



## Problem Solving Profile of Students with High Self-Efficacy Levels in terms of Gender

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### Abstract

This research is motivated by the low mathematical problem-solving ability of MTs students. The purpose of the study was to describe the problem-solving profile of students with high self-efficacy in terms of students gender. The research method is qualitative research, where the research subject consists of one male student and one female student with a high level of self-efficacy from MTs students in class VIII-A. The main instrument is the researcher himself, supported by problem-solving tests, self-efficacy questionnaires, and interview guidelines. The data analysis technique was carried out using stages, namely: data reduction, data presentation, and conclusion. The results showed that in solving problems male students with high self-efficacy were superior to female students with high self-efficacy, namely: (1) In The stage of understanding the problem, male and female students with high self-efficacy were able to name all that information known and asked. (2) In the planning stage, male and female students with high self-efficacy are good enough in determining strategies. (3) In the stage of implementing the plan, male and female students with high self-efficacy were following the planned strategy. However, in practice, female students with high self-efficacy make many mistakes, so the results obtained are not correct. (4) In the re-examination stage, male and female students with high self-efficacy re-examine the results of their answers.

**Keywords:** *problem-solving, self-efficacy, gender*

### A. Introduction

Problem solving is an ability that students must have in learning mathematics. Most mathematics educators may agree that the development of students' problem-solving skills is an important goal of teaching (Haavold & Sriraman, 2022). Purba & Sirait (2017) state that problem solving plays an important role in mathematics education from elementary to secondary level students. Problem solving is a core goal in learning mathematics at school and is an important skill

needed in everyday life (Chang & Zhou, 2022; García et al., 2019; Surya & Putri, 2017; Ummah & Yuliati, 2020). Lester (2013) emphasized that "Problem solving is the heart of mathematics" which means that the heart of mathematics is problem solving. Problem solving abilities provide great benefits to students in seeing the relevance between mathematics and other subjects, as well as in real life (Latifah & Afriansyah, 2021). Therefore, in learning mathematics problem solving has a very important role.

(Krulik & Rudnick (1995) define problem solving skills as a means for individuals to use previously possessed knowledge and abilities to synthesize and apply to new and different situations. Problem solving situations are a challenge and a critical moment for students in an effort to find solutions. Problem solving is identified as a process in which individuals seek solutions to the problems they encounter (Öztürk et al., 2020). Problem solving is an ability that involves various processes including analyzing, interpreting, reasoning, predicting, evaluating and reflecting (Lestari & Afriansyah, 2021). Problem solving can be interpreted as a process in achieving a goal that involves self-ability and skills. To solve or solve the problem, the right steps are needed to get the best solution.

Based on the description above, students should have problem solving abilities. However, in reality, the ability to solve problems in Indonesia is currently still low. Problem solving ability is a difficult thing for students to achieve. This is justified by (Khatimah & Sugiman, 2019) which states that the activity of studying questions that are considered difficult by students requires problem-solving skills. This happens because students only learn according to the example given by the teacher, so that when given non-routine questions (mathematical problems), students will experience errors (Malalina & Kesumawati, 2014). In line with Wasiran (2019) which states that, students are too used to thinking procedurally so they are prevented from responding and solving problems. Low problem-solving abilities also result in low student learning outcomes.

In the 2018 PISA triennial survey, Indonesia is ranked 72nd out of 78 countries in the field of mathematics. One of the factors that causes low PISA achievement in mathematics in Indonesia is the low ability to solve math problems in schools (Inayah, 2018). Strengthened by the results of observations made by researchers on MTs class VIII-A students. Based on the average value of the test results, it was concluded that students' problem-solving abilities were still relatively low with an average score of 65.4. Besides that, from the results of an interview with one of the mathematics teachers at the MTs, researchers obtained information that there were still many students who had difficulty working on problem solving questions. Students tend to be able to work on it if the model questions given are exactly the same as the examples of questions being taught, in the sense that students are only used to routine questions.

