Mathematical Communication Ability of Students Viewed From Self-Efficacy

by 37 Wardono

Mathematical Communication Ability of Students Viewed From Self-Efficacy

Ricky Yusuf Susanto[1], Rochmad[2], Wardono[2]
[1]SMP Negeri 22 Semarang
[2]Universitas Negeri Semarang

Corresponding Author's

ABSTRACT

Mathematical communication ability is the ability to convey what is known by using mathematical sentences. If students have mathematical communication skills, then students can identify everyday problems that can be solved with mathematics and use mathematical language to clarify and solve existing problems. One of the factors of differences in communication skills is self-efficacy. This study aimed to analyze mathematical communication skills viewed from self-efficacy. The subjects of this study were the students of class VIII A of SMP Negeri 22 Semarang in the academic year 2021/2022. The data collection techniques used in this study were observation and interviews about the students' work. Triangulation was used to obtain valid data to increase the credibility of this study. Miles and Huberman's model was used for data analysis in this study. The result of this study indicate that; (1) students with high self-efficacy can fulfill most of the assessment rubrics of mathematical communication skills indicators; (2) students with moderate self-efficacy have sufficient ability on interpreting mathematical ideas indicator; (3) students with low self-efficacy have sufficient ability on expressing mathematical ideas indicators and less ability on interpreting mathematical ideas indicator.
Keywords: Mathematics, Mathematical communication ability, Self-efficacy.

1. INTRODUCTION

The process of developing knowledge in the world can not be separated from the role of mathematics in everyday life. A series of methods used to convert knowledge into science requires mathematics to interpret the data from the research to create today's knowledge. The ability to think logically, analytically, systematically, critically, and creatively in mathematics is needed to solve existing problems because every problem in everyday life is always evolving. Therefore, the ability to think logically, analytically, systematically, critically, and creatively is needed to adapt to the times.

According to NCTM (in Umar, 2013), the objectives of studying mathematics are; (1) learning to communicate; (2) learning to reason; (3) learning to solve problems; (4) learning to relate ideas; (5) learning to present ideas. Often, the problems that come in everyday life occur indirectly in the form of mathematics. Therefore, it is necessary to familiarize students with problems in everyday life. This necessity aligns with Permendikbud number 81A of 2013, which states that mathematics learning needs to be emphasized on everyday (contextual) problems. A critical mind is needed in dealing with problems, and creativity is needed in connecting contextual problems with mathematics to understand problems that are not directly in the form of mathematics.

The ability to translate contextual problems into mathematical sentences is a form of mathematical communication skills, which aligns with one of the objectives of studying mathematics, namely, learning to communicate (NCTM). Unfortunately, at this time, mathematics learning in Indonesia emphasizes problems in direct mathematical forms, not connecting them with contextual problems, so the students are not accustomed to communicating their mathematical ideas. The lack of emphasis on the relationship between mathematics and everyday life resulted in low PISA study results among Indonesian students in 2015. Based on the analysis conducted by Maria, Darmowijoyo, & Nyimas (2019) on the results of the 2015 PISA study, the low 2015 PISA study results happened because Indonesia's students are not trained to solve modeling-type problems that require mastery of mathematical communication skills to solve contextual problems as tested by PISA.

According to Dahlan (in Ismayanti, 2021), "communication has an important role in social activities in society." This statement also applies to mathematical communication, which is important in mathematics learning activities. Mathematical communication as an activity in learning mathematics can help students express mathematical ideas from contextual problems. Students need to have high self-efficacy to master mathematical communication skills because having high self-efficacy can impact students' resilience and behavior in facing difficulties during the learning process.

Self-efficacy is a belief a person has in his ability to react to certain conditions (Bandura, in Lianto, 2019). In learning activities, self-efficacy is often associated with a person's belief in completing the task received. The higher the self-efficacy possessed by a person, the higher the confidence one has in completing the tasks received. On the contrary, if a person has low self-efficacy, he tends to avoid tasks that exceed his capacity. The difference in the level of self-efficacy above shows that self-efficacy affects a person's resilience in facing challenges. So, looking at students' difficulties in mastering mathematical communication skills, it is necessary to research mathematical communication skills viewed from students' self-efficacy. The research by Zimmerman, Bandura, and Martinez-Pons (1992), which states that self-efficacy in the education area can be applied to develop teaching techniques to achieve the expected academic results, strengthens the influence of self-efficacy in learning activities. So, it is expected to affect students' mathematical communication skills by reviewing the level of students' self-efficacy.

