Edumatica: Jurnal Pendidikan Matematika
Volume 14 Number 03 December 2024

Submited : 03 November 2024
Revised : 24 December 2024
Accepted : 25 December 2024

Analisis Kemampuan Pemecahan Masalah Matematis Ditinjau dari *Self Confidence* Siswa Kelas VIII

Rohmatin Zukhriya[1*] , Kartono[2], Kristina Wijayanti[3]
[1,2,3]Program Pascasarjana Pendidikan Matematika, Universitas Negeri Semarang, Indonesia
E-mail: rohmazukhriya04@students.unnes.ac.id[1], kartono.mat@mail.unnes.ac.id[2], kristinawijayanti@mail.unnes.ac.id[3]

Abstrak

Kemampuan pemecahan masalah matematis merupakan salah satu kemampuan mendasar yang dapat menunjang siswa memecahkan masalah matematika. Penelitian ini bertujuan untuk menjelaskan kemampuan pemecahan masalah matematis berdasarkan tingkat *self-confidence*. Metode penelitian ini adalah deskriptif kualitatif. Penelitian ini menggunakan instrumen tes dan kuesioner untuk pengumpulan data. Subjek penelitian adalah enam orang siswa yang mewakili kategori *self-confidence* tinggi, sedang, dan rendah, dengan teknik penentuan sampelnya menggunakan teknik purposive sampling. Teknik analisis data dalam penelitian ini adalah reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa siswa pada kategori *self-confidence* tinggi mampu memenuhi seluruh indikator kemampuan pemecahan masalah matematis. Siswa pada kategori *self-confidence* sedang mampu memenuhi tiga indikator kemampuan pemecahan masalah matematis, yaitu membangun pengetahuan baru melalui pemecahan masalah, menerapkan dan menyesuaikan rencana/strategi yang tepat untuk memecahkan masalah, dan menyelesaikan masalah yang muncul dalam matematika dan situasi lainnya. Sedangkan siswa pada kategori *self-confidence* rendah hanya mampu satu memenuhi indikator kemampuan pemecahan masalah matematis yaitu membangun pengetahuan baru melalui pemecahan masalah. Oleh karena itu, penelitian ini dapat memberikan masukan bagi guru untuk merancang pembelajaran yang dapat membantu siswa dalam mengembangkan kemampuan pemecahan masalah matematisnya.

Kata Kunci: kemampuan pemecahan masalah matematis, penelitian kualitatif, self confidence

Analysis of Mathematical Problem-Solving Ability Reviewed from Students' Self-Confidence in Grade VIII

Abstract

Mathematical problem-solving ability is one of the basic skills that helps students solve mathematical problems. This study aims to describe mathematical problem-solving skills based on the level of self-confidence. The research method is descriptive and qualitative. In this study, testing instruments and questionnaires were used for data collection. The study participants were six students which students representing high, medium, and low self-confidence categories with the sampling technique using a purposive sampling technique. The data analysis techniques in this study are data reduction, data presentation, and conclusion. The study findings show that students in the high confidence category could meet all the indicators of mathematical problem-solving ability. Students in the medium confidence category can meet three indicators of mathematical problem-solving ability, namely, constructing new knowledge through problem-solving, implementing and adapting appropriate plans/strategies to solve problems, and solving problems that arise in mathematics and other situations. Meanwhile, students in the low confidence category can meet the indicator of the mathematical problem-solving ability to construct new knowledge through problem-solving. Therefore, this research is expected to provide input for teachers to design lessons that can help students develop their mathematical problem-solving skills.

***Keywords**: mathematical problem-solving ability; qualitative research; self-confidence*

INTRODUCTION

Education is a cognizant and standard exertion to make a learning handle for understudies so that their capacities can be legitimately created. In the current era of globalization, education, especially mathematics education, must be dynamic. Sumarmo (Rahmani & Widyasari, 2018) state that mathematics education essentially has two directions of development, namely, to meet current and future needs. Current needs are the needs that create the ability to understand concepts necessary to achieve results from future problems. In particular, these needs lead to the development of logical, systematic, critical, and careful reasoning skills, as well as objective and open thinking to deal with various problems, not only in everyday life but also in the future and changes in the world. Mathematics education plays an important role in cultivating human logical thinking abilities and nurturing human resources who can respond to various future challenges and changes and developments of the times.

Mathematics is one of the compulsory subjects taught at all educational levels, from primary school to higher education. According to Subhi et al. (2020), mathematics is a pattern of thinking, an organizational pattern, and a logical proof. By learning mathematics, it is expected that students will be able to apply mathematical thinking to solve everyday problems. This is because repeated problem-solving activities may encourage students to find many alternative solutions to a problem (Anditiasari, 2020; P. Sari, 2017). Therefore, the competence to answer mathematical issues is one of the fundamental skills that students need to acquire while learning mathematics.

Solving mathematical problems is a fundamental cognitive skill that students need to practice and develop (Amam, 2017). According to Harahap & Edy (2017), mathematical problem-solving ability is a complex cognitive activity since the process of dealing with problems encountered and solving them requires multiple strategies. According to Yarmayani (2016), mathematical problem-solving ability is a skill that students try to find solutions to achieve their goals. It also requires motivation, creativity, knowledge, skills, and their application in daily life.

Mathematical problem-solving skills are important for students (Zakiyah et al., 2019). However, evidence from this field indicates that students' mathematical problem-solving skills are still relatively low. This is supported by the results of studies which state that students' mathematical problem-solving abilities are still in the low category (L. Sari et al., 2019; Latifah & Sutirna, 2021; Wahyuda et al., 2021; Lusiana et al., 2022; Amaliatunnisa & Hidayati, 2023). This problem also occurs in the MTs Silahul Ulum Asempapan Pati, where interviews conducted reveal that the majority of students are still unable to complete questions in the form of a story. They also find it difficult to solve mathematical problems whose answer formula differs from the example problem. In addition, students prefer to solve problems quickly rather than taking steps to solve a mathematical problem. Therefore, they have difficulties when asked to model a mathematical problem, which naturally affects the results obtained.

