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THE CONTRIBUTION OF PROBLEM-SOLVING ABILITY TO SELF-REGULATED LEARNING OF KHAIRUL IMAM MEDAN MIDDLE SCHOOL STUDENTS

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ABSTRACT
The purpose of this study is to ascertain the contribution of mathematical problem-solving abilities to self-regulated learning. This research is ex post facto research. The sample taken in this study using the cluster random sampling technique was taken randomly from two classes with a total of 51 students. Data on problem-solving abilities and self-regulated learning were collected using instruments in the form of problem-solving ability tests and self-regulated learning attitude scales. Path analysis techniques were used to analyze the data. The results of the research show that problem-solving abilities contribute significantly to students' self-regulated learning, and the large contribution of problem-solving abilities to students' self-regulated learning is 94.47%. Based on these findings, it can be concluded that to increase student self-regulated learning, problem-solving abilities must be improved. Apart from that, problem-solving abilities contribute significantly to self-regulated learning, both directly and indirectly, and these two variables have a very strong influence.
Keywords: Contribution, Problem-Solving, Self-Regulated Learning

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PRELIMINARY

Mathematics is a lesson that is needed today because, by studying mathematics, individuals are expected to be able to know the world more realistically and be able to solve complex problems. Apart from that, by using mathematics, a person can become an independent, creative individual and can also become a competent individual. Ansari explains that "mathematics learning aims to develop skills and make individuals more independent in collaborating, carrying out self-assessment (reflection), and encouraging individuals to build their own knowledge" (Ansari, 2009). So the hope of the world of education is that using mathematics can form quality human resources, in the sense that by learning mathematics, individuals are expected to be able to think logically and act more rationally, and using mathematics can make individuals good problem solvers, even though the problems that arise are not just mathematical problems.

The main priority in learning mathematics in secondary schools is that students are required to be capable of resolving issues, argue logically, reason, explain, utilize sources of information, collaborate, draw conclusions from various situations, have conceptual and procedural understanding, and become independent learners (Sari, 2020). There are many ways that educators can use to improve mathematics learning outcomes in schools, including by implementing learning models, using relevant media, and so on. This is in line with the research results of Sari N et al. that, to make mathematics learning more exciting for junior high school children, they can combine mathematics with culture, which is called ethnomathematics (Sari et al., 2023). Apart from that, for junior high school students, it is important to apply learning by looking at the student's mindset (learning trajectory) so that students can learn more comfortably and have fun (Sari et al., 2024). In line with that, Sari also explores students' didactic situations in solving problems; this is needed in order to find out the obstacles experienced by students during the learning process (Sari, 2023). The application of methods like this is in line with the independent learning curriculum that is being implemented in schools.

Mathematics is one of the subjects that is important for students to master; however, students' mathematics learning outcomes are still far from educators' expectations. This can be seen from the results of the researcher's initial observations by providing descriptive questions using the material that has been studied, and the results are still far from expectations. According to Endang Wahyu Widayati, there are still many students who think mathematics is difficult because previously students were afraid and not enthusiastic about learning, so they ended up being lazy about studying mathematics (Widayati, 2022). The reality shows that students' mathematics results are still very low. This condition is not in line with expectations, namely that the minimum completeness for each subject is 75% (Mandur et al., 2016).

There are several factors that influence mathematics learning outcomes at school, including within the student (ability) and from the environment (Khotimah, 2020). Apart from ability factors, there are other internal factors that contribute to learning outcomes, including: level of intelligence, learning motivation, interests, attitudes, study habits, perseverance, and both physical and psychological health (Mandur et al., 2016). According to Sari et al. , one of the factors behind students' low mathematics achievement at school is students' low problem-solving abilities (Sari et al., 2022). Apart from problem-solving abilities, students also need to learn independence within themselves. The higher the level of learning independence, the higher the student's learning outcomes, and vice versa

(Handayani & Hidayat, 2019). So it can be said that one of the factors contributing to low mathematics learning outcomes is students' self-regulated learning attitudes.

