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Analysis of Students' Mathematical Problem Solving Ability Based on Self-Efficacy and Gender

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Abstract

This study aimed to describe students' mathematical problem solving ability based on self-efficacy and gender. The method used is descriptive qualitative through the provision of self-efficacy questionnaires, tests, interviews, and documentation. Six subjects were selected based on three levels of self-efficacy and gender from a total of 103 students in one class XI MIPA from three different schools. Research subjects were determined using a purposive sampling technique based on the Rasch model analysis. The test results of the subjects were analyzed using four Polya stages consisting of understanding the problem, making a plan, carrying out the plan, and looking back. The results of this study indicate that (1) subjects with high levels of self-efficacy can fulfill all indicators systematically, confidently, and never give up where females are better than males; (2) subjects with medium levels of self-efficacy can fulfill three indicators well and confident, in which males are better than females; (3) subjects with low levels of self-efficacy only fulfill one indicator at making a plan which showed an attitude of giving up and not being confident, where females were better than males.

1. Introduction

Students view mathematics with a negative response, even though mathematics is beneficial for students' lives. By learning mathematics, students can master the concepts and implementation of mathematics correctly in their lives. For this reason, it takes much mastery of mathematical concepts as the basis for solving various mathematical problems (Fasha et al., 2018; Isroil et al., 2017). In fact, many students find it difficult to understand mathematical concepts because the lessons are abstract and difficult to understand (Heryan, 2018). This view occurs because students cannot use their abilities when solving mathematical problems correctly and precisely.

The solve problem ability is needed when studying mathematics. Mathematical problem solving ability is an essential ability to be mastered by students in learning mathematics to understand, implement and complete plans, and draw conclusions from a problem (Nafi'an & Pradani, 2019; Nur & Palobo, 2018). Students who can solve mathematical problems well will find it easier to solve various mathematical problems. That statement aligns with mathematical problem solving and helps students apply principles, rules, and different systematic problem solving strategies in mathematics (Nurfitri & Jusra, 2021; Rahmatiya & Miatun, 2020).

However, the facts on the ground show that students' mathematical problem solving ability are still low. This statement supports the findings of researcher who discovered that students are less able to understand problems related to problem solving, resulting in several errors in the problem solving process. Other studies also support low mathematical problem solving ability (Christina & Adirakasiwi, 2021; Fatmala et al., 2020; Utami & Wutsqa, 2017). In addition, PISA 2018 stated that Indonesia was ranked 73 out of 79 participating countries with a mathematics ability score of 379 (OECD, 2019). Students not used to working

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on problem solving questions are one of the causes of their low problem solving skills (Nuryana & Rosyana, 2019). For this reason, students must practice their ability to solve problems as one of the basic 4C skills they must master in facing the 21st century generation by solving various questions.

In addition, other factors that influence mathematical problem solving in the learning success of students are the affective aspect of self-efficacy (Masitoh & Fitriyani, 2018; Yuliyanto et al., 2021). Self-efficacy is self-confidence in the learning process of a person's ability to complete various tasks. Several factors can affect self-efficacy, such as age, gender, experience, and education level (Bandura, 1997). Based on Bandura's statement that the higher a person's education and experience in his life, will affect his self-efficacy level. Students with high self-efficacy will be more courageous in approaching each problem carefully, persistently, and without despair, and they will even master new mathematical concepts (Chan & Abdullah, 2018; Yuliana & Winarso, 2019). Therefore, students need to develop and improve their self-efficacy so that they are easy to solve problems.

Gender factors can also affect students' mathematical problem solving (Mefoh et al., 2017; Nur & Palobo, 2018; Yerizon et al., 2021). Gender will show differences in the character, ways of learning, and communicating mathematical ideas of students (Nugraha et al., 2019). That research means that gender factors can also affect how students think and have the characteristics of each gender in solving mathematical problems. Imaroh and Wijayanti's research found that high self-efficacy means that students have high mathematical problem solving ability and otherwise (Imaroh et al., 2021; Wijayanti et al., 2021). In addition, females are better at solving math problems based on the results of Subekti's research (Subekti & Krisdiani, 2021). Several previous studies used only one variable in measuring mathematical problem solving ability, so it is necessary to investigate further the description of mathematical problem solving ability based on self-efficacy and gender. Describe the mathematical problem solving ability of students based on self-efficacy and gender, which is the researcher's goal. The researcher expects the description of students' mathematical problem solving test results to describe the characteristics of each level of self-efficacy and gender in solving mathematics problems.

