Analysis of Mathematical Problem-Solving Ability on Area and Circumference Materials in View of Self-Regulated Learning

Retno Widyaningrum[1], Desi Puri Setyowati[2]
[1,2]Institut Agama Islam Negeri Ponorogo, Indonesia

ARTICLE INFO	ABSTRACT
Keywords: Mathematical problem-solving; learning mathematics; self-regulated learning	This study aims to describe the mathematical problem-solving abilities of class VI students at SDN Tladan I with high, moderate, and low self-regulated learning. In this study using a qualitative approach to the type of case study. Data collection techniques in research using questionnaires, tests, interviews, and documentation. This study uses data analysis techniques according to Miles and Huberman. The results showed that: (1) Subjects with high self-regulated learning fulfilled the four indicators, namely understanding the problem, making a problem-solving plan, carrying out problem solving, and re-examining the results of problem solving obtained. The subject has a weakness in the indicators of re-examining question number 2, because they are not careful in calculating commas. (2) Subjects with moderate self-regulated learning fulfill three indicators, namely understanding problems, making problem-solving plans, and carrying out problem-solving. The subject has a weakness in the indicator of making a problem solving plan for question number 4 because he forgot the formula. (3) Subjects with low self-regulated learning fulfill one indicator, namely understanding the problem.

Corresponding Author
Retno Widyaningrum
Email: retno.widya@iainponorogo.ac.id

.

INTRODUCTION

Education is a form of guidance given to people who are capable, mature, and have knowledge of the development of other people to reach maturity with the aim that someone who is educated has the skills to live life independently (Husamah, Arina Restian, 2019). Education in this era of globalization has an important role to filter the incoming flows of globalization, both positive and negative. The general purpose of education is preparation for public service assignments. Education experts say that to form a complete person it is not enough to only develop intelligence, but also to develop behavior and moral awareness (Husamah, Arina Restian, 2019). Education serves to accommodate all learning including mathematics.

Mathematics is a compulsory subject at all levels of education, both elementary, junior high and senior high schools. According to Prihandoko quoted by Fitria Widiasari, et al. Mathematics is a basic science to learn other sciences. Therefore mastery of mathematics is absolutely necessary and mathematical concepts must be properly understood from an early age (Widiasari et al., 2021). Learning mathematics is a learning activity using reason and having a structured plan by involving activities and thoughts in developing problem-solving skills and conveying information. Mathematics in the world of education has an important position because mathematics is used to determine student abilities.

Problem solving ability is a basic ability in mathematics. However, in reality on the ground, students' abilities in solving mathematical problems vary, some are high and some are low. Likewise with the ability to solve mathematical problems possessed by class VI students at SDN Tladan 1 Magetan. Based on interviews with homeroom teacher class VI Mrs. Sukarni, S.Pd. said that there are students who have good mathematical problem solving abilities so that the results obtained can be maximized. However, there are also those who have low mathematical problem solving abilities. The low ability to solve mathematical problems is caused by the fact that most of the sixth grade students lack the intention to take part in learning mathematics, because they think that mathematics is a difficult subject and is related to numbers. So that when given questions, they have not been able to work on the questions properly and the results obtained by most students are still low.

In solving mathematical problems it is necessary to have self-regulated learning. This is because one of the factors that influences mathematical problem solving abilities according to Ansori and Herdiman is self-regulated learning or independent learning (Ansori & Herdiman, 2019). In his research, it shows that the students' self-regulated learning has a

significant effect on their mathematical problem-solving abilities. In line with Sundayana's research, the higher the student's learning independence, the higher the ability to solve mathematical problems (Sundayana, 2018). This shows that students who have high self-regulated learning can solve problems well.

Based on the description above, the researcher is interested in studying mathematical problem solving abilities based on self-regulated learning. So that researchers are interested in conducting research with the title "Analysis of Mathematical Problem Solving Ability on Area and Circumference Materials in View of Self-Regulated Learning of Grade VI Students at SDN Tladan 1 Magetan."

Problem solving according to Polya quoted by Erif Ahdhianto and Marsigit is a process that a person takes to solve the problems they face, until the problem is solved (Marsigit, 2018). Problem solving ability is a basic ability in mathematics. According to Abdurrahman quoted by Elin Sapto Rini and Kurnia Hidayati, the application of concepts and skills is problem solving. Basically learning problem solving is learning to use methods of thinking regularly, logically, thoroughly, and systematically. For students the purpose of problem solving is to gain cognitive abilities and skills in solving problems rationally (Rini & Hidayati, 2021). Therefore, it is very important for students to have problem-solving abilities in mathematics from an elementary school age (Yuwono, 2020).