According to Dianna Sulistyani, self-regulated learning can be used as a factor that can influence students' mathematical problem-solving abilities (Sulistyani et al., 2020). If students' self-regulated learning is high, then students' problem-solving abilities are good, but if students' self-regulated learning is low, then their problem-solving abilities are poor. This shows that students' ability to solve problems makes them more independent in their learning. If students do not have the ability to solve problems, they will memorize more and have to repeat lesson material so that learning in class does not go as desired.

Thus, problem-solving abilities and self-regulated learning are really needed by students to face current global challenges. Research results related to the causes of Low proficiency in solving mathematical puzzles includes: 1) The majority of students find it difficult to work on problems that diverge from the teacher's sample questions. 2) Story questions are difficult for most pupils to comprehend. 3) The majority of pupils struggle to answer application or problem-solving questions. 4) Pupils respond to questions without applying standard techniques for solving problems (Andayani & Lathifah, 2019; Sari et al., 2022; Zulfah, 2018). Several studies related to the low students' self-regulated learning in junior high school include research by Rambe and Surya at Imelda Middle School in Medan (Rambe & Surya, 2017); Runisah conducted research on class VIII students in Indramayu, West Java (Runisah, 2018); and research by Sulistiyaningsih et al. at Purwokerto Middle School. This research shows that student self-regulated learning is still low, and researchers apply various methods to foster student independence in learning (Sulistiyaningsih et al., 2014).

Furthermore, Dianna Sulistyani stated that students' ability to solve problems and their capacity for self-regulated learning are related (Sulistyani et al., 2020). Then, Ansori and Pratiwi found in their research that there was an influence of self-regulated learning on students' problem-solving abilities (Ansori & Herdiman, 2019; Jayanti & Widyaninggar, 2019). The results of this research indicate that self-regulated learning influences students' problem-solving abilities. So, in theory, these two variables have a very strong relationship and influence. It can also be said that mathematical problem-solving abilities contribute to self-regulated learning and vice versa. However, so far, there has been no research regarding the magnitude of the contribution of these two variables. Therefore, research regarding the contribution of these variables needs to be carried out so that it can provide relevant contributions or input for the variables studied, and this is novelty in this research.

The focus of the study in this research is how big the contribution of mathematical problem-solving abilities is to the self-regulated learning of Khairul Imam Middle School students in Medan.

METHODS

This study is ex post facto research, meaning after the fact. According to Sukardi, the aim of this method is to identify the factors that permit alterations in behavior, symptoms, or phenomena brought on by an incident, behavior that results in modifications to the independent variables that have occurred overall (Sugiyono, 2019). This method is also research to explain or discover how the variables in the research are related or influential, but also why the symptoms or behavior occur. Thus, ex post facto in this research is to find or explain the variables of problem-solving ability and self-regulated learning that influence or contribute, where the researcher does not control these two variables or these two variables are inherently not manipulated, meaning that the classes used as samples do not exist. special treatment. This research was conducted at Khairul Imam Middle School in Medan City with a sample of 51 students taken using the cluster random sampling technique, a random sampling technique where the selection refers to groups, not individuals..

The instruments used in this research were a problem-solving ability test with five descriptive questions and a self-regulated learning attitude scale with 30 statements. The indicators used for the problem-solving ability test instrument refer Napitupulu namely that there are 3 problem-solving processes, including: 1) creating a mathematical model of an everyday situation or problem; 2) selecting and applying a suitable strategy; and 3) explaining or interpreting the results according to the original problem and checking the correctness of the results or answers (Sari et al., 2022). Meanwhile, the self regulated learning scale instrument refers to Sumarmo (2004) with indicators 1) Takes the initiative in learning, 2) Can diagnose learning needs, 3) Can organise and control learning, 4) Continuous motivation and behaviour, 5) Can view difficulties as a challenge, 6) Can search for and utilise relevant learning resources, 7) Can choose and apply strategies in learning, 8) Can evaluate the learning process and learning outcomes, and 9) Confidence about himself.

Path analysis is the data analysis method used in this study, which is carried out to determine how much the relationship between the current variables' route coefficient indicates as the contribution's magnitude.