There is a link between problem solving and students' self-efficacy. Self-confidence (self-efficacy) has a function as a tool for assessing student success in solving problem solving questions (Surya & Putri, 2017). Riskiningtyas & Wangid, (2019) state that a person's low achievement is caused by the person's low self-confidence in solving mathematical problems. Students who have self-confidence (self-efficacy) see that mathematics is important for their lives and help them solve mathematical problems in a fun way, but they do not have self-confidence (self-efficacy) to be able to solve these mathematical problems. In line with research by (Widajati et al., 2018) which states that in order to face and solve social problems, students must have self-confidence (self-efficacy). Riskiningtyas & Wangid (2019) state that self-efficacy plays an important role in achievement motivation, is interconnected with self-regulating learning processes, and mediates academic achievement.

Self-efficacy (self-confidence) is a belief that students must have in order to be successful in the learning process. Self-confidence or self-efficacy is one's ability to solve problems in order to obtain the desired results (Bandura, 1997). Students who have high self-efficacy will be able to solve math problems. Student self-efficacy refers to beliefs about what they are capable of achieving, rather than what skills and abilities they think they have. Self-efficacy can affect students' persistence or persistence in solving problems (Wiharso & Susilawati, 2020; Yeşilyurt et al., 2016). Students who have strong self-confidence will diligently face problems to obtain solutions and vice versa, students who have weak self-confidence will tend to give up easily when facing a problem.

Self-efficacy determines how much effort students will make and how long students survive facing obstacles (Handayani, 2013). In addition, self-efficacy also affects the achievement of student achievement. Furthermore, (Tjiong, 2014) states that the more confident students are about their abilities, the better their decision-making abilities will be. Based on these opinions, it can be said that self-efficacy plays an important role for students in solving math problems. Therefore, self-efficacy abilities must be developed in students so they can interpret the process of learning mathematics in real life, so that the learning process occurs optimally, and can improve problem solving skills.

Each individual can be divided into two genders, namely men and women. In addition to the self-efficacy factor, from these gender differences there are differences in problem solving skills between women and men. Gender differences are innate differences between men and women that can change at any time through the efforts made. Wilkinson & Pickett (2017) states that there are significant differences between male and female students with regard to abilities in solving mathematical problems. When faced with problems based on problem solving, male and female students have different problem-solving tendencies (Nur & Palobo, 2018). Krutetskii (1997) states that men are superior in terms of reasoning and have better mathematical and mechanical abilities although this difference is only apparent at higher levels. While women are superior in accuracy, thoroughness, thoroughness and thoroughness of thinking. This is in line with Nur and Palobo's research (2018) which shows that male students' problem-solving skills are better than female students. This is due to the poor ability to understand problems of female students. Female students have difficulty visualizing existing problems. The mathematical skills of female students are also very low, so that students have difficulty solving a problem. (Gaspard et al., 2015) revealed that the level of intrinsic motivation of female students was lower than that of male students. Female students found mathematics less useful for the future and had higher levels of intrinsic motivation to learn the language. Regarding gender differences, international studies show that there are differences in the average level of academic self-concept between boys and girls according to the dominant gender stereotypes. Girls have a higher self-concept in the verbal domain (Heyder et al., 2017; Jacobs et al., 2002), and boys have a higher self-concept in mathematics (Fredricks & Eccles, 2002; Jacobs et al., 2002; Marsh, 1989; Wilgenbusch & Merrell, 1999).

Meanwhile, on the other hand, the results of research by Aras, et al (2019) show that female students have better mathematical problem-solving abilities compared to male students, where male students tend to be quickly satisfied with what they get even though the completion process is sometimes there is an unnoticed error. Theoretically, female students perform better than male students because they are more motivated and work more diligently in doing school work, women's self-confidence is better than men and women prefer to read than men (Santrock & Cordero, 2012). Several other studies have also shown that the mathematical problem-solving abilities of female students are superior to male students in all indicators of problem solving (Anggraeni & Herdiman, 2018; Davita & Pujiastuti, 2020). This is because female students are better able to handle holistic problem solving, where female students are more focused on the problem-solving process used not the results obtained. This is in line with Nur & Palobo's research (2018) which states that female students are better able to handle holistic problem solving while male students are stronger in analyzing specific problems.

Based on several previous studies, it is known that there are differences of opinion regarding students' mathematical problem-solving with different genders. Several studies have shown that male students are superior in solving math problems. However, some other studies also show that in solving math problems female students are superior to male students. Thus, the existence of these differences of opinion encourages researchers to conduct more in-depth research related to the problem-solving profile of students with high levels of self-efficacy, which is influenced by gender.