2. Methods

The research method used is descriptive qualitative to describe students' mathematical problem solving ability based on self-efficacy and gender. Descriptive qualitative is research based on natural objects where the researcher is the primary instrument, data collection is in the form of analysis, triangulation of inductive data, and in-depth results (Anggito & Setiawan, 2018). The data collection techniques of this research are self-efficacy questionnaires, tests, interviews, and documentation. The researcher carried out the research in the even semester of the 2021/2022 academic year in one class XI MIPA, in three different schools with a total of 103 students. Research subjects were determined using a purposive sampling technique based on the Rasch model analysis. Six subjects were selected based on high, medium, and low levels of self-efficacy and different gender for each group. The test results of the subjects will be analyzed using indicators of mathematical problem solving ability with the Polya stage. The selected subjects will conduct interviews with their answers to verify the mathematics test instrument's problem solving process.

The non-test instrument is a self-efficacy questionnaire consisting of 28 items. It follows the self-efficacy indicators according to Sumarmo with four choices of the likert scale (Hendriana et al., 2017). Then, the test instrument in the form of mathematical problem solving ability tests as many as five items with Polya indicators consisting of understanding the problem, making a plan, carrying out the plan, and looking back (Polya, 1985). Semi-structured interviews are conducted online with zoom meetings where questions can change according to the subject's answers. Researchers used triangulation techniques to obtain valid data based on each data collection technique. The Miles & Huberman data analysis model used in this study consisted of a data reduction process, data presentation, and withdrawal based on the results obtained in the study.

3. Results & Discussions

3.1. Results

The Rasch model analysis is used in determining each level of student self-efficacy with the output, as shown in figure 1. Figure 1 shows a distribution map of the self-efficacy results of 103 students divided into three levels with *winstep*. Fifteen students with high self-efficacy consisted of seven males and eight females. Then, eighty-three students with medium self-efficacy consisted of thirty males and fifty-three females. Meanwhile, five students with low self-efficacy consisted of one male and four females.

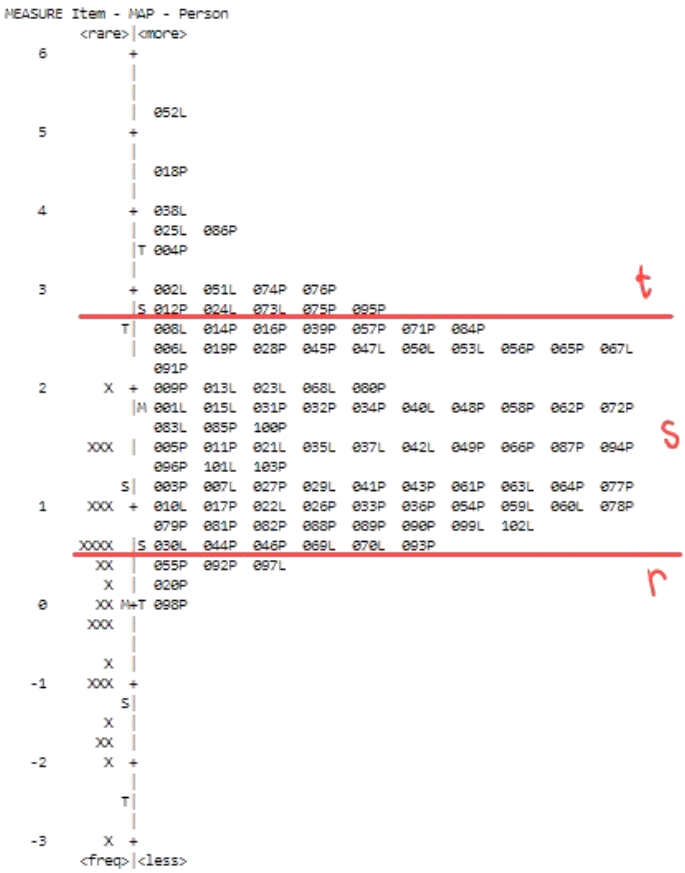

Figure 1. Distribution map of students' person-item self-efficacy

From figure 1, six subjects were selected based on high, medium, and low levels of self-efficacy and different gender for each group, as shown in table 1.