Mathematical problem-solving skills must be underpinned by self-confidence. According to (Sadat, 2016), self-confidence is a person's positive self-image, confidence in their skills, expertise, and ability to complete tasks or overcome life's challenges with excellent results. Lie (Agustyaningrum & Widjajanti, 2013) states that a confident person is confident in their ability to solve tasks and problems. According to Lauster (Hendriana et al., 2021), indicators of self-confidence are belief in one's abilities, independent action when making decisions, positive self-concept, and courage to express opinions.

Self-confidence in mathematics means that students have the ability and ability to learn mathematics better not give up, and are able to think realistically (Nurojab & Sari, 2019). Self-confidence can encourage students to solve math problems optimally. In accordance with what was conveyed by (Aisyah et al., 2018), students who have good self-confidence can be successful in learning mathematics, and self-confidence can generate self-confidence by motivating students and giving them maximum opportunities to solve a problem.

The self-confidence of each student is certainly different from one another, some students have low, medium, or high self-confidence. This is in accordance with the reality that occurs in the field, such as the results of research by Arofah & Hidayati (2021), which show that students' self-confidence is said to be low. Then, research (Fardani et al., 2021) showed the results that students' self-confidence was in

 Print ISSN: 2088-2157, Online ISSN: 2580-0779

the moderate category. In addition, (Susanti & Chairuddin, 2021) research shows that students' self-confidence is in the high category.

Students in learning mathematics need self-confidence. In line with Yates (Fauziah et al., 2018) stated that self-confidence is very important for students to succeed in learning mathematics, and it is hoped that self-confidence can make students like learning mathematics more because they are motivated and moved by their desires so that student achievement increases. Also supported by Hannula, Maijah & Pohkonen (Purwasih, 2015), which states that students who have good self-confidence will succeed in learning mathematics. Because students will tend to understand, find, and fight for the mathematical problems they face to find the expected solution, if students have good self-confidence, then students can be successful in learning mathematics. Therefore, a study is needed to determine the extent of mathematical problem-solving ability in terms of students' self-confidence, which can provide information or an overview to develop mathematical problem-solving ability related to self-confidence.

Based on the above review, no studies were found that specifically addressed mathematics problem-solving skills in terms of self-confidence among Islamic junior high school students. This is a research gap found by the researcher. In this study, the researcher will analyze mathematics problem-solving in terms of self-confidence at the Islamic junior high school level.

METHOD

This research used a qualitative approach with a descriptive research type. The study was conducted from the middle of April to the end of May 2024 at MTs Silahul Ulum Asempapan Pati. The research subjects were students of class VIII B MTs Silahul Ulum Asempapan Pati in the academic year 2023/2024. Selection of research subjects using a purposive sampling technique. Purposive sampling is a sampling technique with certain considerations (Sugiyono, 2015). The subjects taken in this study were six students of class VIII B, consisting of two students from each category of self-confidence (low, medium, and high). The selection of two students from each category by considering teacher recommendations related to student activeness and students' ability to express their ideas or opinions orally.

The instruments of this study are a test of mathematical problem-solving skills, a confidence questionnaire, and an interview guide. Two experts and one practitioner validated the presented instruments. The data collection techniques used are a test technique in the form of a short-answer test question consisting of a total of four questions to measure students' mathematical problem-solving skills, a non-test technique in the form of a questionnaire to collect data on students' confidence, and evaluation, and an interview guide as supporting information to get a deeper insight into students' ability to solve mathematical problems. The research procedure starts with students filling out a questionnaire. The questionnaire consisted of positive and negative statements and was adapted to an index of confidence. According to Mardatillah (2010), the characteristics of a confident person are: 1) They are well aware of their strengths and weaknesses and develop their potential; 2) They set standards to achieve their goals in life and reward themselves if they are successful and try again if they fail; 3) They do not blame others for their losses and failures and try to be more self-reflective; 4) They can overcome the depression, disappointment, and helplessness that surrounds them; 5) They can overcome the feelings of fear within themselves; 6) They have the composure to act and face everything; 7) They have positive thinking; 8) They move forward without looking back. Students choose to answer the questionnaire, which is in the form of a Likert scale with four answer options: always (SL), frequently (S), rarely (J), and never (TP). After students fill in the questionnaire, the results obtained are analyzed by the researcher. The results of this questionnaire are used to determine the students' confidence category (low, medium, high). The guidelines for the students' confidence categories are given in Table 1 below.

Table 1. Student self-confidence categories

Group	Skor
High	$X \leq \bar{X} + 1.SD$
Medium	$\bar{X} - 1.SD \leq X \leq \bar{X} + 1.SD$
Low	$X \leq \bar{X} - 1.SD$

Afterward, students take a mathematical problem-solving ability test in written form. The test questions contain indicators of mathematical problem-solving skills. The indicators of mathematical problem solving ability according to NCTM (Arifin & Hidayah, 2019) are: (1) build new mathematical knowledge through problem solving; namely, students can identify known elements, what is asked, and the sufficiency of the required elements; (2) apply and adjust the right strategy to solve problems; namely students can develop problem solving strategies that will be used; (3) solve problems that arise in mathematics and other contexts; namely students can solve problems with predetermined strategies; (4) observe and reflect on the mathematical problem solving process; namely students can conclude the results of solving the answers obtained. After students complete the test, the researcher conducts interviews with students about the results of their work.

The data analysis technique used in this study according to Miles and Huberman, namely data reduction, data presentation, and conclusion drawing/verification (Sugiyono, 2019). To test the validity of the data using triangulation techniques, namely checking the results of the written test and the acquisition of interviews with research subjects.

RESULTS

The data for this study are based on the analysis of the experimental instruments and interviews with the study subjects. In the first step, the subjects filled out a questionnaire on self-confidence. After receiving the results, the researchers analyzed them to classify the research topics based on the SC values. The data were classified using the guidelines in Table 1. The researchers then randomly selected six subjects to represent each student from high, medium, and low self-confidence categories. Next, the researchers administered an essay test to assess the subjects' mathematical problem-solving skills, followed by an interview. The data results obtained from completing the test instrument and the interviews are shown in Table 2 below.