1.1 Factors that can affect self-efficacy:

Each person's self-efficacy is different. Therefore, it is necessary to know the factors affecting a person. Bandura (in Huang et al., 2020) said that there are four factors that can affect a person's self-efficacy, namely:

1. Experience or "mastery experience" refers to the view of success that has been achieved. It is one of the factors that greatly affect self-efficacy. A person can measure his ability to solve something through his experience in achieving success so that when he faces the same problem, he has confidence that he can solve it too.
2. Vicarious experience or "modeling" is the experience gained through observation activities. In most activities, a person judges his abilities based on the achievements of others. If

someone succeeds in doing something, the self-efficacy of the people around him will increase.

3. Social persuasion is used to provide an appropriate evaluation of a person's abilities that allow that person to achieve the desired goal.
4. A person's physiological states or emotional conditions can affect self-efficacy. Just like anxiety can lower someone's self-efficacy, on the other side, excitement can also increase someone's self-efficacy.

1.1 The Role of Self Efficacy

Everyone can expect something high, but achieving the desired expectations is not easy. It takes persistent effort and patience when experiencing failure to have an attitude of not giving up easily. A good emotional state is needed to achieve the expected goals. A good emotional state is closely related to high self-efficacy, while a low emotional state is often associated with low self-efficacy. This information aligns with Bandura's opinion (in Hassan et al., 2015), which states that self-efficacy is important in achieving the expected goals. A person's level of self-efficacy can be shown through characteristics such as:

1. Seeing problems as challenges that must be mastered
2. Showing interest in every activity participated in
3. Not easily discouraged

The points above are indicated by someone who has high self-efficacy. Meanwhile, someone with low self-efficacy usually has characteristics such as:

1. Avoiding difficult tasks
2. Doubting about his ability to solve problems
3. Focusing more on failure

2.0 LITERATURE REVIEW

Mathematical communication ability is the ability of a person to convey mathematical ideas in the form of mathematical language (Noviana, Dewi, and Rochmad, 2019). Another opinion regarding mathematical communication skills was conveyed by Dharma et al. (2019), who stated that mathematical communication ability is the ability of students to convey what they know to others through the process of interaction that occurs in the classroom. It can be concluded that mathematical communication ability is the ability of a person to convey what he knows to others, either in the form of written or oral mathematical language, through interaction with other people (Putri & Rochmad, 2021).

Mathematical abilities need to be possessed by students because students can understand everyday problems that can be solved with mathematics with the mastery of mathematical communication skills. To solve everyday problems that can be solved with mathematics, symbols, tables, and graphs are needed to clarify the problems at hand so that the solutions for existing problems can be found. To master mathematical communication skills, it takes perseverance, patience, and high self-efficacy in carrying out the process so that when one fails in solving mathematical problems, one will not easily give up.

Self-efficacy is a belief that describes students' beliefs about their ability to manage and use their potential to deal with future situations (Yağci and stündağ, 2009; Sayekti et al., 2019). Self-efficacy is often associated with the ability of students to perform their duties which is also a determinant of the emotional condition of students to complete the given task, how much effort is expended, and how much persistence will be displayed in completing tasks that are challenging for students (Ran, Huang, and Yu, 2012). Unfortunately, a person's emotional condition that determines self-efficacy is different for each individual. Not everyone has high self-efficacy, so their ability to master something is low. Students' low ability to master a problem was found in SMP Negeri 22 Semarang. Students at SMP Negeri 22 Semarang could not solve modeling-type problems that require mastery of students' mathematical communication skills. The low ability to solve modeling-type questions was caused by the student's inability to understand the problem, so they could not find the information contained in contextual questions. In addition, questions that emphasized contextual problems caused SMP Negeri 22's students to make arithmetic errors because they did not read the information in the questions carefully, resulting in wrong final calculations. The students' lack of ability to identify the information contained and the lack of accuracy in reading questions indicated a lack of mathematical communication skills. Students who have good mathematical abilities can generally understand the question's meaning, find the main information needed, and write the information on the answer sheet. By looking at these shortcomings, it is necessary to develop SMP Negeri 22 Semarang's students' mathematical communication skills.