Table 1. Coding of research subjects

Level of self-efficacy	Subject	Description
High	051L	Male subject with high self-efficacy (SL-SET)
	075P	Female subject with high self-efficacy (SP-SET)
Medium	047L	Male subject with medium self-efficacy (SL-SES)
	003P	Female subject with medium self-efficacy (SP-SES)
Low	097L	Male subject with low self-efficacy (SL-SER)
	098P	Female subject with low self-efficacy (SP-SER)

The following is an explanation of the analysis answers to the mathematical problem solving ability test of the six subjects selected based on three levels of self-efficacy in question number 2.

3.1.1. High Self-Efficacy

The explanation of SL-SET's answer in figure 2 shows that due to time constraints, SL-SET did not write down the information. SL-SET, on the other hand, understood the problem unwaveringly and fluently in providing any information contained in the text. SL-SET can devise a strategy by entering the data into a variable example and developing a mathematical model to solve the problem.

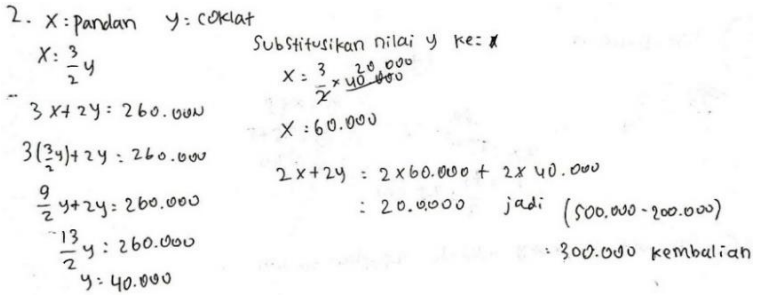

Figure 2. Results of SL-SET test answers

SL-SET can make a complete problem plan. SL-SET obtained the correct final result by using the substitution method in both mathematical equations to get the values of *x* and *y* in finding the price that Tasya bought. In addition, SL-SET can also write down the conclusions obtained even though they are not complete. SL-SET can look back at the calculation process according to the interviews on SL-SET.

Researcher : Do you understand the question in number 2?
SL-SET : Quite understand. I was confused because there was a fractional value, but I still worked on it even though it took a long time.
Researcher : What information in question number 2?
SL-SET : Pandan sponge cakes are $\frac{3}{2}$ chocolate sponge cakes; three pandan sponge cakes and two chocolate sponge cakes cost IDR 260,000. Asked for change if Tasya had IDR 500,000.
Researcher : Are you sure answer number 2 is correct? How do you believe it?
SL-SET : Yes, because I have recalculated.

According to the analysis of responses and interviews with SL-SET on question number 2, SL-SET meets all of the Polya indicators by displaying a persistent and confident attitude toward the results. SL-SET also performed well on other difficult test questions. SL-SET can comprehend the problem and apply the appropriate strategy to achieve the desired outcome. As a result, SL-SET has exceptional mathematical problem-solving abilities. Figure 3 shows an explanation of the SP-SET answers. By writing down the information in the questions, SP-SET can fully comprehend the problem. SP-SET can also generate plans with variable examples and compile a complete mathematical model.

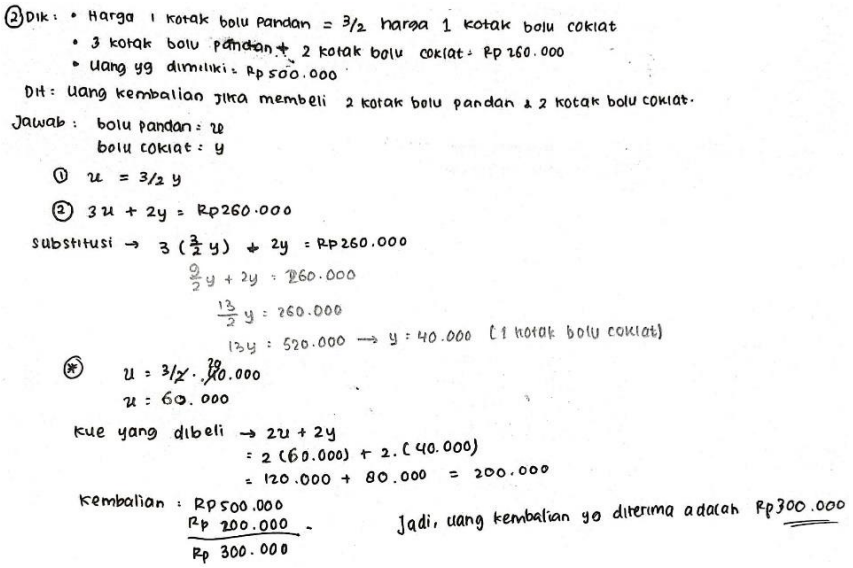

Figure 3. Results of SP-SET test answers

SP-SET can carry out the settlement plan systematically, correctly, and precisely. SP-SET uses the substitution method for both mathematical equations to obtain *x* and *y* values. After that, SP-SET outlines the cake price purchased by Tasya to correct the final result. SP-SET can also write down the conclusions from the problem correctly. SP-SET substituted the values of *x* and *y* obtained into a mathematical model created when planning to solve the problem. The results of this test analysis are in accordance with the interview of the SP-SET.