Table 2. Data Results of Mathematical Problem-Solving Ability

Number	Initials Name	Self Confidence Category	Question Number	Score				Total Score
				Constructing New Mathematical Knowledge Through Problem-Solving	Apply and Adapt A Wide Range of Appropriate Strategies	Solve Problems Arising in Mathematics	Observe and Reflect on the Process of Solving Mathematic Problems	
1	AM	High	1	2	3	3	2	10
			2	2	2	3	2	8
			3	2	3	3	2	10
			4	2	3	3	2	10
2	SF		1	2	2	3	2	9
			2	2	3	3	2	10
			3	2	3	2	2	9
			4	2	3	3	2	10
3	FM	Medium	1	2	3	3	2	9
			2	2	3	3	2	10
			3	2	3	3	0	7
			4	2	3	3	0	7
4	IA		1	2	3	2	2	9
			2	2	3	3	1	9
			3	2	3	2	0	7
			4	2	2	3	0	7
5	EK	Low	1	2	2	1	0	5
			2	2	3	2	0	7
			3	2	1	1	0	4
			4	2	2	0	0	4
6	AY		1	2	3	2	0	7

Print ISSN: 2088-2157, Online ISSN: 2580-0779

Number	Initials Name	Self Confidence Category	Question Number	Score				Total Score
				Constructing New Mathematical Knowledge Through Problem-Solving	Apply and Adapt A Wide Range of Appropriate Strategies	Solve Problems Arising in Mathematics	Observe and Reflect on the Process of Solving Mathematical Problems	
			2	2	1	0	0	3
			3	2	1	0	0	3
			4	2	0	1	0	3

Below are the results of the mathematical problem-solving skills tool for each category of student confidence: high, medium, and low.
Color Description:

- : Indicator 1: construct new mathematical knowledge through problem solving
- : Indicator 2: apply and adapt a wide range of appropriate strategies to solve problems
- : Indicator 3, solve problems arising in mathematics
- : Indicator 4: observe and reflect on the process of solving mathematical problems

a. AM Subjects in the High Self-Confidence Category

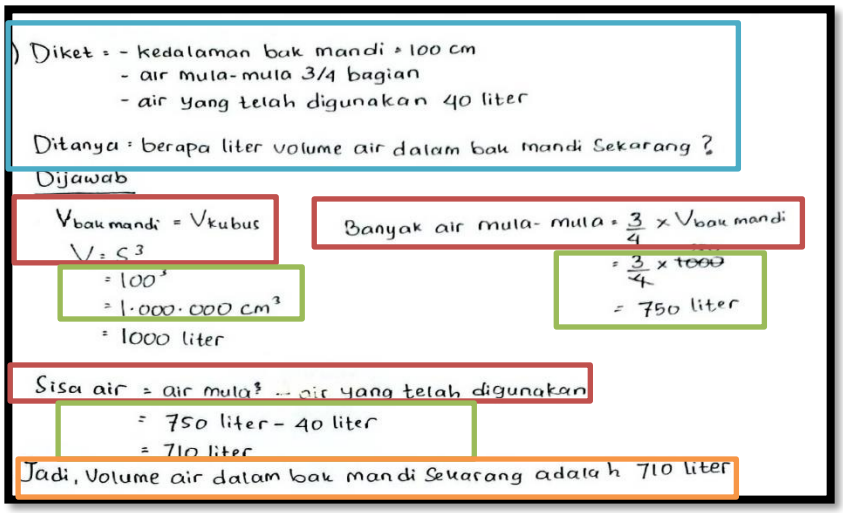

Figure 1. Subject AM Answer to Question Number 1

Transcription 1. AM Interview

Researcher	:	*Hello.....let's go straight to question number 1: what information do you know from the question?*
AM	:	*The depth of the bathtub is 100 cm, the initial water is 3/4 part, and the water used is 40 liters.*
Researcher	:	*What is being asked?*
AM	:	*The volume of the bathtub water now, ma'am.*
Researcher	:	*How do you solve the problem in question number 1?*
AM	:	*Find the volume of the bathtub first using the cube volume formula. After that, find the amount of water at first, which is 3/4 times the volume of the bathtub. Then calculate the remaining water in the bathtub by subtracting the initial amount of water with 40 liters because the question is known to have used 40 liters of water.*
Researcher	:	*How did you calculate it?*

AM	:	*The volume of the bathtub is s × s × s, which means 100 × 100 × 100 results in 1,000,000 cm^3, then the unit is changed from cm^3 to liter to 1000 liters. Then, find much water at first, which is 3/4 times the volume of the bathtub, which means 3/4 times 1000 liters; the result is 750 liters. After that, the remaining water in the bathtub is much water initially minus the water that has been used, which means 750 liters minus 40 liters to find 710 liters.*
Researcher	:	*What is the conclusion of problem number 1?*
AM	:	*The volume of water in the bathtub is now 710 liters.*
Researcher	:	*Did you recheck your answer?*
AM	:	*Yes, ma'am, I have rechecked it.*

Based on the results of the work and interview excerpts, it is known that there is consistency in the data information obtained through written tests and interviews. In the indicator of building new knowledge through problem-solving, subject AM was able to write down the known and questionable information from the problem correctly. In the indicator of applying and adjusting the right strategy, subject AM was able to write down the formula that would be used to solve the problem correctly. In the indicator of solving issues that arise in mathematics, subject AM is able to perform calculations according to the planned formula so that the results obtained are correct. In the indicator of reflecting on the mathematical problem-solving process, subject AM was able to write conclusions and reexamine the results obtained.