The steps in this research for testing path analysis are:

1. Formulate hypotheses and structural equations.
2. Using the regression coefficient as a base, get the path coefficient..
   a. Draw a path diagram.
   b. Calculating correlation and regression coefficients with SPSS
3. Calculate path coefficients individually.

The test hypothesis is formulated as follows:

$H_a = \rho yx > 0$

$H_o = \rho yx = 0$

Calculating significant values using SPSS with the following basis for decision-making:

- If the probability value $\alpha \leq sig$, then H_0 is accepted and H_a is rejected, meaning it is not significant.
- If the probability value $\alpha \geq sig$, then H_0 is rejected and H_a is accepted, meaning it is significant.

4. Draw conclusions

The final step of the research is to conclude the final results obtained from this research, whether or not the hypothesis is validated, and how big the contribution of the dependent variable is.

For more details on this research procedure, you can see the following picture:

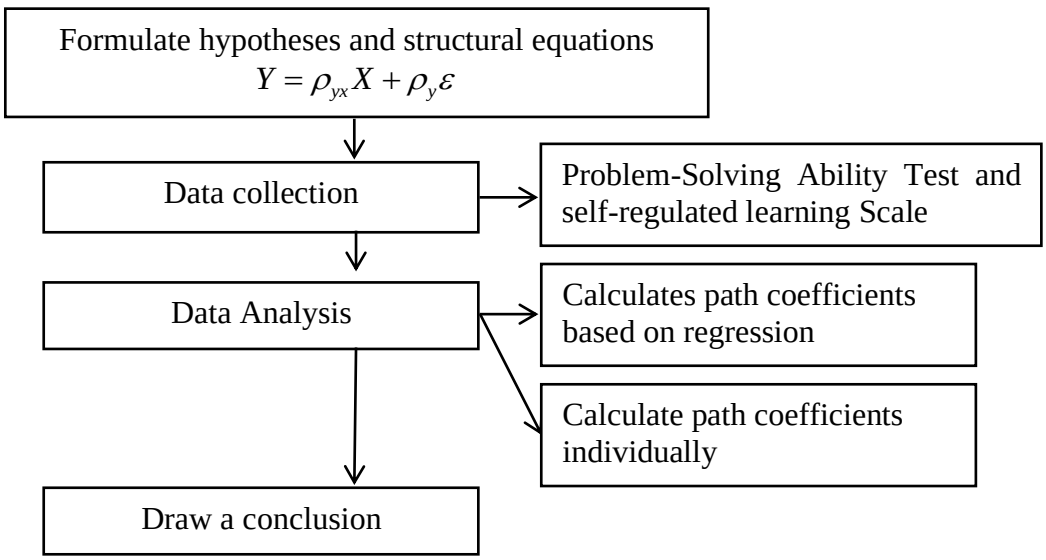

Figure 1. Research Procedure

RESULT AND DISCUSSION

The aim of this research is to see how big the contribution of mathematical problem-solving abilities is to the self-regulated learning of Khairul Imam Middle School students in Medan. Research data was obtained from problem-solving ability tests and self-regulated learning scales. The data was processed using the SPSS program, along with a series of other data processing tasks carried out in this research.

The steps taken in testing path analysis are described as follows:

1. Formulate hypotheses and structural equations

   Research hypothesis: problem-solving abilities contribute significantly to student self-R regulated learning

   Structure: $Y = \rho_{yx} X + \rho_{y} \varepsilon$

2. Using the regression coefficient as a base, get the path coefficient.

   a. Draw a path diagram

   Correlation and regression analysis is the basis for calculating path coefficients where the problem constellation can be seen in the following path diagram.

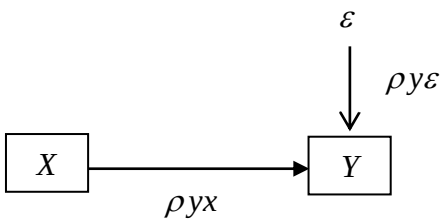

Figure 2. Relationship between Structure *X* and *Y*

Caption :

X = problem-solving ability

Y = self-regulated learning

$\rho y\varepsilon$ = contribution of other factors

ε = other factors

ρyx = contribution of problem-solving abilities to self-regulated learning

b. Calculating correlation and regression coefficients with SPSS

Test the significance of the correlation coefficient using the Pearson correlation coefficient. The results of correlation testing with SPSS can be seen in table 1.