The process of solving mathematical problems has an important role in the learning process and completion. Because it is possible for students to gain experience using the knowledge and skills they already have to apply as problem solving in new situations (Lahinda & Jailani, 2015). So students must explore their knowledge and with the problem solving process, students will often develop new mathematical understandings. Because problem solving can be a way for students to make free decisions about how to solve problems and gain confidence in their thoughts and actions. The problem-solving ability indicators in this study used the problem-solving ability indicators according to Polya, namely understanding the problem, making a problem-solving plan, carrying out problem-solving, and re-examining the results of the solutions obtained.

Self-regulated learning is an individual's ability to determine learning goals and monitor, regulate, and control behavior, which has an impact on changes in the environment (Surapptini, 2022). According to Zimmerman & Martinez-Pons quoted by Riri Ropidatul Fadilah, et al. self-regulated learning is the level at which students participate actively from a metacognitive, motivational, and behavioral perspective in the learning process.

Metacognitively, self-regulated plan, organize, self-direct, self-monitor, and self-evaluate at different levels of what they learn. Motivationally, they feel themselves competent and independent. Behaviorally they select, arrange, and create an optimal learning environment (Fadilah et al., 2021). So that self-regulated learning can be used by individuals when learning mathematics, and can help improve their mathematical problem solving abilities. This study uses indicators of self-regulated learning according to Hidayati and Listyani cited by Helenita Zube, et al, namely: (1) not depending on other people. (2) have self-confidence. (3) behave discipline. (4) have a sense of responsibility. (5) behave on their own initiative. (6) exercise self-control (Helenita Zube, Hamdunah, 2022). Because according to researchers these indicators are easier to understand in making self-regulated learning questionnaires.

RESEARCH METHOD

The purpose of this study was to describe the mathematical problem solving abilities of class VI students of SDN Tladan I Magetan with high, medium and low self-regulated learning categories. The research subjects in this study were class VI students of SDN Tladan I who were selected by purposive sampling, totaling 6 students, namely 2 students with high self-regulated learning, 2 students with moderate self-regulated learning, and 2 students with low self-regulated learning. The research subjects in this study are as follows:

Table 1. Research Subject

Kategori *Self-Regulaed Learning*	Subject Code	Score SRL	Score KPM
High	T1	136	100
	T2	132	95
Moderate	S1	97	74
	S2	96	75
Low	R1	60	45
	R2	55	39

The instruments in this study used self-regulated learning questionnaires, tests of mathematical problem solving abilities, and interview guidelines. While the data collection techniques in this study used questionnaires, tests, interviews, and documentation. Data analysis techniques in this study used data analysis techniques according to Miles and Huberman which consisted of data reduction, data presentation, and conclusion drawing. So that the activities in qualitative data analysis are carried out interactively and continuously until the data is saturated (Sugiyono, 2016).

.

RESULT AND DISCUSSION

Based on the results of the self-regulated learning questionnaire and the results of the mathematical problem solving ability test, 6 students were selected as research subjects. The following will present the research results that have been obtained:

1. **Mathematical Problem Solving Ability of T1 Subjects with High Self-Regulated Learning**

    Based on the results of tests and interviews conducted with subject T1, a summary of test results and interviews with mathematical problem solving abilities is as follows:

    a. In question number 1, subject T1 can understand the problem by writing down all the information that is known and asked, devise a problem solving plan by writing down the formula and explaining the steps to solve the problem correctly. Solve problems according to formulas and perform calculations correctly. The subject checks and writes down the conclusions from the answers obtained.

    b. In question number 2, subject T1 can understand the problem by writing down the information that is known and asked, devise a problem-solving plan by writing down the formula and explaining the steps to solve the problem correctly. Solve problems according to formulas and perform calculations correctly. The subject checks and writes down the conclusions from the answers that have been obtained.

    c. In question number 3, subject T1 can understand the problem by writing down the information that is known and asked, making plans by writing the circle circumference formula and explaining the steps exactly. Solving problems according to the formulas compiled and being able to perform calculations correctly. Subjects can check again and write conclusions from the answers obtained.

    d. In question number 4, subject T1 can understand the problem by writing down the information that is known and asked, formulating a plan by writing the formula for the circumference of the circle, the number of turns, and the total distance traveled correctly and sequentially. Solve problems according to the formula and be able to perform calculations correctly. The subject checks and writes down the conclusions from the answers that have been obtained.