b. SF Subjects in the High Self-Confidence Category

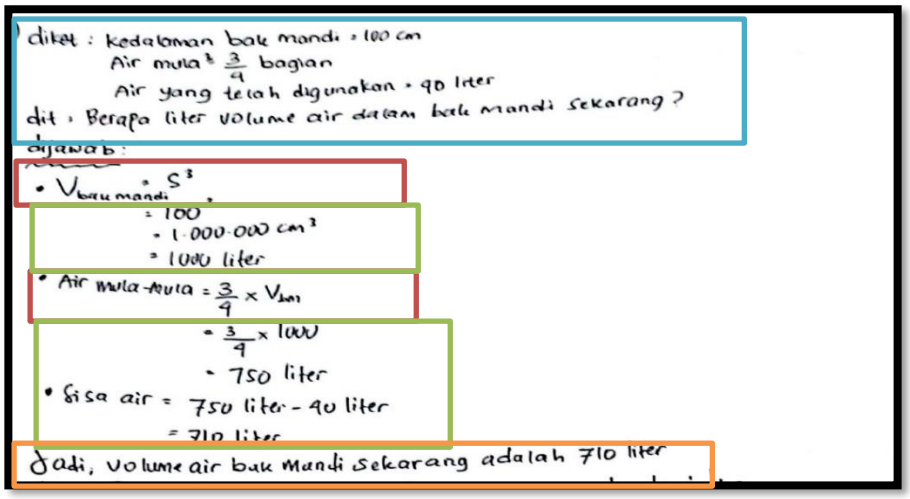

Figure 2. Subject SF Answer to Question Number 1

Transcription 2. SF Interview

Researcher	:	*Hello....look at number 1, what is the information you know from the question?*
SF	:	*The bathtub is 100 cm deep, the initial water is 3/4, and the water used is 40 liters.*
Researcher	:	*Then what is being asked?*
SF	:	*The volume of water in the bathtub now.*
Researcher	:	*How do you solve problem number 1?*
SF	:	*Finding the volume of the bathtub, then finding the amount of water at first, and after that, calculating the volume of water in the bathtub now.*
Researcher	:	*What is the formula?*
SF	:	*The volume of the bathtub is the same as the volume of the cube, which is side by side by side. The amount of water at the beginning is equal to 3/4*

Print ISSN: 2088-2157, Online ISSN: 2580-0779

times the volume of the bathtub. While the volume of water now is equal to the initial amount of water minus the amount of water that has been used.

Researcher : How did you calculate it?

SF : First, finding the volume of the bathtub, the formula s3 means 1003 to get 1,000,000 cm3, then the unit cm3 is converted to liter to become 1000 liters. Next, find the water at first 3/4 times the volume of the bathtub, which is 3/4 times 1000 liters; the result is 750 liters. Then, find the remaining water in the bathtub. Now that the initial water minus the water that has been used is 750 liters minus 40 liters, the result is 710 liters.

Researcher : What is the conclusion of problem number 1?

SF : The volume of the bathtub water is now 710 liters.

Researcher Did you check your answer again?

SF Yes ma'am.

Based on the results of the work and interview excerpts, it is known that there is consistency in the data information obtained through written tests and interviews. In the indicator of building new knowledge through problem-solving, subject SF was able to write down the known and questionable information from the problem correctly. In the indicator of applying and adjusting the right strategy, subject SF was able to write down the formula that would be used to solve the problem correctly. In the indicator of solving issues that arise in mathematics, subject SF is able to perform calculations according to the planned formula so that the results obtained are correct. In the indicator of reflecting on the mathematical problem-solving process, subject SF was able to write conclusions and reexamine the results obtained.

c. FM Subjects in the Medium Self-Confidence Category

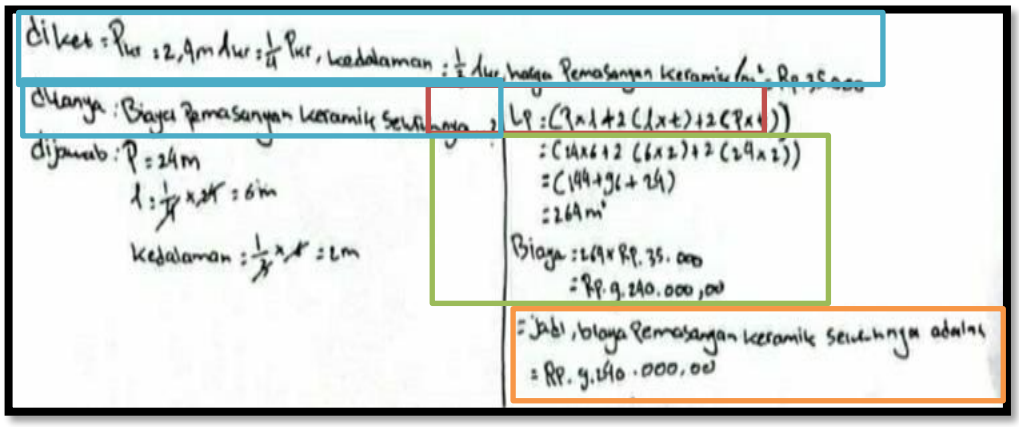

Figure 3. Subject FM Answer to Question Number 2

Transcription 3. FM Interview

Researcher : For question number 2, what information do you know from the question?

FM : The length of the swimming pool is 24 m, the width is 1/4 of the length, the depth is 1/3 of the width, and the price of tiling is Rp. 35,000 per m^2.

Researcher : What is being asked?

FM : The total cost of tiling

Researcher : How do you solve this problem?

FM : Using the formula for the surface area of a block without a lid, after that I multiply the result with the price of ceramic installation per meter, ma'am.

Researcher : How did you calculate it?

FM : The length of the swimming pool is 24 meters, the width is 6 meters, and the depth is 2 meters. I put it into the formula for the surface area of the beam,

ma'am; the result is 264 square meters. Then, find the cost of installing all the tiles, which is 264 multiplied by 35,000; the result is 9,240,000.

Researcher : What is the conclusion of problem number 1?
FM : The cost of installing all the tiles is 9,240,000.
Researcher : Did you check your answer again?
FM : I didn't have time, ma'am.