Table 1. Correlation Coefficient Significance Test Results

		Problem-Solving Ability	**Self-Regulated Learning**
Problem-Solving Ability	Pearson	1	.972**
	Sig. (2-tailed)		.000
	N	51	51
Self-Regulated Learning	Pearson	.972**	1
	Sig. (2-tailed)	.000	
	N	51	51

From the results of the correlation coefficient significance test, a sig (2-tailed) value of 0.000 was obtained, so consequently, it may be said that the correlation coefficient between self-regulated learning and problem-solving ability is significant.

Next, regression tests and path analysis were carried out. Test the significance of the regression using the F test (ANOVA) and the path coefficient significance test using path analysis. Using SPSS software, the following tables show the test results.

Table 2. Model Summary

					Change Statistics				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.972[a]	.944	.943	2.59821	.944	823.680	1	49	.000

Table 3. Regression Significance Test Results

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	5560.393	1	5560.393	823.680	.000[a]
	Residual	330.783	49	6.751		
	Total	5891.176	50			

From the table above, a regression significance value of 0.00 is obtained, meaning that the regression coefficient between self-regulated learning and problem-solving ability is significant.

3. Using the regression coefficient as a base, get the path coefficient.

Calculating path analysis with SPSS, the path coefficient menu is shown in the output coefficient, which is known as the Beta value

Table 4. Path Coefficient Test Results

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.238	2.431		.920	.362
	Problem Solving Ability	.965	.034	.972	28.700	.000

From the 3 tables of test results with SPSS shown above, to analyze the path coefficients are shown in table 4 with hypothesis testing carried out individually. This is the formulation of the research hypothesis that will be investigated.

$H_a = \rho yx > 0$

$H_o = \rho yx = 0$

Hypothesis in sentence form:

Ha: Problem-solving abilities contribute significantly to student self-regulated learning

Ho: Problem-solving abilities do not contribute significantly to student self-regulated learning

From Table 4 above, the problem-solving variable has a significant value of 0.000. Subsequently, the sig value is less than the probability value of 0.000 < 0.05 when compared to the likelihood of 0.05, indicating that it is significant and rejecting Ho and accepting Ha. So problem-solving abilities contribute significantly to students self-regulated learning. From table 4, it can be seen that the contribution of problem-solving abilities to self-regulated learning is (0.972)2 = 94.47%.

Discussion

Research findings show that problem-solving abilities as measured by self-regulated learning have a positive and significant contribution to the level of self-regulated learning. The contribution of problem-solving ability to direct self-regulated learning was 94.47%, and the remaining 5.6% was the contribution of other variables that were not studied. The contribution is quite large, and the results of these findings show that the level of independence in mathematics learning achieved by students is determined by their problem-solving abilities. Therefore, to optimize self-regulated learning, efforts must be made to improve problem-solving abilities first.

According to Polya, in the problem-solving ability indicator, there are 4 stages, namely: 1) comprehending the issue; 2) formulating a plan of action 3) carrying out the

strategy for solving problems, and 4) reviewing (Chabibah et al., 2019). If students are able to carry out these four stages in solving the problem, they can It is ensured that students will not experience difficulties and can learn more independently.So, to increase self-regulated learning, problem-solving abilities must be improved. The findings of this research are strengthened by the opinion of Sari N et al. , who stated that by implementing problem-based learning that makes students independent in learning, it can improve students' problem-solving abilities (Sari et al., 2022).