## **B. Methodology**

### *1. Research Design*

This research is qualitative research. It is called qualitative research because all the facts, both written and oral, from human data sources that have been observed and other related documents

are described as they are, then studied as briefly as possible to answer the problems studied. This research was conducted in class VIII-A of MTs Negeri 6 Pasuruan, the academic year 2021/2022 with a total of 22 students. From 22 people, 2 people were selected as research subjects consisting of 1 male student and 1 female student with high self-efficacy.

## 2. Instruments

The instrument used in this study consisted of the main instrument and the supporting instrument. The main instrument is the researcher himself, while the supporting instruments are self-efficacy questionnaires, problem-solving test sheets, and interview guidelines. The three instruments have been validated in terms of content and construction by 3 validators. The self-efficacy questionnaire was used to determine the research subject. The questionnaire consists of 30 statement items with detailed scores for each answer choice using a Likert scale which is presented in Table 1 below.

**Table 1. Self-efficacy Questionnaire Response Format Score**

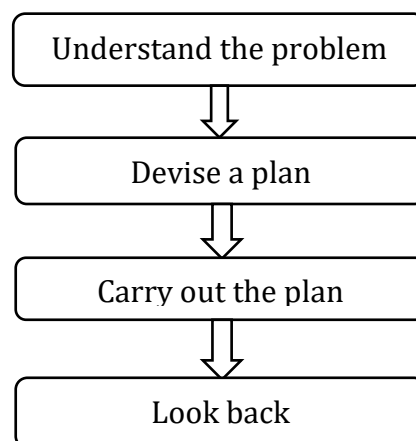
Category Student Answers	Questionnaire Item Score	
	Positive	Negative
Strongly Agree (SS)	4	1
Agree (S)	3	2
Disagree (TS)	2	3
Strongly Disagree (STS)	1	4

Data from the self-efficacy *questionnaire* were analyzed using a range of scores with calculations referring to Azwar (2015) Self-efficacy is classified into high, medium, and low levels. However, in this study students will only be grouped into the classification of high self-efficacy which is reviewed based on gender according to the research objectives. Thus the high and low *self-efficacy* of students are classified as follows.

**Table 2. Student Self-efficacy Grouping Criteria**

Criteria	Category
$x \geq (\bar{x} + SD)$	Tall
$(x - SD) < x < (\bar{x} + SD)$	Currently
$x \leq (\bar{x} - SD)$	Low

The problem-solving test sheet is used to find out the steps of student completion in solving mathematical problems. The test is given in the form of *essay questions*. The results of the problem-solving test were analyzed using the problem-solving steps (Polya, 2004).



**Figure 1. Steps to Solve Polya's Problems (1973)**

In addition, to complete the information regarding the profile of students' mathematical problem-solving, interviews were conducted. The interviews conducted in this study were semi-structured. The validity of the data was obtained through the triangulation technique. The data triangulation used in this study is time triangulation, which is to compare and check the validity of the information obtained at different times. In this case, the researcher checked the suitability of the data obtained from tests 1 & 2 and interviews 1 & 2 to obtain valid data.

### 3. The technique of Data Analysis

The data obtained were analyzed by referring to the data analysis model from Miles & Huberman (1994), where there are three steps of data analysis activities, namely: data reduction, data presentation, and conclusion drawing.

## C. Findings and Discussion

### 1. Findings

Based on the data analysis of the self-efficacy questionnaire results, 2 research subjects were selected, namely 1 male student and 1 female student who had high self-efficacy with the highest questionnaire score. Because this research is qualitative research that is intended to explore deeply subjects who have a high level of self-efficacy and is not intended to be generalized. Representatives of two subjects are sufficient to provide information about the problem-solving profiles of students who have high self-efficacy in terms of gender. The questionnaire scores of the two subjects were used to determine the classification of research subjects as follows.