Researcher : How do you believe your answer number 2 is correct?
SP-SET : When I find a way, I always substitute the value into the equation to ensure that the answer is correct.

According to the analysis of answers and interviews with SP-SET on question number 2, SP-SET completely, systematically, and accurately meets all Polya indicators. SP-SET has a very positive attitude toward the results. SP-SET was also able to solve other difficult test questions very well and systematically. SP-SET can comprehend the issue until the final result is double-checked. SP-SET is very concerned with the problem-solving process involved in answering each question. As a result of his confident demeanor, SP-SET demonstrates excellent mathematical problem-solving abilities.

3.1.2. Medium Self-Efficacy

The explanation of SL-SES's answers in figure 4 shows that SL-SES can write down known and asked questions aligned with interview results. SL-SES can make a good plan by creating a complete mathematical model to carry out the completion plan but does not make an example of variables.

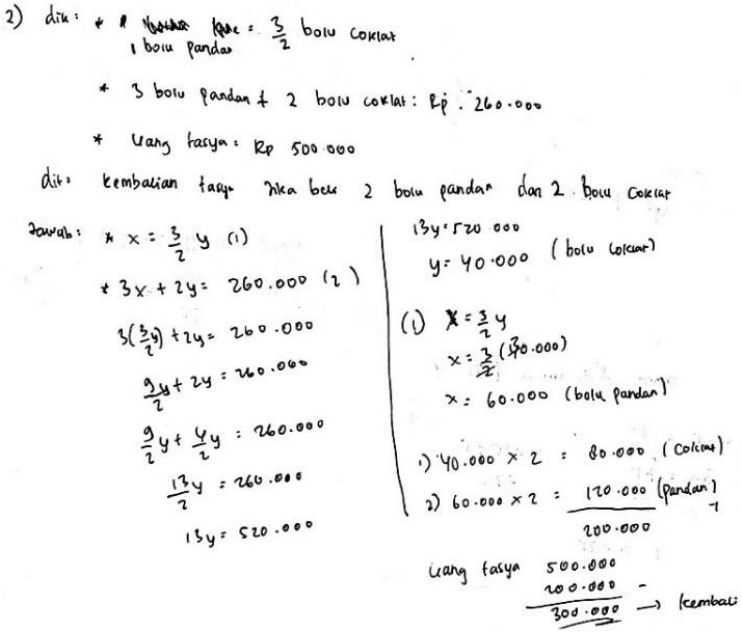

Figure 4. Results of SL-SES test answers

SL-SES can carry out a complete settlement plan using the substitution method to obtain the values of *x* and *y* first. Next, look for the price that Tasya bought which is $2x + 2y$, by describing the costs of $x = 40{,}000$ and $y = 60{,}000$. Then both were multiplied by two and added to get the price of the sponge cake that Tasya bought. Then, look for Tasya's change and get the correct final result. However, SL-SES could not write down the conclusions obtained and did not conduct a re-examination that was align with the results of the interviews with SL-SES.

Researcher : What are the conclusions obtained?
SL-SES : The change that Tasya gets is IDR 300,000.
Researcher : Are you sure the answer to number 2 is correct? Do you re-check your answer?
SL-SES : Sure, but I didn't re-check.

Three Polya indicators are met by the analysis of answers and interviews with SL-SES on question number two. By not writing conclusions on the answer sheet, there is an error in the indicators of looking back. SL-SES has faith in the outcomes of the answers he receives based on his knowledge. Other difficult

test questions can be completed successfully by SL-SES. Even if there are some errors in the problem solving, SL-SES can understand the problem on each question. SL-SES used the correct settlement strategy, resulting in the correct final result. As a result, SL-SES can solve mathematical problems. The SP-SES responses are explained in Figure 5. SP-SES did not completely write down the information in the questions and was not careful in making the information requested, as evidenced by the interview results. Instead of a variable example, SP-SES can make plans by creating a complete mathematical model.