    Based on the results of the research above, it shows that subject T1 has fulfilled all indicators of problem solving ability. The subject can understand the problem by writing down all the information that is known and asked in the question correctly. Make a detailed and clear problem-solving plan, carry out a solution plan according to the formula

made, be able to carry out calculations correctly and get the right answers. The subject has also examined the solutions that have been carried out, and can conclude the results of solving the problems that have been carried out.

Based on this description, it shows that students with high self-regulated learning will also have very good problem-solving skills. This is in line with Azizah's research which states that subjects with high self-regulated learning will also have good problem-solving skills (Azizah, Maimunah, 2019). Sundayana in her research stated that the more independent students are in the learning process, the better their mathematical problem solving abilities will be (Sundayana, 2018).

2. **Mathematical Problem Solving Ability of T2 Subjects with High Self-Regulated Learning**

Based on the results of tests and interviews conducted with subject T2, a summary of test results and interviews with mathematical problem solving abilities is as follows:

a. In question number 1, subject T2 can understand the problem by writing down the information that is known and asked, devise a problem-solving plan by writing down the formula and explaining the steps to solve the problem correctly. Solve problems according to formulas and perform calculations correctly. The subject checks and writes down the conclusions from the answers obtained.

b. In question number 2, subject T2 can understand the problem by writing down what is known and asked, devise a solution plan by writing down the formula and explaining the steps to solve the problem correctly. Solve the problem according to the formula, but the calculations are not quite right, so the answer is wrong. The subject checks and writes down the conclusions from the answers obtained.

c. In question number 3, subject T2 can understand the problem by writing down what is known and asked, making plans by writing formulas and explaining the steps precisely. Solve problems according to the formula and be able to perform calculations correctly. Subjects can check again and write conclusions from the answers obtained.

d. In question number 4, subject T2 can understand the problem by writing down the information that is known and asked, making plans by writing and explaining the formula to solve the problem correctly and coherently. Solve problems according to the formula and be able to perform calculations correctly. The subject has checked and wrote down the conclusions from the answers that have been obtained.

.

Based on the results of the research above, it shows that the T2 subject has fulfilled all indicators of problem solving abilities. However, the subject has weaknesses in the indicators of carrying out the problem solving plan for question number 2, because the subject is not careful in calculating comma numbers. According to Setiawan, et al, the calculation problems in this case occurred due to errors in students' calculation process skills (Setiawan & Jusniani, 2021). However, when students were asked by the researcher to re-calculate, subject T2 was able to correct his mistakes well and was able to write down the answers correctly.

Based on this description, it shows that students with high self-regulated learning will also have very good problem-solving skills. This is in line with Azizah's research which states that subjects with high self-regulated learning will also have good problem-solving skills (Azizah, Maimunah, 2019). Sundayana in her research stated that the more independent students are in the learning process, the better their mathematical problem solving abilities are (Sundayana, 2018).

3. **Mathematical Problem Solving Ability of S1 Subjects with Moderate Self-Regulated Learning**

Based on the results of tests and interviews conducted with S1 subjects, a summary of test results and interviews with mathematical problem solving abilities is as follows:

a. In question number 1, the S1 subject can understand the problem by writing down the information that is known and asked, devise a solution plan by writing down the formula and explaining the steps to solve the problem correctly. Solve problems according to the formula and perform calculations correctly, but not equipped with units. The subject did not check and write down the conclusions from the answers.

b. In question number 2, the S1 subject was able to understand the problem by writing down what was known and asked, devise a solution plan by writing down the formula and explaining the steps to solve the problem correctly. Solve problems according to the formula, perform calculations correctly but are not equipped with units. The subject did not check and write down the conclusions from the answers.

c. In question number 3, S1 subjects were able to understand the problem by writing down what was known and asked, making plans by writing formulas and explaining the steps precisely. Solve problems according to the formula and be able to perform calculations correctly. The subject did not re-examine the results of the solution and did not write down the conclusions from the answers obtained.

d. In question number 4, S1 subjects were able to understand the problem by writing down what was known and asked, but it was incomplete. Develop a plan by writing and explaining the formula to solve the problem correctly, but incompletely. After the researcher asks to reread the problem, the subject can correct his mistakes. Solve problems according to the formula and be able to perform calculations correctly. The subject did not check and did not write down the conclusions from the answers obtained.