Based on the results of the work and interview excerpts, it is known that there is consistency in the data information obtained through written tests and interviews. In the indicator of building new knowledge through problem-solving, subject FM was able to write down the known and questionable information from the problem correctly. On the indicator of applying and adjusting the right strategy, subject FM was able to write down the formula to be used to solve the problem correctly. In the indicator of solving issues that arise in mathematics, subject FM is able to perform calculations according to the planned formula so that the results obtained are correct. In the indicator of reflecting on the process of solving mathematical problems, subject FM was unable to reexamine the results obtained.

d. IA Subjects in the Medium Self-Confidence Category

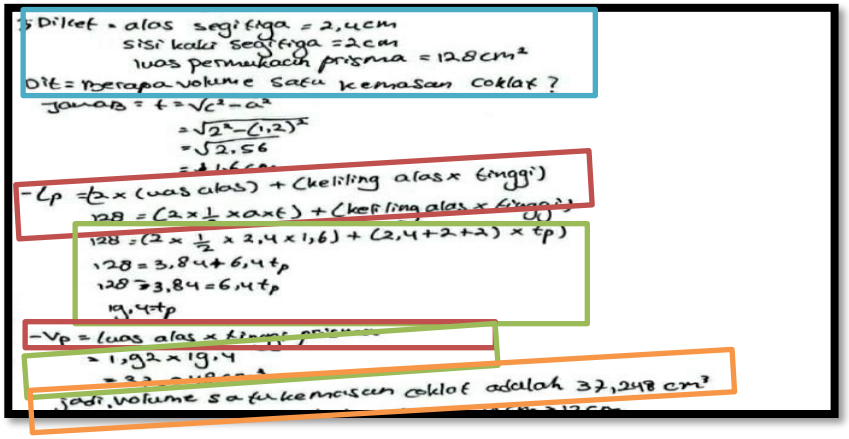

Figure 4. Subject IA Answer to Question Number 3

Transcription 4. IA Interview

Researcher : For question number 3, what information do you know?
IA : The length of the brown base is 2.4 cm, the two sides of the legs are 2 cm, and the surface area of the prism is 128 cm2.
Researcher : What is being asked?
IA : The volume of one package of chocolate
Researcher : How do you solve the problem in problem number 3?
IA : Find the height of the triangle first, then find the height of the prism using the known surface area of the prism from the problem. After that, calculate the volume of the prism.
Researcher : How did you calculate it?
IA : The height of the triangle was first found to be 1.6 cm. Then, find the height of the prism with the formula $2 \times La + (K_a \times t_p)$ obtained 19.4 cm; after that, see the volume of the prism with the formula base area times height obtained 37.248 cm^3.
Researcher : What is the conclusion of problem number 3?
IA : The volume of one chocolate package is 37.248 liters.
Researcher : Did you double-check your answer?
IA : No, ma'am, I didn't have time.

Print ISSN: 2088-2157, Online ISSN: 2580-0779

Based on the results of the work and interview excerpts, it is known that there is consistency in the data information obtained through written tests and interviews. In the indicator of building new knowledge through problem-solving, subject IA was able to write down the known and questionable information from the problem correctly. On the indicator of applying and adjusting the right strategy, subject IA was able to write down the formula to be used to solve the problem correctly. In the indicator of solving issues that arise in mathematics, subject IA is able to perform calculations according to the planned formula so that the results obtained are correct. In the indicator of reflecting on the process of solving mathematical problems, subject IA was unable to reexamine the results obtained.

e. EK Subjects in the Low Self-Confidence Category

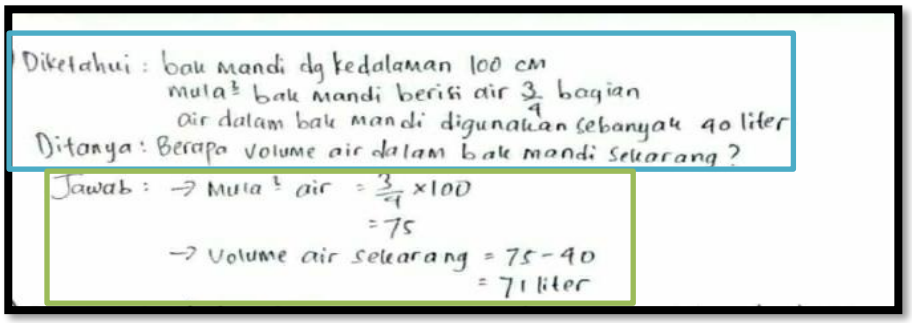

Figure 5. Subject EK Answer to Question Number 1

Transcription 5. EK Interview

Researcher	:	*Look at number 1, after you read the problem, can you mention the known information from the problem?*
EK	:	*Yes, ma'am, what is known from the problem is that the bathtub is 100 cm deep, then at first, the water in the bathtub contains 3/4 parts, and the water in the bathtub that has been used is 40 liters.*
Researcher	:	*What is asked from question number 1?*
EK	:	*What is asked is the volume of water in the bathtub now, ma'am.*
Researcher	:	*How do you solve this problem?*
EK	:	*I don't know; I made it up, ma'am.*
Researcher	:	*Did you check your answer again?*
EK	:	*No ma'am.*

Based on the results of the work and interview excerpts, it is known that there is consistency in the data information obtained through written tests and interviews. On the indicator of building new knowledge through problem-solving, subject EK was able to write down the known and questionable information from the problem correctly. On the indicator of applying and adjusting the right strategy, subject EK immediately performed calculations, not writing down the formula to be used to solve the problem. In the indicator of solving issues that arise in mathematics, subject EK is unable to perform calculations correctly. In the indicator of reflecting on the process of solving mathematical problems, the IA subject was unable to write conclusions and re-examine the results obtained.