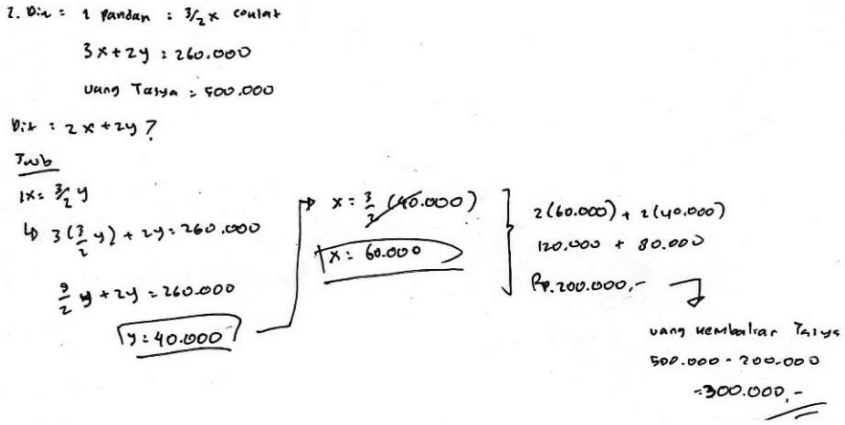

Figure 5. Results of SP-SES test answers

SP-SES did not write down the complete problem solving process like in figure 5. SP-SES was able to carry out the settlement plan well. SP-SES also uses the substitution method to obtain the value of *x* and *y* in finding the cake price that Tasya purchased. Then substitute that value into the purchase price so that the final result is correct. In addition, SP-SES can also write down the conclusions from the problem correctly even though it is not complete, but SP-SES does not re-examine. The results of this test analysis is align with the results of interviews on the SP-SES.

Researcher : Why are you wrong to make the information asked?
SP-SES : I'm not very careful when I read the questions.
Researcher : Are you sure the answer to number 2 is correct? What is your answer re-check?
SP-SES : Yes, sure. But I didn't re-check.

According to the analysis of answers and interviews with SP-SES on question number 2, SP-SES can meet the three Polya indicators well but is incorrect in their understanding of the problem. The SP-SES only reread the questions during the interview to answer the information in question number 2. Despite some errors in problem solving, the SP-SES demonstrated a confident attitude toward the results obtained. SP-SES was able to successfully complete other difficult test questions. SP-SES is less capable of comprehending two test questions. SP-SES had a good understanding of the other three questions. As a result, SP-SES has a moderately good ability to solve mathematical problems.

3.1.3. Low Self-Efficacy

The explanation of SL-SER's answers in figure 6 shows that SL-SER is less able to understand the problem. SL-SER did not write down the information and incorrectly made information asked, which are strengthened by the results of the interviews. SL-SER can make a plan by creating a complete mathematical model to carry out the solution plan and make an example of variables.

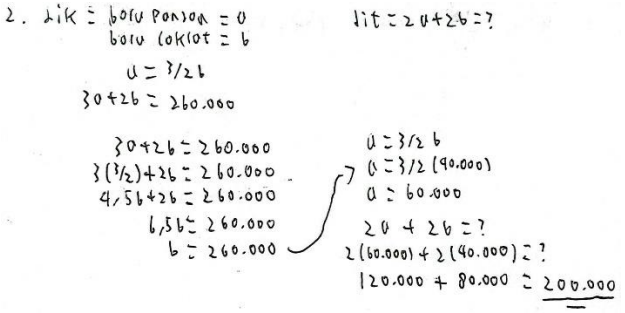

Figure 6. Results of SL-SER test answers

SL-SER can carry out the settlement plan even though there are inaccuracies in writing when solving problems to find the value of *b*. The final result obtained by SL-SER is incorrect because of an error in understanding the information asked. In addition, SL-SER is less able to write the conclusions from the problem because it is lazy. The analysis of this test align with the results of the interviews.

Researcher : What information is in question number 2?
SL-SER : The price of one box of pandan sponge cake and chocolate sponge cake. I assume the pandan sponge cake is *a* and the chocolate sponge cake is *b*. As shown in the answer sheet, I made a mathematical model and asked for a change to buy two pandan and chocolate sponge cakes.
Researcher : Why is the process not finished, and there are no conclusions in your sheet?
SL-SER : I was not careful when I read the question, and I'm too lazy to conclude the problem.
Researcher : Are you sure the answer in number 2 is correct?
SL-SER : Not sure because I doubt my answer.