Based on the results of the research above, it shows that S1 subjects can write down information that is known and asked correctly. Subjects can develop detailed problem-solving plans, in solving problems the subject can perform calculations properly according to the formula, and the results obtained are also correct. This shows that S1 subjects have quite good problem-solving skills, because they have fulfilled the three indicators of problem-solving ability. The subject could not meet the indicators of re-examining, because the subject did not understand and was used to not re-examining and writing the conclusions of the solutions that were made. The subject has weaknesses in the indicator of understanding problem number 4 because they are not careful in reading, so the information written on being asked is still incomplete. Hanum Faizunnur Lathifah et al. stated that interest in reading affects problem-solving skills (Lathifah et al., 2021). However, after being asked by the researcher to re-read the problem, S1 subjects were able to correct their mistakes well.

This is in line with Aisyah and Hikmatul's research which states that students with moderate self-regulated learning are able to solve problems using three indicators, namely indicators of understanding the problem, making a problem-solving plan, and carrying out the solution, but the scores obtained are less than optimal in some questions (Ekadiarsi & Husna, 2022). Siti Aminah et al. stated that subjects with learning independence were not able to fulfill the indicators of re-examining the results of problem solving that had been obtained (Aminah et al., 2022).

4. **Mathematical Problem Solving Ability of S2 Subjects with Moderate Self-Regulated Learning**

   a. Based on the results of tests and interviews conducted with S2 subjects, a summary of test results and interviews with mathematical problem solving abilities is as follows:

   b. In question number 1, subject S2 can understand the problem by writing down the information that is known and asked, devise a solution plan by writing down the

formula and explaining the steps to solve the problem correctly. Solve problems according to the formula and perform calculations correctly, but not equipped with units. The subject did not check and write down the conclusions from the answers.

c. In question number 2, subject S2 can understand the problem by writing down what is known and asked, devise a solution plan by writing down the formula and explaining the steps to solve the problem correctly. Solve problems according to the formula, perform calculations correctly, but are not equipped with units. The subject did not check and write down the conclusions from the answers.

d. In question number 3, subject S2 can understand the problem by writing down what is known and asked, making plans by writing the circle circumference formula and explaining the steps precisely. Solve problems according to the formula and be able to perform calculations correctly, complete with units. The subject did not re-check the results of the solution and did not write down the conclusions from the answers.

e. In question number 4, subject S2 can understand the problem by writing down the information that is known and asked. Develop a plan by writing and explaining the formula to solve the problem, but it's still not quite right, so that in solving the problem, the calculations are not quite right and the answers are still wrong. The subject did not check and did not write down the conclusions from the answers obtained.

Based on the results of the research above, it shows that S2 subjects can meet the indicators of understanding the problem because they can write down complete information. Make a clear and detailed problem-solving plan, and be able to solve problems according to the formula and the calculation results obtained are correct. This shows that the S2 subject has quite good problem-solving skills, because it can fulfill the three indicators of problem-solving ability. The subject cannot meet the reassessment indicator, because the subject has not carried out an examination and has not been able to conclude the results of the completion that has been carried out. The subject has weaknesses in the indicator of making a problem solving plan for question number 4b, subject S2 has difficulty determining the formula to be used to solve the problem so the subject writes the formula randomly, and the calculation results obtained are not quite right. According to Hanum Faizunnur Lathifah et al, the ability to determine strategies for solving problem solving questions affects the ability to solve mathematical problems (Lathifah et al., 2021).

This is in line with Aisyah and Hikmatul's research which states that students with self-regulated learning are able to solve problems using problem indicators, make plans to solve problems, and carry out solutions, but the scores obtained are not optimal in several questions (Ekadiarsi & Khusna, 2022). Assyifa Ekananda, et al in his research stated that students with a level of independent learning tend to have moderate ability to solve mathematical problems (F Assyifa et al., 2020).