f. AY Subjects in the Low Self-Confidence Category

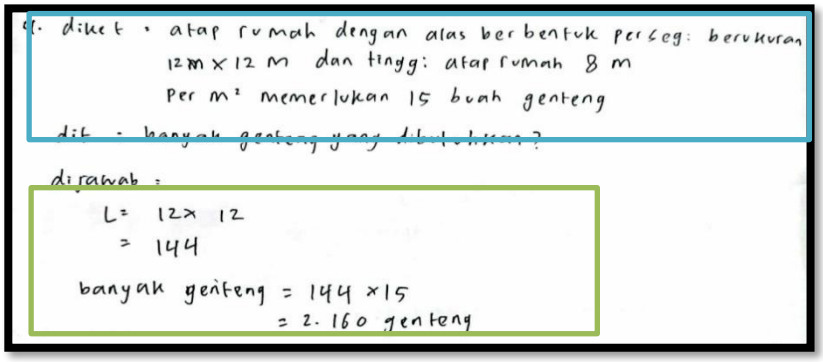

Figure 6. Subject AY Answer to Question Number 4

Transcription 5. AY Interview

Researcher	:	*For number 4, what information do you know?*
AY	:	*The roof of a house with a square base measuring 12 m × 12 m, the height of the roof of the house is 8 m, and each meter requires 15 roof tiles.*
Researcher	:	*What is being asked?*
AY	:	*The number of roof tiles needed*
Researcher	:	*How do you solve this problem?*
AY	:	*I don't know, ma'am... I just wrote it down.*
Researcher	:	*Did you double-check your answer?*
AY	:	*No ma'am.*

Based on the results of the work and interview excerpts, it is known that there is consistency in the data information obtained through written tests and interviews. On the indicator of building new knowledge through problem-solving, subject EK was able to write down the known and questionable information from the problem correctly. On the indicator of applying and adjusting the right strategy, subject EK immediately performed calculations, not writing down the formula to be used to solve the problem. In the indicator of solving issues that arise in mathematics, subject EK is unable to perform calculations correctly. In the indicator of reflecting on the process of solving mathematical problems, the IA subject was unable to write conclusions and re-examine the results obtained.

DISCUSSION

The students with high levels of confidence are AM and SF. The analysis showed that students in the high confidence category have the following mathematical problem-solving skills: 1) AM and SF can gain new knowledge through problem-solving. Subjects AM and SF read questions carefully to ensure comprehensive understanding. When recording information, both subjects convert information into mathematical notation. 2) AM and SF can execute strategies correctly. When using strategies/plans, AM and SF subjects can make decisions to choose acceptable approaches to solving problems without encountering difficulties. 3) AM and SF subjects can overcome difficulties by using mathematical concepts. AM and SF subjects consistently followed pre-planned problem-solving methods to determine the correct final result. 4) AM and SF subjects can reflect on their problem-solving approach. AM and SF subjects can conclude and evaluate the results of their work. This is evident from the interview results, which show that subjects AM and SF can correctly explain the questions they answered.

The students with moderate confidence are FM and IA. The findings show that students with moderate confidence have the following mathematical problem-solving skills: 1) FM and IA subjects can learn new things through problem-solving. FM and IA subjects study the question carefully so that they

 Print ISSN: 2088-2157, Online ISSN: 2580-0779

can fully and clearly state what is known and what is being asked. When acquiring information, both subjects convert it into mathematical notation. 2) FM and IA can apply relevant techniques. When using strategies/plans, FM and IA participants can make decisions to choose the appropriate plan to address the problem without encountering problems. 3) FM and IA participants can solve problems using mathematical concepts. Although FM and IA subjects were able to follow the pre-planned problem-solving steps, there were still errors in the calculation steps due to a lack of attention. 4) FM and IA subjects were not able to think about the problem-solving process. FM and IA subjects did not check the results of their work. The interview results showed that two subjects could not properly explain the questions they answered.

The students with low self-confidence are EK and AY. Based on the findings, the students with low self-confidence have the following mathematical problem-solving skills: 1) Subjects EK and AY can gain new knowledge by solving problems. Subjects EK and AY carefully considered the question and made sure they could clearly explain all known and asked aspects. Subjects EK and AY take the information as it is without converting it into mathematical notation. 2) Subjects EK and AY cannot execute strategies effectively. When using strategies/plans, subjects EK and AY had difficulty making decisions to select an effective problem-solving plan. 3) Subjects EK and AY could not solve problems using mathematical concepts. Subjects EK and AY did not use problem-solving procedures when solving the problems and tended to use their thinking, which resulted in incorrect final results for almost all questions. 4) Subjects EK and AY were unable to reflect on the problem-solving process. Subjects EK and AY were unable to conclude and were unable to verify the results of their work. The interview results showed that subjects EK and AY were confused and hesitant when explaining the questions they answered.

Based on the explanation above, it is obtained that the mathematical problem-solving ability of students in the high self-confidence category can fulfill all indicators of mathematical problem-solving ability. Fulfill all indicators of mathematical problem-solving ability, namely building new knowledge through problem-solving, applying and adjusting the right plan/strategy to solve problems, and adjusting the right plan/strategy to solve problems, solve problems that arise in mathematics and other contexts, and reflect on the mathematical problem-solving process. In this study, students with high self-confidence are AM and SF subjects. Students with high self-confidence have high mathematical problem-solving skills. In line with the research results by Ramdan et al., (2018), which state that the higher the student's self-confidence, the better the student has problem-solving skills. Subjects AM and SF, in solving math problems, are always confident in their abilities. Students who have high self-confidence tend to like challenges and are confident in solving problems. Furthermore, (Hartono et al., 2020) state that students with high self-confidence are more likely to be active, brave, and confident in their abilities, affecting their ability to solve a problem. Subjects AM and SF could also use correct and systematic solution strategies so that the results obtained were correct. People with high self-confidence carry out the best plan for problem-solving. In addition, Mullis (Situmeang & Marjuki, 2021) said that students who have self-confidence will be more confident that their goals will be achieved. Then during the interview process, AM and SF subjects showed a calm and confident attitude that the results of their solution were correct and had rechecked. This is supported by Yulinawati & Nuraeni (2021) stated that students with high self-confidence can have a positive attitude towards mathematics, more able to appreciate everything that is owned in themselves so that students will be confident and optimistic in working on math problems.