Based on answer sheet analysis and interviews, SL-SER only meets one Polya indicator in carrying out the plan. In the interview results, SL-SER understood the problem but did not write it down on the answer sheet and wrote the information incorrectly. Because of a misunderstanding of the mathematical concepts used, SL-SER does not understand the strategy. SL-SER stated during the interview that it employs the elimination and substitution method. Because SL-SER was careless when reading the questions, the answers were incorrect. SL-SER does not examine the results obtained in the question. When confronted with a difficult-to-solve problem, SL-SER displays a lack of confidence and quickly gives up, instilling in him a sense of laziness. Another set of difficult test questions could not be completed well because SL-SER did not answer them. Only two questions can be understood by SL-SER. The SL-SER settlement strategy is correct, but there are still faults in how each problem-solving indicator is implemented. As a result, SL-SER has a limited ability to solve mathematical problems. Following that, the explanation of SP-SER answers in figure 7 reveals similarities to the SL-SER. SP-SER is less capable of understanding the problem and providing incorrect information. SP-SER can make plans by developing a complete mathematical model as well as examples for each variable.

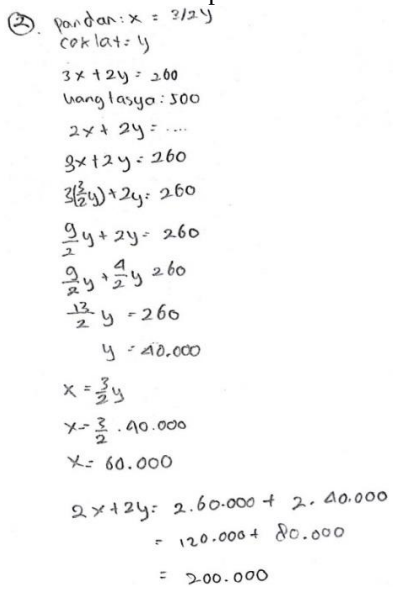

Figure 7. Results of SP-SER test answers

SP-SER is quite capable of carrying out the settlement plan. Still, the final results obtained are incorrect due to an error in understanding the information in question. In addition, SP-SER also did not write down the conclusions obtained from the problem. The results of this test analysis are in accordance with the interview of the SP-SER.

Researcher : Do you understand the question in number 2?
SP-SER : I do not understand. I did the best I could.
Researcher : Why is it wrong to make the information in question, and why have you not finished working on it?

SP-SER : I was not careful enough when I read the questions.
Researcher : Are you sure about your answer? And why not conclude?
SP-SER : I am unsure and usually do not conclude the answer.

According to the analysis of answers and interviews with SP-SER in question number 2, SP-SER only meets one of the Polya indicators. Even if the plan is incomplete, SP-SER performs better than SL-SER. SP-SER does not read the questions carefully, so the final result is incorrect. SP-SER is not accustomed to solving mathematical problems in a systematic manner, draws no conclusions, and does not examine the results obtained. SP-SER lacks confidence and quickly abandons the problems it faces. SP-SER can solve all test questions in other difficult test questions. SP-SER can use strategy effectively, but it does not execute every step of troubleshooting flawlessly. SP-SER does not solve problems in a systematic manner, so it is not optimal in every situation. As a result, SP-SER has a poor ability to solve mathematical problems.

3.2. Discussions

3.2.1. High Self-Efficacy

Subjects included in the category of high self-efficacy are SL-SET and SP-SET. Based on the results, the analysis and triangulation show that overalls SL-SET and SP-SET can fulfill all the Polya indicators very well as shown in table 2 below.

Table 2. Results of Analysis and Triangulation of High Self-Efficacy Subjects

Subjects	Mathematical Problem Solving Ability Indicators			
	1	**2**	**3**	**4**
SL-SET	Good – Complete	Very Good – Complete	Very Good – Complete	Good – Complete
SP-SET	Very Good – Complete	Very Good – Complete	Very Good – Complete	Very Good – Complete

In indicator 1, SL-SET mathematical problem solving ability is good and complete. SL-SET can mention every element contain in the question even though SL-SET did not write it down on the answer sheet due to the short time. Meanwhile, SP-SET has very good and complete mathematical problem solving ability. SP-SET can write down and mention every information contained in the questions in detail and systematically. Based on this, both subjects fulfill understanding the problem.