**Table 3. Classification of Research Subjects**

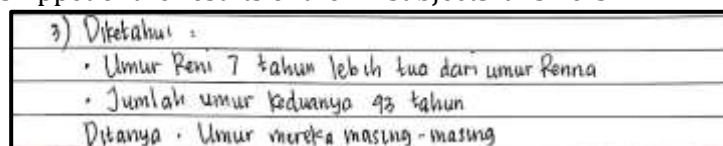
No.	Student's name	Gender	Self-Efficacy Questionnaire Score	Student Code
1.	MIR	Man	112	LT
2.	NLK	Woman	108	PT

Based on the data analysis of the results of mathematical problem-solving tests and interviews that have been conducted on the two research subjects above, they are presented as follows.

### Problem-solving profile of male students with high self-efficacy (LT)

#### a. Stage of Understanding the Problem

The following is a snippet of the results of the LT subjects' answers.



3) Diketahui :
• Umur Beni 7 tahun lebih tua dari umur Renna
• Jumlah umur keduanya 43 tahun
Ditanya : Umur mereka masing-masing

**Figure 2. Results of LT Subjects' Answers at the Problem Understanding Stage**

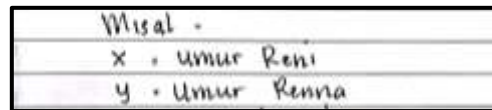
In Figure 1, it can be seen that the LT subjects wrote down the things that were known and asked correctly and in accordance with the information contained in the questions. LT subjects wrote it down sequentially according to the order of information listed on the question and wrote everything completely without missing any information on the answer sheet. The subject writes completely what is known and asked in the form of a sentence. In addition to excerpts from the subject's answers, here are excerpts from interviews that show the subject's activities at the stage of understanding the questions.

P : Based on the questions you have read, explain what information you found in the questions?

LT : *It is known that Reni is 7 years older than Renna. If their ages are combined the total is 43 years. Then what is asked from the question is their age, how old is Reni, how old is Renna. So sis.*

Based on excerpts from interviews with LT subjects, it is known that the subjects understood the problems given well. LT subjects were able to retell the problems given using their language without changing the meaning of the problem. In addition, LT subjects can also mention all information, namely things that are known and asked in the question clearly and correctly.

b. Making Plans



Misal -  
 $x = \text{umur Reni}$   
 $y = \text{umur Renna}$

**Figure 3. Results of LT Subjects' Answers at the Planning Stage**

P : *What is your strategy for solving this problem?*

LT : *Suppose first into  $x$  and  $y$ , namely  $x$  for Reni's age and  $y$  for Renna's age.*

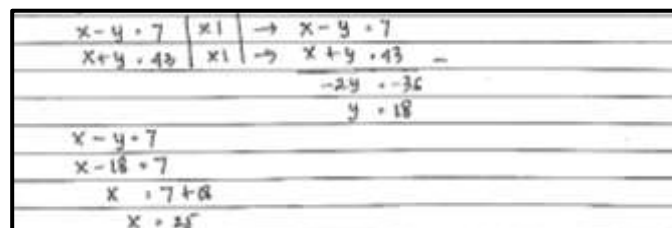
P : *Okay, then is that all?*

LT : *Make an equation from the problem, then calculate it using a mixed method, namely the elimination-substitution method*

At this stage, the LT subjects developed a problem-solving plan quite well. The subjects mentioned in detail the plans that had been made, starting with making more detailed examples, where  $x$  was Reni's age and  $y$  was Renna's age. Then the subject plans to make an equation. After that, calculate the results using a mixed method, namely the elimination-substitution method. However, at this stage, there is a slight drawback in that the LT subject does not explain the number of equations needed to calculate the results.

c. Executing the Plan

The following is a snippet of the results of the LT subjects' answers.



$$\begin{array}{rcl} x - y = 7 & \times 1 & \rightarrow x - y = 7 \\ x + y = 43 & \times 1 & \rightarrow x + y = 43 \\ \hline & & -2y = -36 \\ & & y = 18 \\ \hline x - y = 7 & & \\ x - 18 = 7 & & \\ x = 7 + 18 & & \\ x = 25 & & \end{array}$$

**Figure 4. Results of LT Subjects' Answers at the Stage of Implementing the Plan**

In addition to excerpts from the subject's answers, the following is an excerpt from an interview that shows the subject's activities at the stage of implementing the plan.