5. **Mathematical Problem Solving Ability of R1 Subjects with Low Self-Regulated Learning**

Based on the results of tests and interviews conducted with subject R1, a summary of test results and interviews with mathematical problem solving abilities is as follows:

a. In question number 1, subject R1 can understand the problem by writing down the information that is known and asked. The subject cannot explain the solution plan and cannot solve the problem properly, because the work written is the result of cheating. The subject does not understand what formula to use, so the subject cheats. Subjects also did not check and conclude their answers.

b. In question number 2, subject R1 can understand the problem by writing down the information that is known and asked. The subject could not explain the problem-solving plan properly, because the formula used was the result of making up his own formula. So that the subject also cannot solve the problem properly, and the answers obtained are not correct. The subject did not check and write down the conclusions from the answers.

c. In question number 3, subject R1 can understand the problem by writing down the information that is known and asked correctly. The subject can write the circle circumference formula well. However, to find the number of bamboos, the formula used is still inaccurate, because the subject does not change the unit to centimeters, the arithmetic operation used should be division, but the subject writes multiplication. So that the subject also could not solve the problem properly, and the answers obtained were wrong. The subject did not check and write down the conclusions from the answers.

d. In question number 4, subject R1 can understand the problem by writing down the information that is known and asked correctly. The subject had not been able to develop a problem-solving plan as evidenced by the subject had not written down the formula that would be used to solve the problem, the subject also explained that he

did not know what formula to use, so he left the answer sheet blank. The subject could not solve the problem properly because the subject did not write anything on the answer sheet. The subject did not check and did not write down the conclusions from the answers obtained.

Based on the results of the research above, it shows that subject R1 can fulfill one of the four indicators of problem solving ability, namely understanding the problem. Subject R1 was able to write down all the information that was known and asked correctly. The subject has not been able to make and carry out a problem-solving plan properly, the subject writes answers on the answer sheet which is the result of copying friends and others, the subject does random things or according to his own thoughts. The subject also has not carried out a re-examination of the results of the solutions that have been carried out. This shows that subjects with low self-regulated learning will also have poor mathematical problem solving abilities.

This is in line with the research of Siti Asna Rodliyah, et al which states that subjects with a low level of self-regulated learning have poor mathematical problem solving abilities, because the subject only meets indicators of understanding the problem (Rodliyah et al., 2021). This is also in line with Assyifa Ekananda, et al who stated that students with a low level of learning independence also have low mathematical problem solving abilities (F Assyifa et al., 2020). According to Sundayana, the more independent students are in the learning process, the higher their mathematical problem-solving abilities (Sundayana, 2018).

6. **Mathematical Problem Solving Ability of R2 Subjects with Low Self-Regulated Learning**

Based on the results of tests and interviews conducted with subject R2, a summary of test results and interviews with mathematical problem solving abilities is as follows:

a. In question number 1, subject R2 can understand the problem by writing down the information that is known and asked. The subject cannot explain the problem-solving plan and cannot solve the problem properly, because the work written is the result of cheating. The subject also did not re-examine the results that had been obtained and the subject had not been able to conclude the results of the solutions that had been made.

b. In question number 2, subject R2 can understand the problem by writing down the information that is known and asked. The subject cannot explain the problem solving

plan and the subject also cannot solve the problem properly. The subject said that he could not work on the problem, and finally cheated, but the results of the cheat sheet obtained were also not correct. The subject does not check and write down the conclusions of the answers.

c. In question number 3, subject R2 can understand the problem by writing down the information that is known and asked correctly. The subject could not write down the problem-solving plan properly, because the formula that was written was still wrong, so that the subject also could not solve problem number 3 properly. The subject did not re-examine the results of the solution and the subject did not write down the conclusions from the answers. The subject said that he had difficulty working on question number 3.

d. In question number 4, subject R2 can understand the problem by writing down the information that is known and asked correctly. The subject has not been able to develop a problem solving plan, because the subject is confused in determining the formula. Subject also could not solve the problem properly, because according to him the numbers were too big and made him confused. So that the subject can not work on the problem. The subject also did not carry out the examination and did not write down the conclusions from the answers that had been obtained.

Based on the results of the research above, it shows that subject R2 was able to write down all the information that was known and asked correctly, but the words were incomplete. The subject has not been able to make and carry out a problem-solving plan properly, because the subject is copying his friend. According to the subject, the problem solving given was too difficult, so the subject could not do it. The subject also has not been able to re-examine the results of the solution that was carried out. From this description it shows that subjects with low self-regulated learning also have low mathematical problem solving abilities. Because it only fulfills one of the four indicators of problem solving ability, namely understanding the problem.