In indicator 2, SL-SET mathematical problem solving ability is very good and complete. SL-SET can create a completed mathematical model that you want to use. Meanwhile, SP-SET has very well and completed mathematical problem solving ability. SP-SET can make every mathematical model in detail. Based on this, both subjects fulfill making plans indicator.

In indicator 3, the mathematical problem solving ability of SL-SET is very good and complete. SL-SET can solve problems coherently and can use strategies very well previously. Meanwhile, SP-SET also has very well and completed mathematical problem solving ability. SP-SET can solve problems systematically and can use a complete way to solve problems. Based on this, both subjects fulfill carrying out the plan.

In indicator 4, the mathematical problem solving ability of SL-SET is good and complete. SL-SET is already good at making the conclusions it gets. SL-SET can also re-check the calculation process. However, SL-SET is confident and does not give up easily, which is one of the high self-efficacy factors. Meanwhile, SP-SET has very good and complete mathematical problem solving ability. SP-SET can make complete and clear conclusions. SP-SET also re-examines the results by substituting each variable value into the design of mathematical models. Based on this, both subjects fulfill looking back indicator.

Based on the discussion above, subjects with high self-efficacy is excellent that can fulfill all of the Polya indicators where a female is better than a male. That statement is align with research (Imaroh et al., 2021) that students with high self-efficacy can fulfill all Polya indicators systematically and precisely. SL-SET and SP-SET can carry out each Polya indicator very well. They are also showed confidence and did not give up easily in going through every problem. That statement is in line with research (Marasabessy, 2020) that students with high self-efficacy will have better problem solving ability. The knowledge possessed by students with high self-efficacy is very good.

3.2.2. Medium Self-Efficacy

Subjects included in the category of medium self-efficacy are SL-SES and SP-SES. Based on the results, the analysis and triangulation show that the overalls of the two subjects can fulfill the three Polya indicators. The analysis result can see in table 3 below.

Table 3. Results of Analysis and Triangulation of Medium Self-Efficacy Subjects

Subjects	Mathematical Problem Solving Ability Indicators			
	1	2	3	4
SL-SES	Good – Complete	Very Good – Quite Complete	Very Good – Complete	Not Good – Incomplete
SP-SES	Not Good – Less Complete	Good – Quite Complete	Good – Quite Complete	Good – Complete

In indicator 1, the mathematical problem solving ability of SL-SES is good and complete. SL-SES can write and mention every element in the questions completely. Meanwhile, SP-SES has not had a good and less completed mathematical problem solving ability. SP-SES is less able to write every information completely and incorrectly in making the element being asked. Based on this, both subjects quite fulfill understanding the problem where males are better than females.

In indicator 2, the mathematical problem solving ability of SL-SES is very well and quite complete. SL-SES can create a completed mathematical model that you want to use. However, SL-SES did not write the example variables in the answer sheet. However, SL-SES mentioned the example variables during the interview so that SL-SES understood the plan that had been made. Meanwhile, SP-SES has good mathematical problem solving ability and is quite complete. SP-SES can complete make every mathematical model. SP-SES doesn't write variable examples into the answer sheet, but SP-SES understands the strategy. Based on this, both subjects fulfill making plans indicator.

In indicator 3, the mathematical problem solving ability of SL-SES is very well and complete. SL-SES can solve problems coherently with the correct final result. SL-SES is also can explain the problem solving process that has been made. Meanwhile, SP-SES has good and quite complete mathematical problem solving ability. SP-SES can solve problems well but not systematically. Based on this, both subjects fulfill carrying out a plan where males were superior to females.

In indicator 4, the mathematical problem solving ability of SL-SES is not good and is incomplete. SL-SES did not conclude and did not re-examine the results because they were in a hurry. However, SL-SES is confident in the results it obtains even though it is not re-examined in the calculation or settlement process. Meanwhile, SP-SES has good and complete mathematical problem solving ability. SP-SES was able to conclude well but did not re-examine the results. Based on this, both subjects did not fulfill re-examination where women were better than men.

Based on the discussion above, subjects with medium self-efficacy have good mathematical problem solving ability. SL-SES and SP-SES fulfill the three Polya indicators where males were superior on the indicator of understanding the problem and females were superior on the indicator of looking back. In general, males are better able to solve the problems systematically than females. SL-SES and SP-SES can carry out indicator quite well even though there were some errors and inaccuracies in the problem solving process. Both subjects also showed a confident and confident attitude towards the results.