Self-efficacy can improve students' mathematical communication skills because self-efficacy can determine students' behavior and perspective in dealing with problems. The students' perspective in dealing with problems will determine how much effort is made. The greater the effort made, the greater the opportunity to solve the existing problem. Although self-efficacy can improve students' mathematical communication skills, it can not be generalized that using self-efficacy will certainly improve students' mathematical abilities. The differences in the level of self-efficacy of each person and the differences in the models and media used can present different results regarding the success of self-efficacy in improving students' mathematical communication skills.

The previous research will be presented to assume that self-efficacy affects students' mathematical abilities so that there is clarity regarding the hypothesis of the influence of self-efficacy on students' mathematical communication skills. According to research by Scherer & Beckman (in Yunitasari & Zaenuri, 2020), Indonesia's problem-solving ability is still low, so developing problem-solving skills needs to be accompanied with the development of self-efficacy. The research related to self-efficacy was carried out in a junior high school in Kendal in 2018/2019, with class VIII F as the experimental class and class VIII G as the control class. The results of Yunitasari & Zaenuri's research (2020) states that the students with high self-efficacy have high aspirations and commitment to the task, so they could achieve four indicators of problem-solving ability, while the students with moderate self-efficacy only achieved one indicator of problem-solving ability.

Another study related to self-efficacy was carried out by Sefiany et al. (2016). The problem in this study was the use of conventional learning methods (teacher-centered), resulting in one-way communication. Schunk & Pajares (2001) states that self-efficacy can affect academic motivation, learning, and student achievement, so in Sefiany's (2016) research, self-efficacy was used to improve students' mathematical communication skills. The research was conducted at SMP Negeri 13 Magelang, and the samples used were class VII B and class VII A. The research conducted by Sefiani et al. (2016) shows that students with high self-efficacy could fulfill four aspects of mathematical communication skills, while students with low efficacy could fulfill three aspects of mathematical communication skills. Based on the research above, it can be concluded that self-efficacy can improve students' mathematical abilities.

Based on the previous research above, self-efficacy was chosen to improve students' mathematical communication skills. Based on the problems above, several problems can be identified, namely; (1) low mathematical communication skills; (2) mathematical communication contributes to students' ability to solve contextual problems; (3) one of the factors of high and low mathematical communication skills is self-efficacy. From the identification of these problems, solutions and problem solving are required. The formulation of the problem in this article is how mathematical communication ability is viewed from self-efficacy.

3. RESEARCH METHOD

3.1 Research Method Design

This study used a qualitative research design, and the topic was mathematical communication skills viewed from students' self-efficacy.

3.2 Population and Research Sample

The subjects of this study were class VIII's students at SMP Negeri 22 Semarang in the 2021/2022 academic year, and the research informants were selected from the results of the students' self-efficacy questionnaires.

3.3 Data Collection Techniques

In this study, the data collection techniques used were observation and interviews of students' work related to mathematical communication skills. Triangulation was used to obtain valid data to increase credibility in this study.

3.4 Data Analysis

The data analysis in this study used Miles & Huberman's model, which includes data collection, data reduction, data display, and conclusions (Miles & Huberman, 2014)

4 RESULTS AND DISCUSSION

4.1 Self-Efficacy

The data relating to students' self-efficacy was measured through a questionnaire. The results of the students' self-efficacy questionnaire were collected and grouped based on three categories, namely; (1) high, (2) moderate, and (3) low. The grouping of the self-efficacy's results is presented in Table 1 below.

Table 1 Self Efficacy Group

Category	The Number of Students	Percentage
High	2	10%
Moderate	16	80%
Low	2	10%
Total	20	100%

Based on Table 1, it can be seen that there were two students or 10% with high self-efficacy, 14 students or 80% with moderate self-efficacy, and two students or 10% with low self-efficacy. Based on the results above, two students with high self-efficacy, three students with moderate self-efficacy, and two students with low self-efficacy were selected to become informants.

4.2 Mathematical Communication Ability Viewed From Self-Efficacy

A mathematical literacy ability test was carried out directly using a mathematical communication ability test. The pre-test and post-test score results of mathematical communication ability were then grouped and compared. The mathematical communication ability test results of students who have been selected as informants are presented in Table 2.