P : *Explain every step you take in solving the problem!*

LT : *(While pointing to the results of problem-solving that has been done) from what is asked in the question, suppose into  $x$  and  $y$ , then make equations 1 and 2, equation 1 is  $x - y = 7$  and equation 2 is  $x + y = 43$ . Next, I look for the value  $y$  first by means of elimination  $x$ . To eliminate  $x$ , all equations are multiplied by 1, so that the value of  $y = 18$ . After that, the value  $x$  that has been replaced can be substituted into equation 1. The variable  $y$  in equation 1 is replaced with 18 so that the value of  $x = 25$ . Where  $x$  is for Reni's age which is 25 years and  $y$  for Renna's age 18 years.*

Based on the results of the subject's answers in Figure 4 and the interview footage, it can be seen that the LT subject wrote down the steps used to solve the problem and did the calculations correctly to get to the final solution. From Figure 3, it can be seen that the solution written by the LT subject was following what had been planned and did not find any problems when working on the problem. LT subjects can build links between the settlement plans used and the knowledge

they have to solve problems. As seen in the results of the answers, LT subjects made two linear equations correctly and used mixed methods to determine the value of each variable. However, in the answer sheet, the LT subjects did not write down the method used. The LT subject directly eliminates and substitutes equations (1) and (2). LT subjects work on and write step by step in a coherent manner from beginning to end. In addition, at the time of the interview, the subject was able to explain the steps taken clearly and in detail.

d. Check again

The following is a snippet of the results of the LT subjects' answers.

Pendapat yang benar Yunis, yaitu umur Renna 25 tahun dan umur Reni 18 tahun

Karena

$$x - y = 7$$

$$25 - 18 = 7$$

$$7 = 7 \text{ (benar)}$$

$$x + y = 43$$

$$25 + 18 = 43$$

$$43 = 43 \text{ (benar)}$$

Figure 5. Results of LT Subjects' Answers at the Re-Checking Stage

In addition to excerpts from the subject's answers, the following is an excerpt from an interview showing the subject's activities at the re-examination stage.

- P : Are you sure about the answer you got?
- LT : sure sis
- P : Did you double-check your answers?
- LT : Yes, to make sure the answer is right or wrong.
- P : What method did you use to double-check your answer?
- LT : The trick is to re-examine the process, especially in the process of calculating it.
- P : Is there another way to double-check your answer?
- LT : Yes, that is by substituting the value  $x$  and  $y$  which I got into equations 1 and 2, bro (while pointing to the answer sheet). I've done it and the results are also correct sis
- P : Have the answers you received answered the questions?
- LT : Already sis. The answer I got was following the information in the question, namely Reni's age was 25 years and Renna's age was 18 years. Where Reni's age must be older than Renna's age because Reni is Renna's older sister.

Based on Figure 5 and the interview excerpt above, the LT subjects have re-examined the results of their answers by examining the workmanship and the process of calculating them from beginning to end before being collected. In addition, the LT subjects also rechecked the results of their answers by substituting the  $x$  and  $y$  values obtained into equations 1 and 2, to ensure the correctness of the answers that have been obtained. When substituted, the obtained  $x$  and  $y$  values are appropriate. LT subjects believe in the correctness of the answers that have been obtained and the results they get have answered the questions in the questions.

### Problem-solving profile of female students with high self-efficacy (PT)

a. Understanding the Problem

The following is a snippet of the answers to the subjects of PT.

③ Diketahui =

- umur Reni 7 tahun lebih tua daripada umur Renna
- Jumlah umur Reni dan Renna = 43 tahun

Ditanya umur mereka masing-masing

Figure 6. Results of PT Subject's Answers at the Problem Understanding Stage



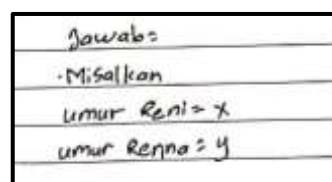
In Figure 6, it can be seen that the subject of PT wrote down all the information, namely things that were known and asked correctly and following the information contained in the questions. PT subjects also wrote it down sequentially according to the order of the information listed on the question and wrote everything down completely without missing any information on the answer sheet. The subject of PT writes down what is known and asked in the form of a sentence. In addition to excerpts from the subject's answers, here are excerpts from interviews that show the subject's activities at the stage of understanding the questions.