Apart from that, several other studies related to the positive influence of students' self-regulated learning can improve students' problem-solving abilities (Beljeur et al., 2023; Jayanti & Widyaninggar, 2019; Nurdiati et al., 2024). Furthermore, from several previous studies that have been carried out by researchers, if students are adept at solving problems using stages according to indicators of problem-solving ability, then these students no longer need a teacher because they are able to self-regulate learning and find their own solutions to the problems given, and students like these people on average have high learning abilities. Thus, a teacher's function is crucial to the process of teaching and learning in the classroom; it is not teacher-centered learning that is desired, but student-centered learning. A teacher not only acts as a scaffolder but also as a facilitator if students experience difficulties in solving the problems given.

Problem-solving abilities are also a goal of mathematics learning. In accordance with the Ministry of National Education, the objectives of mathematics learning are: (1) understanding mathematical concepts; (2) applying logic to data that exhibits patterns and qualities; (3) problem-solving techniques; (4) conveying students' concepts through symbols, diagrams, or tables to elucidate issues; and (5) adopting a mindset that recognizes the usefulness of mathematics in everyday life (Depdiknas, 2006). It is clear that problem-solving ability is very important and a necessity, especially in the era of globalization and free trade. Problem-solving ability is very important for success in this era.

Students who have good problem-solving skills try to build their self-regulated learning so that their mathematics learning achievement becomes high. So, it is clear that problem-solving abilities contribute to students' self-regulated learning, especially at Khairul Imam Middle School in Medan.

The results of this research are in line with the results of previous research regarding contributions, namely the contribution of the ability to understand concepts to problem-solving abilities (Sudane & Saadjad, 2021). Apart from that, Krisma's research is entitled Contribution of reasoning abilities and self-efficacy to students' problem-solving

abilities (Krisma & Abadi, 2023). Research related to contributions has also been carried out in every aspect of life, for example, in relation to culture, with the title Contribution of local culture to environmental literacy: a case study at pandam gadang middle school, west sumatra (Ilhami, 2019). So research related to contributions is very broad in scope; in every field of science, research related to these contributions can be carried out. Thus, the researcher limited this research only to the problem-solving abilities and independent learning of Khairul Imam Middle School students in Medan.

CONCLUSION

Based on these findings, it can be concluded that problem-solving abilities as measured by self-regulated learning have a positive and significant contribution to the level of student self-regulated learning. Thus, the level of self-regulated learning is influenced by problem-solving abilities. The contribution of problem-solving abilities, which directly contribute to self-regulated learning, is 94.4%. Based on the research findings, it can be concluded that the research hypothesis, which states that "problem-solving abilities contribute significantly to self-regulated learning," is acceptable. This means that problem-solving abilities contribute to self-regulated learning. Therefore, to increase students' self-regulated learning, it is first necessary to improve their problem-solving abilities. These findings also show that problem-solving abilities are related to and influence students' self-regulated learning.

The results of the research that has been carried out can be input for further research regarding investigations related to the contribution of other abilities to learning outcomes or other factors in the learning process. For example, research can be carried out with the title The contribution of reasoning abilities to student learning outcomes

REFERENCES

Andayani, F., & Lathifah, A. N. (2019). Analisis Kemampuan Pemecahan Masalah Siswa SMP dalam Menyelesaikan Soal Pada Materi Aritmatika Sosial. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *3*(1), 1–10. https://doi.org/10.31004/cendekia.v3i1.78

Ansari, B. I. (2009). Peningkatan Kemampuan Berpiktr Kritis Siswa Sd Dalam Meinyelesaikan Soal Cerita Melaltii Pembelajaran Inquru. *Jurnal Ilmiah Guru*, *1*(4), 32–40. https://journal.uny.ac.id/index.php/cope/article/view/5445/4740

Ansori, Y., & Herdiman, I. (2019). Pengaruh Kemandirian Belajar terhadap Kemampuan Pemecahan Masalah Matematis Siswa SMP. *Journal of Medives : Journal of Mathematics Education IKIP Veteran Semarang*, *3*(1), 11-19, https://doi.org/10.31331/medivesveteran.v3i1.646

Beljeur, W., Ardianik, & Hatip, A. (2023). The Effect of the Discovery Learning Model and Learning Independence on Mathematical Problem Solving Ability in Students. *JKIP: Jurnal Kajian Ilmu Pendidikan*, *3*(2), 169–176. https://journal.al-matani.com/index.php/jkip/article/view/554.