Table 2 Pre-test and Post-test scores of Students' Mathematical Communication Ability

Self-Efficacy Group	Subject Initial	Pre-test Score	Post-test Score
High	A1	79	100
	A2	75	96
Moderate	B1	83	92
	B2	79	83
	B3	83	83
	B4	58	75
Low	C1	54	71
	C2	42	63

Based on Table 2, it can be seen that eight students served as informants, namely Subjects A1 and A2 who have high self-efficacy, Subjects B1, B2, B3, and B4 who represented students with moderate self-efficacy, with Subject B1 as a representative of top-ranking students with moderate self-efficacy, Subject B2 as a representative of top-middle ranking students with moderate self-efficacy, Subject B3 as a representative of low-middle ranking students with moderate self-efficacy, and Subject B4 as a representative of lower-ranking students with moderate self-efficacy. Meanwhile, Subjects C1 and C2 were selected to represent students with low self-efficacy.

Based on table 2, it can be seen from the comparison between the pre-test and post-test scores that most of the students experienced an increase in scores. To find out more about the differences in abilities between students with low, medium, and high self-efficacy on students' mathematical communication skills, interviews were conducted regarding the results of the informants' work.

4.3 High Category Students' Mathematical Communication Ability Viewed From Self Efficacy

An analysis based on the students' answers and interviews was carried out to find out more about mathematical communication skills viewed from self-efficacy. The research results processing was carried out in line with the indicators of communication skills (NCTM, in Hodiyanto, 2017), namely; (1) the ability to express mathematical ideas verbally, in writing, and visually describe them; (2) the ability to understand, interpret, and evaluate mathematical ideas either orally or in other forms; (3) the ability to use terms, mathematical notation, and structure to present ideas and show relationships.

Based on the work observation, Subjects A1 and A2 could express mathematical ideas well. Subjects A1 and A2 could write mathematical models correctly, write variables, and use the SPLDV solution method properly and correctly. In the interview session, Subject A1 could explain how to write a mathematical model properly and correctly, indirectly explaining how to write variables. Subject A1 could use the SPLDV solution method and simplify mathematical models well. In the interview session, Subject A2 could verbally explain how to correctly write a mathematical model and use the SPLDV solution method. Thus, it can be concluded that students with high self-efficacy could express mathematical ideas by making mathematical models, writing variables, and using the SPLDV solution method.

The work observation result of Subject A1's mathematical ideas interpretation indicator indicated that Subject A1 could interpret mathematical ideas well. However, even though it was good, Subject A1 could not write an equation on one question of interpreting mathematical ideas indicator, even though the calculations were correct. Another weakness that Subject A1 had in interpreting mathematical ideas was the lack of neatness in drawing Cartesian coordinate graphs and the lack of information on the graphs he drew. In the interview session, Subject A1 showed a mastery of interpreting mathematical ideas indicator. Subject A1 could explain the steps in drawing a graph, starting with writing an equation, determining the set of solutions, determining the coordinate points, and then drawing a connecting line between the coordinate points. Based on the interview session and observations of the work interpreting mathematical ideas indicators, Subject A2 indicated an ability to determine the coordinates well and connect the lines to the coordinates correctly in one of the questions. However, Subject A2 did not use an example to find the coordinate points, so the drawn Cartesian coordinate chart was not accurate. Thus, it can be concluded that students with high self-efficacy could meet the requirements of at least two assessment rubrics in one question that tests students' ability to interpret mathematical ideas.

The work observation result of Subject A1's using terms, mathematical notation, and mathematical structures that show relationships indicator indicated that Subject A1 could write down things that are known, asked, and answered well. However, Subject A1 could not write variables for the type of questions that used terms, mathematical notation, and mathematical structures that show a relationship with the application of material of two variables linear equations. According to the information from Subject A1 in the interview session, Subject A1 chose to use simple sentences because he felt that using simple sentences would speed up the process.

The interview session and work observation result of Subject A2's using terms, mathematical notation, and mathematical structures that show relationships indicator indicated that Subject A2 had no difficulty solving problems. Subject A2 could simplify the problem in the form of important information using basic mathematical language such as using short sentences and basic arithmetic operations effectively. It can be concluded that students with high self-efficacy could use terms, mathematical notation, and mathematical structures that show relationships to explain arithmetic operations performed during the problem-solving process very effectively.

