustment* pada Mahaperta Didik Tahun Pertama Program MBKM. *Journal of Psychological Science and Profession*, 6(3), 232. <https://doi.org/10.24198/jpsp.v6i3.38432>
- Astuti, R. P., & Purwanto, E. (2014). Perbedaan *Self Efficacy* Peserta didik dalam Menghadapi Ujian Nasional di SMP Negeri 1 Boyolali Ditinjau dari Keikutsertaan Bimbingan Belajar. *Educational Psychology Journal*, 3(1), 19–25.
- Aulia, U., Junaidi, H., & Setiawan, D. I. (2024). *Statistik Parametrik: Teori dan Aplikasi dengan SPSS*. Bandung: Media Sains Indonesia.
- Ayllón, S., Alsina, Á., & Colomer, J. (2019). Teachers' Involvement and Students' Self Efficacy: Keys to Achievement in Higher Education. *PLoS ONE*, 14(5), 1–11. <https://doi.org/10.1371/journal.pone.0216865>
- Fakih Khusni, M., Munadi, M., & Martin, A. (2022). Impelementasi Kurikulum Merdeka Belajar di MAN 1 Wonosobo. *Jurnal Kependidikan Islam*, 12(1), 60–71. <https://doi.org/10.15642/jkpi.2022.12.1.60-71>
- Fitriani, R. (2018). Hubungan Minat Belajar dengan Hasil Belajar Matematika Peserta Didik: Analisis Korelasi *Product Moment*. *Pedagogi: Jurnal Pendidikan Dasar*, 7(1), 45–54.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2011). *Multivariate Data Analysis* (7th ed.). Pearson.
- Hutabarat, H., Elindra, R., & Harahap, M. S. (2022). Analisis Penerapan Kurikulum Merdeka Belajar di SMA Negeri Sekota Padangsidimpuan. *Jurnal MathEdu (Mathematic Education Journal)*, 5(3), 58–69. <http://journal.ipts.ac.id/index.php/>
- Jeong, J. S., González-Gómez, D., Cañada-Cañada, F., Gallego-Picó, A., & Bravo, J. C. (2019). Effects of Active Learning Methodologies on The Students' Emotions, Self-Efficacy Beliefs and Learning Outcomes in a Science Distance Learning Course. *Journal of Technology and Science Education*, 9(2), 217–227. <https://doi.org/10.3926/jotse.530>
- Meriyati. 2015. *Memahami Karakteristik Anak Didik*. Lampung: Fakta Press IAIN Raden Intan Lampung.
- Miranda, L. P. (2017). Pengaruh Konformitas Teman Sebaya dan Minat Belajar Terhadap Perilaku Menyontek. *Psikoborneo: Jurnal Ilmiah Psikologi*, 4(1), 125–134. <https://doi.org/10.30872/psikoborneo.v4i1.3972>
- Saragih, F., Saragi, C. N., & Manurung, L. W. (2022). Pengaruh Kesiapan Belajar Terhadap Kemandirian Belajar pada Masa Pandemi COVID-19 (Studi Kasus Penerapan Kebijakan Pembelajaran Tatap Muka Terbatas). *Jurnal Pendidikan Tambusai*, 6(1), 7992–7999. <https://doi.org/10.31004/jptam.v6i1.3659>
- Sunaryo, Y., & Nuraida, I. (2017). Pengaruh Penerapan Model Pembelajaran *Brain-Based Learning* Terhadap Kemampuan Pemecahan Masalah Matematik Siswa. *Jurnal Penelitian Pendidikan dan Pengajaran Matematika (JP3M)*, 3(2), 89–96. <https://doi.org/10.37058/jp3m.v3i2.259>