- P : *After reading the questions, what can you understand from the questions?*  
 PT : *At first, I was confused because I thought it was quite difficult. But after reading it over and over again I understand better what the question is about.*  
 P : *Can you explain the meaning of this question?*  
 PT : *Asked to find out how old Reni and Renna are*  
 P : *What information did you find in the question?*  
 PT : *It is known that Reni is 7 years older than Renna and the sum of their ages is 43 years. They were asked how old they were.*  
 P : *Apart from the information you mentioned, did you find any other information from this question?*  
 PT : *Hmmm... what else? That's all maybe*

Based on excerpts from interviews with PT subjects, it is known that the subjects have understood the problems given quite well. At first, the PT subject could not understand the meaning of the question, but after reading it repeatedly, the PT subject finally understood the meaning of the question. So it can be seen that in understanding the problem, PT subjects need to read repeatedly to build a link between the information available in the problem and the knowledge they already have. In restating the problem, the PT subject retells the problem by reading the question without changing the word and the meaning of the problem. The subject of PT mentioned things that were known and asked clearly. However, when asked again whether there was any other information found from the question, the PT subject was able to answer correctly and hesitated in answering.

#### b. Making Plans

The following is a snippet of the answers to the subjects of PT.



**Figure 7. Results of PT Subject's Answers at the Planning Stage**

In addition to excerpts from the subject's answers, the following is an excerpt from an interview that shows the subject's activities at the planning stage.

- P : *What is your strategy for solving this problem?*  
 PT : *Suppose  $x$  and  $y$ . Then make equations 1 and 2 of the problem. After making the equation, calculate using the elimination method to determine one of the variables. Well, after I found one variable, I substituted it into one of the equations that had been made earlier to determine the other variable.*

At the stage of making a problem-solving plan, the subject of PT developed a problem-solving plan quite well. This is because the planning made by the subject of PT is not complete. The planning starts with making an example of  $x$  and  $y$ . Here the subject does not explain more



specifically that the values of  $x$  and  $y$  are Reni's age or Renna's age. The next plan is to make two equations. The subject already knows that solving this problem requires two equations. After that, the LT subject explained the steps to be taken in sequential counting. However, the subject did not clearly explain the type of method used to execute the two equations.

c. Executing the Plan

The following is a snippet of the answers to the subjects of PT.

$$\begin{array}{l} \textcircled{1} 7x - y = 0 \\ x + y = 43 \end{array} \quad \begin{array}{l} \textcircled{2} x + y = 43 \\ 5 + y = 43 \\ y = 43 - 5 \\ y = 38 \end{array}$$

$$\begin{array}{r} 7x - y = 0 \\ x + y = 43 \\ \hline 8x = 43 \\ x = 43/8 \\ x = 5.375 \\ x \approx 5 \end{array}$$

Jadi, umur Reni adalah 5 tahun dan umur Renna adalah 38 tahun

**Figure 8. Results of PT Subject's Answers at the Stage of Implementing the Plan**

In addition to excerpts from the subject's answers, the following is an excerpt from an interview that shows the subject's activities at the stage of implementing the plan.

- P : Explain every step you take in solving the problem!
- PT : (While pointing to the answer) this is for equation 1,  $7x - y = 0$  and this is equation 2,  $x + y = 43$ . After that, eliminating  $x$ , all equations are multiplied by 1. So that we get  $x = 5$ . Then, the value of  $x = 5$  is substituted into equation 2 to get the value of  $y = 38$ . So, Reni's age is 5 years and Renna's age is 38 years.
- P : Okay. How do you get this equation?
- PT : Actually, I'm confused about changing from a sentence into an equivalent form, bro. As for my answer, my thoughts are like this, for equation 1, Reni's age is 7 years older than Renna's age. Let's say Reni's age was  $x$ , I just joined  $7x$ . So equation 1 is  $7x - y = 0$ . For equation 2, the sum of their ages is 43 years, meaning that if you add their ages, they are 43 years old. So, equation 2 is obtained  $x + y = 43$ .
- P : In the  $y$ -elimination process, is  $43 \div 8 = 5$  (while pointing to the subject's answer)?
- PT : When I calculate the result, the result is a comma, Sis, then I round it to 5 because people's ages have to match the numbers.