Students with moderate self-confidence category are FM and IA subjects. The results showed that students with moderate self-confidence were able to fulfill three indicators of mathematical problem-solving ability, namely building new knowledge through problem-solving, applying and adjusting appropriate plans/strategies to solve problems, and solving problems that arise in mathematics and other contexts. Students with moderate self-confidence have moderate mathematical problem-solving abilities in line with the research of Aisyah et al. (2018), which states that students who have moderate self-confidence have mathematical problem-solving skills in the moderate category as well. FM and IA subjects, in working on problems, try to get the expected results, even though there are problems whose mathematical calculation steps are not optimal. This is in line with research Anwar et al. (2018), which

states that students who have moderate self-confidence, in solving problems based on the correct steps but still experience calculation errors. During the interviews, FM and IA participants were good at explaining the outcome of their solutions. Still, their explanations were often insufficient because students were in a hurry or worried about the deadline for answering a question and had not yet given the answer once they had checked.

Students with low self-confidence category are subjects EK and AY. The results showed that students with low self-confidence were only able to fulfill one indicator of mathematical problem-solving ability, namely building new knowledge through problem-solving. Students with low self-confidence have low mathematical problem-solving ability. Students who have low self-confidence feel unsure of their abilities, so they only use their thoughts in solving math problems. According to the research of Lestari & Fajar (2020), the attitude of self-esteem and optimism attitude lacking, so the attitude of confidence in working on problems is also lacking. Furthermore, research conducted by (Purnama & Mertika, 2018)suggests that students' self-confidence is low, so that they will experience delays in learning mathematics, especially in problem-solving. Subjects EK and AY, in working on math problems, had difficulty in planning problem solving, implementing the solution plan, and could not check back. According to Askar et al. (2016), students who lack self-confidence have difficulty solving mathematics problems. During the interview, subjects EK and AY looked tense and anxious in explaining the solution results that had been obtained. This is supported by Fitayanti et al. (2022), that students with low self-confidence tend to feel anxious, doubtful, and nervous in facing math problems, so they do not understand math material and need teacher assistance.

CONCLUSION

Based on the above findings, it can be concluded that students with high self-confidence have high mathematical problem-solving skills and meet all indicators of mathematical problem-solving skills, namely, the ability to construct, implement, and solve new knowledge through problem solving, apply appropriate plans/strategies to problem solving, solve problems arising in mathematics and other contexts, and reflect on the mathematical problem-solving process. Students with moderate self-confidence have moderate mathematical problem-solving skills and meet only three indicators of problem-solving skills, namely, constructing new knowledge through problem solving, implementing and adapting appropriate problem-solving plans/strategies, and solving problems encountered in mathematics and other contexts. In contrast, students with low self-confidence have low mathematical problem-solving skills and meet only one indicator of mathematical problem-solving skills, namely, constructing new knowledge through problem-solving. Therefore, this research is expected to provide input for teachers to design lessons that can help students develop their mathematical problem-solving skills.

REFERENCES

Agustyaningrum, N., & Widjajanti, D. B. (2013). Pengaruh Pendekatan CTL dengan Setting Kooperatif Tipe Kancing Gemerincing terhadap Kemampuan Komunikasi Matematis, Kepercayaan Diri, dan Prestasi Belajar Matematika Siswa SMP. *PYTHAGORAS: Jurnal Pendidikan Matematika*, *8*(2), 171–180. https://doi.org/10.21831/pg.v8i2.8946

Aisyah, P. N., Nurani, N., Akbar, P., & Yuliani, A. (2018). Kemampuan Pemecahan Masalah Matematis dan Self-Confidence Siswa SMP. *SJME (Supremum Journal of Mathematics Education)*, *1*(1), 58–65. https://doi.org/10.35706/sjme.v2i2.1313

Amaliatunnisa, N., & Hidayati, N. (2023). Analisis Kemampuan Pemecahan Masalah Matematis Siswa SMP Pada Materi Pola Bilangan. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, *6*(1), 159–168. https://doi.org/10.22460/jpmi.v6i1.14515

Amam, A. (2017). Penilaian Kemampuan Pemecahan Masalah Matematis Siswa Smp. *Teorema*, *2*(1), 39. https://doi.org/10.25157/.v2i1.765

 Print ISSN: 2088-2157, Online ISSN: 2580-0779

Anditiasari, N. (2020). *Mathematics Analysis of Learning Difficulties of Children with Special Needs in Completing Mathematical Story*. *5*, 183–194.

Anwar, N. T., Budi Waluya, S., & Supriyadi. (2018). Unnes Journal of Mathematics Education Research Abilities of Mathematical Literacy Based on Self-Confidence in Problem-Based Learning with DAPIC Problem-Solving Process. *Ujmer*, *7*(2), 152–160.

Arifin, S., & Hidayah, I. (2019). Analisis Kemampuan Pemecahan Masalah pada Model Problem Based Learning Disertai. *EduMa*, *8*(1).

Arofah, A. J., & Hidayati, N. (2021). Analisis Kepercayaan Diri Siswa SMP Kelas IX Dalam Pembelajaran Matematika. *Jurnal Ilmiah Pendidikan Matematika*, *8*(2), 328–335.

Askar, Rizal, Muh., & Hamid, Abd. (2016). Profil Pemecahan Masalah Matematika Siswa SMP Kelas VII pada Materi Bangun Datar Ditinjau dari Tingkat Efikasi Diri. *Jurnal Elektronik Pendidikan Matematika Tadulako*, *4*(2), 314–325.

Fardani, Z., Surya, E., & Mulyono. (2021). Analisis Kepercayaan Diri (Self confidence) Siswa dalam Pembelajaran Matematika Melalui Model Problem Based Learning. *Paradikma Jurnal Pendidikan Matematika*, *14*(1), 39–51.

Fauziah, R., Maya, R., & Fitrianna, A. Y. (2018). Hubungan Self Confidence Terhadap Kemampuan Pemecahan Masalah Matematis Siswa Smp. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, *1*(5), 881. https://doi.org/10.22460/jpmi.v1i5.p881-886

Fitayanti, N., Rahmawati, A., & Asriningsih, T. M. (2022). Pengaruh Self-Confidence Terhadap Kemampuan Pemecahan Masalah Matematika Siswa. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, *5*(2), 335. https://doi.org/10.22460/jpmi.v5i2.9678

Harahap, E. R., & Edy, S. (2017). Perbandingan Kemampuan Pemecahan Masalah Matematis Siswa Kelas Vii Dalam Menyelesaikan Persamaan Linier Satu Variabel. *Efumatica*, *07*(01), 44–54.