Chabibah, L. N., Siswanah, E., & Tsani, D. F. (2019). Analisis kemampuan pemecahan masalah siswa dalam menyelesaikan soal cerita barisan ditinjau dari adversity quotient. *Pythagoras: Jurnal Pendidikan Matematika*, *14*(2), 199–210. https://doi.org/10.21831/pg.v14i2.29024

Depdiknas. (2006). Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 22 Tahun 2006 Tentang Standar Isi Untuk Satuan Pendidikan Dasar Dan Menengah. https://jdih.kemdikbud.go.id/sjdih/siperpu/dokumen/salinan/permen_tahun2006_nomor24.pdf

Handayani, N., & Hidayat, F. (2019). Hubungan kemandirian terhadap hasil belajar siswa mata pelajaran matematika di kelas X SMK kota cimahi. *Journal on Education*, *1*(02), 1–8. https://media.neliti.com/media/publications/270114-hubungan-kemandirian-terhadap-hasil-bela-b7065fae.pdf

Ilhami, A. (2019). Kontribusi Budaya Lokal Terhadap Literasi Lingkungan : Studi Kasus di SMP Pandam Gadang Sumatera Barat. *Journal of Natural Science and Integration*, *2*(2), 1, 122-131, https://doi.org/10.24014/jnsi.v2i2.7788

Jayanti, A., & Widyaninggar, A. A. (2019). Pengaruh Motivasi dan Kemandirian Belajar terhadap Kemampuan Pemecahan Masalah Matematika Anna. *JKPM (Jurnal Kajian Pendidikan Matematika)*, *5*(1), 1, 1-14, https://doi.org/10.30998/jkpm.v5i1.5083

Khotimah, H. (2020). Faktor-Faktor Yang Memengaruhi Belajar Matematika. *De Fermat : Jurnal Pendidikan Matematika*, *2*(2), 116–123. https://doi.org/10.36277/defermat.v2i2.56

Krisma, D., & Abadi, A. (2023). Kontribusi Kemampuan Penalaran dan Self-Efficacy terhadap Kemampuan Pemecahan Masalah Siswa. *JP3M (Jurnal Penelitian Pendidikan dan Pengajaran Matematika)*, *8*(2), 121-132, doi:https://doi.org/10.37058/jp3m.v8i2.5215

Mandur, K., Sadra, W., & Suparta, I. N. (2016). Kontribusi Kemampuan Koneksi, Kemampuan Representasi, Dan Disposisi Matematis Terhadap Prestasi Belajar Matematika Siswa Sma Swasta Di Kabupaten Manggarai. *Jurnal Pendidikan Dan Kebudayaan Missio*, *8*(1), 65–72. https://doi.org/10.36928/jpkm.v8i1.84

Nurdiati, T., Setiani, Y., & Santosa, C. A. H. F. (2024). Pengaruh Kemandirian Belajar Terhadap Kemampuan Pemecahan Masalah Matematis Siswa Kelas VIII SMP Negeri 17 Kota Serang. *Jurnal Ilmiah Wahana Pendidikan*, *10*(2), 926–931. https://jurnal.peneliti.net/index.php/JIWP/article/view/8601

Rambe, A. S., & Surya, E. (2017). Melalui Model Number Head Together Pada Siswa Smp Swasta Imelda. *Mathematics Education Research Journal*, 01, 1-8, https://www.researchgate.net/publication/321854723_MENINGKATKAN_KEMANDIRIAN_BELAJAR_MATEMATIKA_MELALUI_MODEL_NUMBER_HEAD_TOGETHER_PADA_SISWA_SMP_SWASTA_IMELDA

Runisah. (2018). Peningkatan Kemandirian Belajar Matematika Siswa Smp Melalui Model Learning Cycle 5e Dengan Teknik Metakognitif. *Jes-Mat*, *1*(4), 13–24. https://journal.uniku.ac.id/index.php/JESMath/article/view/906