Based on the description above, it can be concluded that students with high self-efficacy could fulfill most of the requirements for mastering mathematical communication skills. This discovery is in line with the research of Desmawati et al. (2015), which states that students with high self-efficacy also have high mathematical communication skills. Someone with high self-efficacy has fewer emotional and academic challenges (Yulianto & Suprihatiningsih, 2019), so the students with high self-efficacy only have a few obstacles in the process of mastering mathematical communication skills. Thus, it can be concluded that students with high self-efficacy can master mathematical communication skills better because they have fewer emotional and academic challenges.

4.4 Medium Category Students' Mathematical Communication Ability Viewed From Self-Efficacy

An analysis based on the students' answers and interviews was carried out to find out more about mathematical communication skills viewed from self-efficacy. The research results processing was carried out in line with the indicators of communication skills (NCTM, in Hodiyanto, 2017), namely; (1) the ability to express mathematical ideas verbally, in writing, and visually describe them; (2) the ability to understand, interpret, and evaluate mathematical ideas either orally or in other forms; (3) the ability to use terms, mathematical notation, and structure to present ideas and show relationships.

Here is the work observation result of Subject B1, B2, B3, and B4's expressing mathematical ideas, an indicator of mathematical communication skills. Subjects B1, B2, and B3 could write mathematical models well and write variables and use the SPLDV solution method quite well. Subjects B1, B2, and B3 could meet all the requirements for mastering expressing mathematical ideas, the indicator of mathematical communication skills, while Subject B3 could complete more than half of the working steps. So, based on the Subjects B1, B2, B3, and B4's work results, it can be concluded that their expressing mathematical ideas indicator is very good. Furthermore, Subjects B1, B2, B3, and B4 could explain how to write a mathematical model, write variables, and use the SPLDV solution method well in the interview sessions. However, Subject B4 could only complete more than half of the working steps on one of the questions that tested expressing mathematical ideas indicator, even though he could explain it well and correctly in the interview session. Therefore, it can be concluded that students with moderate self-efficacy expressed mathematical ideas by making mathematical models, writing variables, and using more than half of the working steps with the SPLDV solution method.

The work observation result of Subject B1's interpreting mathematical ideas indicator indicated that Subject B1 could interpret mathematical ideas well. Subject B1's shortcoming lay in the lack of equation writing on one question that tested students' ability to interpret mathematical ideas. Subject B1's shortcoming in solving the problem of interpreting mathematical ideas indicator was also experienced by Subject B2. Besides that, Subject B1 also lacked descriptions on graphs and could not connect the dots on one of the questions. Meanwhile, Subject B2 and Subject B3's shortcomings lay in errors in writing information, resulting in the mismatch of calculations using the SPLDV method and images. Subject B3 also had another shortcoming: he could not write equations and a set of solutions in one question that tested students' ability to interpret mathematical ideas.
Meanwhile, the weakness of Subject B4 was that he was unable to solve the problem of drawing graphs with two equations that tested mathematical ideas interpretation, an indicator of mathematical communication skills. In the interview session, Subject B1 knew the location of the error in his work result and was able to explain well the flow of thinking on how to solve problems about mathematical ideas interpretation, an indicator of mathematical communication. While in the interview session with Subject B2, according to his statement, he could not determine the coordinate points on each equation, so the work results only described the point of intersection of the two equations. In the interview session with Subject B3, it can be seen that he did not understand the steps to draw a Cartesian coordinate graph systematically, and he did not clarify his work errors so that it can be said that Subject B3's knowledge was shown only in the results of the work and interview. According to the information from Subject B4, he did not fill one of the questions that tested the ability to interpret mathematical ideas because he was confused about how to write the equation. Therefore, it can be concluded that students with moderate self-efficacy could

interpret mathematical ideas by at least being able to fulfill two assessment rubrics, drawing a Cartesian coordinate graph with one equation, and writing down what is known and asked by the question.

The work observation results of Subjects B1, B2, B3, and B4's use of terms, mathematical notation, and mathematical structures that describe relationships indicators show that they could use language and notation that were mostly effective for explaining arithmetic operations. In the interview session, Subjects B1, B2, B3, and B4 could explain their work well. They explained the working steps of solving problems about mathematical communication indicators, which are using terms, mathematical notation, and mathematical structures that describe relationships accurately and clearly. However, Subject B4 could not solve one of the questions that measured his ability in using terms, mathematical notation, and mathematical structures that describe relationships, even though he could explain the work result and ideas. According to his statement, he could not finish it because he lacked time to solve the problem. It can be concluded that students with moderate self-efficacy could use terms, mathematical notation, and mathematical structures that describe relationships by writing short sentences containing important information on the questions and using arithmetic operations. Students with moderate self-efficacy have met the minimum requirements to use mathematical language that is mostly effective for explaining operations and processes.