At this stage, the subject of PT implements the problem-solving plan poorly. This is because the subject of PT is less precise in making one of the equations, namely the first equation, the subject writing  $7x - y = 0$  should be  $xy = 7$ . The subject also could not explain well where the equation came from, the subject only answered according to his instincts which he thought was right because from the start he found it difficult to convert a sentence into his mathematical model. Based on Figure 8, it can be seen that the subject performs calculations using a mixed method, namely the elimination-substitution method. However, the LT subjects did not write down the method used. In addition, the subject also made an error in the elimination process, namely when performing the division calculation operation so it affected the next step and caused the results obtained to be inaccurate. Therefore, it can be said that the subject is less thorough.

d. Check again

The following is an excerpt from an interview with the subject of PT.

- P : Did you double-check your answers?
- PT : Yes, but only briefly.

- P : *What method did you use to double-check your answer?*  
 PT : *Look again at the results of the answer and corrected again the calculation.*  
 P : *Is there another way you can check your answers?*  
 PT : *Nothing, bro, that's all.*  
 P : *Are you sure that your answer is correct? What is the reason?*  
 PT : *Not sure sis, for fear of being wrong in the equation.*

At the stage of re-examining the completion, the PT subject admitted to re-examining the results of his answers by examining the results of his work and recalculation, but this was done at a glance, not in its entirety. The PT subject felt less sure of the correctness of the answer he had received because he was doubtful about one of the equations he made earlier.

## 2. Discussion

The results showed that male students with high self-efficacy were able to understand the problems given well, starting with explaining the existing problems using their own language, so that they could state what information was known and ask the questions correctly. When making a problem-solving plan, male students with high self-efficacy are good enough at determining what strategies will be used in solving problems, although there is a little incomplete information. In implementing the problem-solving plan, male students with high self-efficacy were following the planned strategy and in its implementation it was appropriate. Male students with high self-efficacy work on and explain the methods used in solving these problems well, and feel confident with the results of their calculations. Some of the things above are following the opinion of Santrock (2012) that male students have high self-confidence in mathematics.

Re-checking the answers, male students with high self-efficacy conduct a thorough re-examination of the results of their work before they are collected, namely by substituting answers based on what is known on the question and checking the answer algorithm procedure based on the rules of mathematical elaboration. Male students with high self-efficacy have a strong belief in the results of the answers they get by doing an inductive proof. Male students with high self-efficacy can overcome difficulties in solving the given problems and have high accuracy in solving problems so that they re-check the answers obtained including the completion algorithm. This fact is not following the opinion of Aras (2019) who states that male students will feel satisfied with what they get even though in the completion process sometimes there are errors that are not realized, so male students feel no need to re-examine.

While on the other hand, in understanding the problems of female students with high self-efficacy, This is done by repeatedly reading the given problem until the problem is well understood and mentioning the information contained in the problem, namely what is known, and asking about the answer sheet correctly. Based on this, it is following Sudia's opinion (2016) that female students realize the importance of understanding the problem, which is done by reading the problem several times until the problem is completely understood. In making a problem-solving plan, female students with high self-efficacy are quite good at determining what strategies will be used in solving problems, although there is a little incomplete information. When implementing the problem-solving plan, the problem-solving steps of female students with high self-efficacy were according to the plan, but there were many errors in its implementation, including not being able to make equations correctly and errors in calculations when eliminating. At the re-examination stage, female students with high self-efficacy only checked their work in passing, so the solutions obtained were less precise and less thorough, even though the written solutions were following the plans made. Female students with high self-efficacy admitted to having difficulties in solving these problems, especially in converting sentences into their mathematical models.

## D. Conclusion

The results showed that the problem-solving abilities of male students with high self-efficacy were superior to female students with high self-efficacy. This can be seen from the results of student work, where at the stage of implementing the problem-solving plan male students with

high self-efficacy can solve the problems given correctly and follow the plans made previously, in contrast to female students with high self-efficacy who make many mistakes in their implementation and are very less thorough, so the results obtained are not correct, it is also supported by the statement of female students with high self-efficacy that they find it difficult to solve these problems.

## E. References

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