3.2.3. Low Self-Efficacy

Subjects included in the category of low self-efficacy are SL-SER and SP-SER. Based on the results, the analysis and triangulation show that the overalls of the two subjects only fulfill only one Polya indicators. The analysis result can see in table 4.

In indicator 1, SL-SER mathematical problem solving ability is not good and less complete. SL-SER can not write down every element contained in the question and is wrong in making asked. Meanwhile, SP-SER has not good and incomplete mathematical problem solving ability. SP-SES was also unable to write down every information contained and was wrong in making the elements asked because they were not careful when reading the questions. Based on this, both subjects did not fulfill understanding the problem, but males were better than females.

Table 4. Results of Analysis and Triangulation of Low Self-Efficacy Subjects

Subjects	Mathematical Problem Solving Ability Indicators			
	1	2	3	4
SL-SER	Not Good – Less Complete	Quiet Good - Complete	Quiet Good – Less Complete	Not Good – Incomplete
SP-SER	Not Good – Incomplete	Good – Complete	Good – Less Complete	Not Good – Incomplete

In indicator 2, the mathematical problem solving ability of SL-SER is quite good and complete. SL-SER can create a complete example of variables and mathematical models. However, SL-SER is wrong in stating the strategy used. Meanwhile, SP-SER has good and complete mathematical problem solving ability. SP-SER can make a variable example and a completed mathematical model. Based on this, both subjects fulfilled making plan indicators in which females were better than males.

In indicator 3, the mathematical problem solving ability of SL-SER is quite good and less complete. SL-SER can solve the questions quite well even though some inaccuracies result in wrong final results. Meanwhile, SP-SER has good and less completed mathematical problem solving ability. SP-SER can solve problems coherently. SP-SES can use the strategy correctly to solve the problem even though SP-SES makes wrong final results. Based on this, both subjects quite fulfill carrying out the plan in which females were better than males.

In indicator 4, the mathematical problem solving ability of SL-SER is not good and incomplete. SL-SER does not make conclusions and does not re-examine the results by showing a lazy attitude and giving up easily. Meanwhile, SP-SER has no good and incomplete mathematical problem solving ability. SP-SER can not make conclusions because they are not used to making conclusions. SP-SES also did not re-examine the results because of their laziness and lack of confidence in their answers. Based on this, both subjects did not fulfill looking back indicators.

Based on the preceding discussion, subjects with low self-efficacy continue to fail to meet the indicators of mathematical problem solving ability. One Polya indicator can be satisfied by SL-SER and SP-SER. However, SL-SER and SP-SER performed admirably in terms of making plan indicators. Overall, female subjects performed better than males at carrying out plans indicator coherently, even when the solutions were not perfect. According to research (Wijayanti et al., 2021), subjects with low self-efficacy fulfill only a small portion of the mathematical problem solving ability indicators. As a result, several Polya indicators with low self-efficacy produce suboptimal results. Furthermore, there are parallels between the two subjects in that both subjects with low self-efficacy are lazy to draw conclusions and are not even used to drawing conclusions. According to research (Utami & Wutsqa, 2017), the lowest stage for students in the four stages of Polya is when re-checking answers. Students do not see the outcomes of the problem-solving process in a systematic manner. Both subjects also exhibited a lack of confidence, laziness, and were easily discouraged by the results. According to research (Subaidi, 2016), students with low self-efficacy in problem solving tend to give up easily and have difficulty solving problems in front of them. As a result of their lack of a positive attitude, students have difficulty solving problems.

4. Conclusion

Based on the analysis results of the subjects mentioned above, this research has several outcomes. Subjects with high self-efficacy performed admirably on all of the Polya indicators, never gave up, and were optimistic. Female subjects outperform males in indicators of problem understanding and problem solving in a structured manner. Subjects with medium self-efficacy performed well on all three Polya indicators. They are confident in the outcomes of their responses. Male subjects comprehended the problem better and followed a systematic plan than females. Female subjects still made mistakes when completing out the questions. However, neither of them reflected on the problem-solving process. Furthermore, subjects with low self-efficacy only meet one Polya indicator at the planning stage, with an attitude of giving up easily, being lazy, and lacking confidence in their results. Even though the results obtained are incorrect, female subjects perform better than males in carrying out the plan. Most of the Polya indicators cannot be met

optimally by the two subjects. They do not fully comprehend the problem, and they make mistakes in carrying out the plan. They are also unable to review the outcomes.

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