This statement is in line with the research of Siti Asna Rodliyah, et al which states that subjects with a low level of self-regulated learning have poor mathematical problem-solving abilities, because the subjects meet indicators of understanding problems (Rodliyah et al., 2021). This is also in line with Assyifa Ekananda, et al who stated that students with a low level of learning independence also have low mathematical problem solving abilities (F Assyifa et al., 2020).

.

Table 2. Recapitulation of Mathematical Problem Solving Ability in View of the Self-Reglated Learning of Grade VI Students at SDN Tladan I Magetan

Subject Self-Regulated Learning	Problem Solving Ability Indicator			
	Understanding Problems	Making Plans	Execute the Plan	Check again
High	From questions number 1-4 the subject can fulfill the indicators of understanding the problem well, because it can write down information from what is known and asked in the questions.	From questions number 1-4 the subject can fulfill the indicators of making a problem solving plan, because the subject can write down the formula and can explain the steps that will be used to solve the problem.	From question number 1-4, the subject can fulfill the indicators of carrying out the problem-solving plan, because the subject can carry out the calculation process using well-planned formulas and arithmetic operations.	Of the 4 question numbers, the subject was able to fulfill the indicators of checking again because the subject had already carried out the examination and wrote down the conclusions on the results of the solutions that had been carried out on questions number 1, 3, 4. However, in question number 2, the subject was not thorough in examining the results of the solved questions. done.
Mederate	From questions number 1-4 the subject can fulfill the indicators of understanding the problem well, because it can write down information from what is known and	From questions number 1-4 the subject can fulfill the indicators of making a problem solving plan, because the	From question number 1-4, the subject can fulfill the indicators of carrying out the problem-solving plan, because the subject can	From question number 1-4 the subject has not been able to meet the indicators to re-examine the results of the solutions that have been

Subject Self-Regulated Learning	Problem Solving Ability Indicator			
	Understanding Problems	Making Plans	Execute the Plan	Check again
	asked in the questions.	subject can write down the formula, and can explain the steps that will be used to solve problem numbers 1,2,3. However, in question number 4 the subject has problems in determining the formula to be used because they are confused.	carry out the calculation process using well-planned formulas and arithmetic operations. .	done. Because the subject is used to not checking again and not writing conclusions at the end of the solving process.
Low	From questions number 1-4 the subject can fulfill the indicators of understanding the problem well, because it can write down information from what is known and asked in the questions.	From question number 1-4 the subject has not been able to meet the indicators to make a problem solving plan. Because the plans written on the answer sheet are the result of cheating and based on their own initiative.	From question number 1-4 the subject has not been able to fulfill the indicators of carrying out the problem solving plan. Because the calculations written on the answer sheet are the result of cheating and based on their own initiative.	From question number 1-4 the subject has not been able to meet the indicators to re-examine the results of the solutions that have been done. Because the subject does not check again and does not write conclusions at the end of the solving process.

.

CONCLUSION

Based on the results of data analysis, the following conclusions are obtained.

1. Subjects with high self-regulated learning have good mathematical problem solving abilities, because the subject has fulfilled the indicators of understanding the problem, making a solving plan, carrying out the solving plan, and checking again. The subject had problems with the indicator checking again on question number 2, because the subject was not careful in calculating comma numbers.

2. Subjects with moderate self-regulated learning have fairly good mathematical problem-solving skills, because they have fulfilled the indicators of understanding the problem, making a problem-solving plan, and carrying out the problem-solving plan. The subject has problems with indicators in making a solution plan for question number 4, because he forgot the formula.

3. Subjects with low self-regulated learning have poor mathematical problem-solving skills, because they only meet one indicator of problem-solving ability, namely understanding the problem.

Researchers suggest to students to further improve their self-regulated learning, so that their mathematical problem-solving abilities also increase. For educators, in improving students' mathematical problem-solving abilities it should be done using a variety of learning models and media, often given practice problem solving and HOTS questions, fostering motivation, enthusiasm for learning, and student learning independence. For other researchers who will discuss the topic of the same problem, it is advisable to conduct interviews and tests on the same day, so that it is more effective in collecting research data.

REFERENCES

Aminah, S., Sembiring, M. G., & Prastiti, T. D. (2022). *Analisis Kemampuan Pemecahan Masalah Matematis Ditinjau dari Kemandirian Belajar pada Pembelajaran Blended Problem-Based Learning. 06*(03), 2773–2787.

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.