From the discussion above, it can be concluded that students with moderate self-efficacy can master mathematical communication skills indicators, namely: (1) expressing mathematical ideas very well; (2) interpreting mathematical ideas sufficiently; and (3) using terms, mathematical notation, and mathematical structures that describe relationships very well. Based on the recapitulation results of students' mathematical communication skills in students with moderate self-efficacy, it can be seen that the average student's communication skills are considerably good. It indicated that there were students who got a high score, and there were students who got an average and less score. Students with moderate self-efficacy had a significant difference in ability between each student. These differences in abilities could cause different learning difficulties for each student. So, if they were not given the appropriate treatment, there could be a decrease in medium-level students' self-efficacy.

Students with moderate self-efficacy sometimes seemed to have doubts when asked to interpret their mathematical ideas in the form of a graph of the two existing equations. These doubts sometimes made them lose enthusiasm and interest in interpreting their mathematical ideas. This situation was revealed by the difference in each student with moderate self-efficacy's answers. Some students could draw a graph of Cartesian coordinates with a few errors, some students misunderstood the intersection point, and some could only write down what they knew and were asked about. The fundamental thing that distinguished students with moderate self-efficacy were the high or low motivation of each individual, the doubts about their abilities, and the interest in solving problems at hand. Since doubt and interest are closely related to motivation, the teacher must strive to increase students' learning motivation to deal with their moderate self-efficacy. This statement is in line with the opinion of Zega (2020), which states that self-efficacy and motivation should go hand in hand, so it can be said that self-efficacy and motivation influence each other. To increase students' motivation in overcoming the doubts about their abilities and the decrease of interest in solving problems, more intense communication is needed between teachers and students so that students can express their doubts and difficulties in learning. The importance of communication to increase students' motivation is in line with Toharudin's research (2020), which states that teachers and students can share what they want and need to achieve the same understanding in learning activities through good and effective communication so that the students' self-efficacy can increase in the next learning process, thus increasing the mathematical communication skills as well (Nurdiana et al., 2018).

4.5 Low Category Students' Mathematical Communication Ability Viewed From Self-Efficacy

An analysis based on the students' answers and interviews was carried out to find out more about mathematical communication skills viewed from self-efficacy. The research results processing was carried out in line with the indicators of communication skills (NCTM, in Hodiyanto, 2017), namely; (1) the ability to express mathematical ideas verbally, in writing, and visually describe them; (2) the ability to understand, interpret, and evaluate mathematical ideas either orally or in other forms; (3) the ability to use terms, mathematical notation, and structure to present ideas and show relationships.

The work observation result of Subject C1's expressing mathematical ideas indicators indicated that Subject C1 could write mathematical models, write variables, and use the SPLDV solution method well and correctly. Based on the observations on Subject C2's work, he showed that he could write mathematical models, write variables, and use the SPLDV solution method well. However, Subject C2 made a calculation error which resulted in an error in the final result when he solved one of the questions that measured the ability to express mathematical ideas. In the interview session, Subject C1 explained the steps for writing a mathematical model and writing variables clearly. But In the interview session, Subject C1 also stated that he still had difficulties writing variables and writing mathematical models that matched the purpose of the problems. Even though Subject C1 knew the theory of how to write variables, he seemed not to understand its application when faced with questions. It can be concluded that students with low self-efficacy were quite able to express mathematical ideas by writing mathematical models, writing variables, and using more than a quarter step of the SPLDV solution method.

The work observation result of Subject C1's interpreting mathematical ideas indicator indicated that Subject C1 could write equations, determine coordinate points, and draw lines connecting coordinate points on Cartesian diagrams. Unfortunately, Subject C1 could not write down the solutions and draw a graph with two equations. In the interview session, Subject C1 could explain the steps for drawing a graph with one equation quite well, but when he was asked about the problem of drawing graphs from two equations, he stated that he knew how to solve it. The work observation result of Subject C1's interpreting mathematical ideas indicator indicated that Subject C2 could write equations to draw graphs of two equations well. Unfortunately, even though the written equations were correct, the images' descriptions on Subject C2's work looked wrong, and there were no coordinates for each equation. Subject C2 could not write equations when asked to draw a graph from one equation. In the interview session, Subject C2 explained the working steps of drawing a graph from one equation properly and correctly. Meanwhile, Subject C2 could only work up to the point of using the SPLDV solution method when drawing graphs from two equations. It can be concluded that students with low self-efficacy were less able to interpret mathematical ideas by drawing Cartesian coordinate graphs. Students with low self-efficacy could at least write down things that were known and asked and show one rubric indicator of interpreting mathematical ideas on their work results.