Sari, N. (2020). Pengaruh Pembelajaran Berbasis Masalah Pada Kemandirian Belajar Matematis SiswaSMK Ar-Rahman Medan. *Jurnal Mathematic Paedagogic*, *4*(2), 175–180. https://jurnal.una.ac.id/index.php/jmp/article/view/1074

Sari, N. (2023). Exploration of the Didactic Situation of Linear. *Mathline, Jurnal Matematika Dan Pendidikan Matematika*, *8*(2), 569–588. https://www.mathline.unwir.ac.id/index.php/Mathline/article/view/426

Sari, N., Saragih, S., & Napitupulu, E. E. (2024). Developing a Hypothetical Learning Trajectory with Problem-Based Learning and a Learning Medium for Middle School. *Educational Administration: Theory and Practice*, *30*(1), 32–50. https://doi.org/10.52152/kuey.v30i1.714

Sari, N., Saragih, S., Napitupulu, E. E., Rakiyah, S., Sari, D. N., Sirait, S., & Anim, A. (2023). Applying Ethnomathematics in Learning Mathematics for Middle School Students. *Acta Scientiae*, *25*(5), 250–274. https://doi.org/10.17648/acta.scientiae.7690

Sari, N., Saragih, S., Napitupulu, E. E., Siti, R., Hasni, S., & Anim, A. (2022). Analysis of Answering Process on Problem Solving Ability Through Problem-Based Learning Model. *Mathline : Jurnal Matematika Dan Pendidikan Matematika*, *7*(2), 269–287. https://doi.org/10.31943/mathline.v7i2.287

Sari, N., Saragih, S., Rahmadani, E., Safitri, E., Rakiyah, S., Sari, D. N., & Anim, A. (2022). Improving Student's Problem Solving Ability through Problem-Based Learning in Cultural Context. *AIP Conference Proceedings*, *2659* (November). https://doi.org/10.1063/5.0113406

Sudane, I. W., & Saadjad, A. S. R. (2021). Kontribusi Kemampuan Pemahaman Konsep Terhadap Kemampuan Pemecahan Masalah Matematis Pada Materi Spldv. *Linear : Jurnal Ilmu Pendidikan*, *5*(2), 159–173. https://doi.org/10.53090/jlinear.v5i2.208

Sugiyono (2019). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Alphabet

Sulistiyaningsih, B, & Purwoko, R. Y. (2014). Kemandirian Belajar Dan Prestasi Belajar Matematika Siswa Smp Negeri 27 Purworejo. *Ekuivalen*, *10*(1), 33–38. https://download.garuda.kemdikbud.go.id/article.php?article=1312100&val=612&title=KEMANDIRIAN%20BELAJAR%20DAN%20PRESTASI%20BELAJAR%20MATEMATIKA%20SISWA%20SMP%20NEGERI%2027%20PURWOREJO

Sulistyani, D., Roza, Y., & Maimunah. (2020). Hubungan Kemandirian Belajar dengan Kemampuan Pemecahan Masalah Matematis. *Jurnal Pendidikan Matematika*, *11*(1), 67–76. http://ojs.uho.ac.id/index.php/jpm

Sumarmo, U. (2004). Kemandirian belajar: apa, mengapa, dan bagaimana dikembangkan pada peserta didik. Makalah pada Seminar Tingkat Nasional. FPMIPA UNY Yogyakarta (Vol. 8). https://scholar.google.co.id/citations?view_op=view_citation&hl=en&user=3NdVEzoAAAAJ&citation_for_view=3NdVEzoAAAAJ:u-x6o8ySG0sC

Widayati, E. W. (2022). Pembelajaran Matematika di Era "Merdeka Belajar", Suatu Tantangan bagi Guru Matematika. *SEPREN: Journal of Mathematics Education and Applied*, *04*(01), 01–10. https://doi.org/10.36655/sepren.v4i1

Zulfah, Z. (2018). Analisis Kebutuhan Pengembangan Soal Berbasis Kearifan Lokal. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *2*(1), 1–6. https://doi.org/10.31004/cendekia.v2i1.27