Azizah, Maimunah, Y. R. (2019). Kemampuan Pemecahan Masalah Matematis Siswa pada Materi Peluang Berdasarkan Self-Regulated Learning (S-Rl). *Jurnal Review Pembelajaran*

.

Matematika, *4*(1), 23–31.

Ekadiarsi, A. N., & Khusna, H. (2022). Analisis Kemampuan Pemecahan Masalah Matematis pada Program Linear Ditinjau berdasarkan Kemandirian Belajar Siswa SMA. *Prisma*, *11*(1), 279.

F Assyifa, E., Pujiastuti, H., & S, C. A. H. F. (2020). Analisis Kemampuan Pemecahan Masalah Matematis Ditinjau Dari Kemandirian Belajar Siswa. *Jurnal Inovasi dan Riset Pendidikan Matematika*, *1*(4), 367–382.

Fadilah, R. R., Sumarni, S., & Adisatuty, N. (2021). Analisis Kemampuan Koneksi Matematis Siswa Pada Materi Segiempat Ditinjau Dari Self-Regulated Learning. *Jurnal Edukasi Dan Sains Matematika (JES-MAT)*, *7*(1), 17–30.

Helenita Zube, Hamdunah, M. S. (2022). Analisis Kesalahan Siswa Dalam Menyelesaikan Soal Persamaan Garis Ditinjau Dari Self Regulated Learning (SRL). *Jurnal Equation*, *5*(2).

Husamah, Arina Restian, R. W. (2019). *Pengantar Pendidikan*. UMM Press.

Lahinda, Y., & Jailani, J. (2015). Analisis Proses Pemecahan Masalah Matematika Siswa Sekolah Menengah Pertama. *Jurnal Riset Pendidikan Matematika*, *2*(1), 148–161.

Lathifah, H. F., Bintoro, H. S., & Ulya, H. (2021). Analisis Faktor Yang Mempengaruhi Kemampuan Pemecahan Masalah Matematis Siswa SD. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, *10*(3), 515–523.

Marsigit, E. A. dan. (2018). *Matematika Untuk Sekolah Dasar Pembelajaran Dan Pemecahan Masalah*. Media Akademi.

Rini, E. S., & Hidayati, K. (2021). Komparasi Kemampuan Pemecahan Masalah Matematika antara yang Menggunakan dan Tidak Menggunakan Pembelajaran RME. *Al-Thifl-Jurnal Kajian Pendidikan Guru Madrasah Ibtidaiyah*, *1*(1), 25–32.

Rodliyah, S. A., Zainal, A., & Syaifuddin. (2021). Analisis Kemampuan Pemecahan Masalah berdasarkan Kemandirian Belajar (Self-Regulated Learning) Pada Materi Aritmatika Sosial Peserta Didik Kelas VII SMPN 5 Karangploso. *Jurnal Penelitian,Pendidikan, Dan Pembelajaran*, *16*(12), 163–175.

Setiawan, E., & Jusniani, N. (2021). Analisis Kesalahan Mahasiswa Dalam Menyelesaikan Soal Interpolasi Berdasarkan Analisis Kesalahan Newman. *Prisma*, *10*(2), 221.

Sugiyono. (2016). *Metode Penelitian Kuantitatif, Kualitatif, Dan R&D*. Alfabeta.

Sundayana, R. (2018). Kaitan antara Gaya Belajar, Kemandirian Belajar, dan Kemampuan Pemecahan Masalah Siswa SMP dalam Pelajaran Matematika. *Mosharafa: Jurnal Pendidikan Matematika*, *5*(2), 75–84.

.

Supraptini. (2022). *The Art Of Self Regulated Learning And Self Reflection (Layanan Konseling K... - Google Books.* Penerbit P4I.

Widiasari, F., Hidayati, K., Guru, P., & Ibtidaiyah, M. (2021). Analisis Kemampuan Pemecahan Masalah Matematika Pada Soal Cerita Berdasarkan Taksonomi Solo (Structured of Observed Learning Outcome) di SDN Kutuwetan Jetis Ponorogo. *Jurnal Ilmiah Al Thifl*, *2*(1), 1–8.

Yuwono, T. (2020). Penerapan Langkah Polya Untuk Meningkatkan Hasil Belajar Matematika Siswa Kelas 5 SDN Percobaan 2 Malang. *Ibriez : Jurnal Kependidikan Dasar Islam Berbasis Sains.*