The work observation result of Subject C1's using terms, mathematical notation, and mathematical structures that describe relationships indicators showed that Subject C1 wrote down what was known and asked by using short sentences and arithmetic operations correctly. In the interview session, Subject C1 stated that he ran out of time to solve the next question, a question of the same type. The work observation result of Subject C1's using terms, mathematical notation, and mathematical structures that describe relationships indicators showed that Subject C2 could use language and mathematical notation, which were mostly effective for explaining operations and processes. In the interview session, Subject C2 was less able to explain what he wrote down systematically. It can be concluded that students with low self-efficacy could use terms, mathematical notation, and mathematical structures that describe relationships well. Based on the results of student work and interviews, it can be seen that students with low self-efficacy could use short sentences containing the information contained in the questions and use basic arithmetic operations to solve problems properly and effectively.

From the discussion above, it can be concluded that students with moderate self-efficacy can master mathematical communication skills indicators, namely: (1) expressing mathematical ideas quite well; (2) being less able to interpret mathematical ideas; and (3) being able to use terms, mathematical notation, and mathematical structures that describe relationships well. Students with low self-efficacy were characterized by the behavior of avoiding problems that should be faced and the lack of ability to communicate their problem so that they required supervision and support from teachers and discussion members to help them not avoid every problem that should be faced and dare to express their difficulties in learning to others. Students with low self-efficacy also needed examples of simpler problems and needed to commit to the difficulties being faced to increase their experience of success in dealing with problems, so their self-efficacy could increase. This statement is supported by Putri & Fakhruddiana (2018), which state that previous success experiences can increase students' self-efficacy. In addition, teachers must motivate students not to avoid problems and think of ways that can be done to solve problems. The importance of motivating students not to avoid problems is supported by the research from Sopiyah (2016), which states that providing opportunities for students not to avoid problems and think of ways to solve problems is one way to develop self-efficacy.

5. Conclusion

Students with high self-efficacy can meet most of the indicators of mathematical communication skills, which include; (1) expressing mathematical ideas; (2) interpreting mathematical ideas; (3) using terms, mathematical notation, and mathematical structures that describe relationships. Students with high self-efficacy can express mathematical ideas by writing mathematical models of problems, writing variables, and using the SPLDV solution method properly and correctly. In addition, students with high self-efficacy can also show their mastery of interpreting mathematical ideas by meeting the minimal requirement, which are two assessment rubrics in one question that tests students' ability to interpret mathematical ideas in the form of a Cartesian coordinate graph. Students with high self-efficacy could use effective and efficient mathematical language that describes their process of arithmetic operations. Because of most of the rubric indicators for assessing mathematical communication skills, students with high self-efficacy have few obstacles in solving mathematical communication skills problems.

Meanwhile, students with moderate self-efficacy can master the indicators of mathematical communication skills, which include: (1) expressing mathematical ideas very well; (2) interpreting mathematical ideas quite well; (3) using terms, mathematical notation, and mathematical structures that describe the relationship well. Students with moderate self-efficacy can demonstrate mastery of expressing mathematical ideas by writing mathematical models, writing variables, and using the SPLDV solution method properly and correctly. Students with moderate self-efficacy can use mathematical language that is mostly effective for explaining the process of their arithmetic operations. When interpreting mathematical ideas in the form of pictures, students with moderate self-efficacy could show at least two indicator rubrics of mathematical communication skills assessment, even though there were students who could not answer one of the questions that test students' ability to interpret mathematical ideas.

Students with low self-efficacy could at least use more than half the steps of mathematical solution method on one of the questions that test students' ability to express mathematical ideas. Students with low self-efficacy could show at least one assessment indicator rubric in one of the questions that test students' ability to interpret mathematical ideas. Students with low self-efficacy could use mathematical language that is mostly effective for explaining arithmetic operations.

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