Hartono, H., Huda, N. N., & Prihatin, I. (2020). Model Pembelajaran Missouri Mathematics Poject Terhadap Kemampuan Pemecahan Masalah Matematis Ditinjau dari Self Confidence Siswa. *Journal of Education and Learning Mathematics Research (JELMaR)*, *1*(1), 25–32. https://doi.org/10.37303/jelmar.v1i1.4

Latifah, N. I. W., & Sutirna. (2021). Strategi Pemecahan Masalah Matematis Siswa Pada Materi Himpunan Di Masa Pandemi Covid-19. *Jurnal Pembelajaran Matematika Inovatif*, *4*(3), 541–550. https://doi.org/10.22460/jpmi.v4i3.541-550

Lestari, R., & Fajar, M. (2020). Gratitude, Self-Esteem, and Optimism in People with Physical Disabilities. *Prizren Social Science Journal*, *4*(2), 14–21. https://doi.org/10.32936/pssj.v4i2.150

Lusiana, Armiati, & Yerizon. (2022). Kemandirian Belajar dan Persepsi Siswa Mengenai Guru Terhadap Kemampuan Pemecahan Masalah Matematis Siswa SMK. *Mosharafa: Jurnal Pendidikan Matematika*, *11*(1), 155–166. https://doi.org/10.31980/mosharafa.v11i1.695

Nurojab, E. S., & Sari, V. T. A. (2019). Hubungan Self Confidence Terhadap Kemampuan Pemecahan Masalah Matematik Siswa. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, *2*(5), 329–336.

Purnama, S., & Mertika, M. (2018). Analisis Kemampuan Pemecahan Masalah Siswa Ditinjau dari Self Confidence. *Journal of Educational Review and Research*, *1*(2), 59–63. https://doi.org/10.26737/jerr.v1i2.1619

Purwasih, R. (2015). Peningkatan Kemampuan Pemahaman Matematis Dan Self Confidence Siswa MTs Di Kota Cimahi Melalui Model Pembelajaran Inkuiri Terbimbing. *Jurnal Ilmiah STKIP Siliwangi Bandung*, *9*(1), 16–25.

Rahmani, W., & Widyasari, N. (2018). Meningkatkan Kemampuan Pemecahan Masalah Matematis Siswa Melalui Media Tangram. *FIBONACCI: Jurnal Pendidikan Matematika Dan Matematika*, *4*(1), 17. https://doi.org/10.24853/fbc.4.1.17-23

Ramdan, Z. M., Veralita, L., Rohaeti, E. E. R., & Purwasih, R. (2018). Analisis Self Confidence Terhadap Kemampuan Pemecahan Masalah Matematis Siswa SMK Pada Materi Barisan dan Deret. *Jurnal AKSIOMA*, *7*(2), 171–179.

Sadat, A. (2016). *Implementasi Model Pembelajaran Missouri Mathematics Project dalam Upaya Meningkatkan Kemampuan Pemecahan Masalah Matematis dan Self Confidence Siswa Madrasah Tsanawiyah*. *2*(1), 1–11.

Sari, L., Maidiyah, E., & Anwar. (2019). Proses Pemecahan Masalah Matematis Siswa Smp Materi Bentuk Aljabar Melalui Model Problem-Based Learning. *Jurnal Peluang*, *7*(2), 77–84. https://doi.org/10.24815/jp.v7i2.15099

Sari, P. (2017). Pemahaman Konsep Matematika Siswa pada Materi Besar Sudut Melalui Pendekatan PMRI. *Jurnal Gantang*, *2*(1), 41–50. https://doi.org/10.31629/jg.v2i1.60

Situmeang, M. S., & Marjuki. (2021). Hubungan Kepercayaan Diri (Self Confidence) Mahasiswa Dengan Hasil Belajar Pengembangan Kurikulum Menggunakan Sistem Pembelajaran Jarak Jauh (PJJ). *Thawalib | Jurnal Kependidikan Islam*, *2*(2), 103–130.

Subhi, M. S., Nursuprianah, I., & Izzati, N. (2020). Pengaruh Pembelajaran Matematika Al-Qur'an dengan Model Pembelajaran Kooperatif Tipe Think Pair Share Terhadap Kemampuan Komunikasi Matematis Siswa. *Jurnal Riset Pendidikan Matematika Jakarta*, *2*(2), 1–12. https://doi.org/10.21009/jrpmj.v2i1.16207

Susanti, G., & Chairuddin, C. (2021). Kemampuan Pemecahan Masalah Matematis Ditinjau Dari Self Confidence Siswa. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *10*(4), 2626–2635. https://doi.org/10.24127/ajpm.v10i4.4403

Wahyuda, R., Sari, H. P., & Fitria, N. (2021). JUWARA: Jurnal Wawasan dan Aksara Volume 1 Nomor 2 Tahun 2021. *JUWARA: Jurnal Wawasan Dan Aksara*, *1*(1), 13–22.

Yarmayani, A. (2016). Analisis Kemampuan Pemecahan Masalah Matematis Siswa Kelas XI MIPA SMA Negeri 1 Kota Jambi. *Jurnal Ilmiah Dikdaya*, *6*(2), 12–19.

Yulinawati, A., & Nuraeni, R. (2021). Kemampuan Representasi Matematis ditinjau dari Self-Confidence Siswa pada Materi Statistika di Desa Talagasari. *Plusminus: Jurnal Pendidikan Matematika*, *1*(3), 519–530. https://doi.org/10.31980/plusminus.v1i3.1448

Zakiyah, S., Hidayat, W., & Setiawan, W. (2019). Analisis Kemampuan Pemecahan Masalah dan Respon Peralihan Matematik dari SMP ke SMA pada Materi SPLTV. *Mosharafa: Jurnal Pendidikan Matematika*, *8*(2), 227–238. https://doi.org/10.31980/mosharafa.v8i2.555

 Print ISSN: 2088-2157, Online ISSN: 2580-0779