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## **Analysis Of Mathematical Communication Skills On The Material Of Two-Variable Linear Equation System In SMP Negeri 7 Medan**

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### **Abstract**

*The purpose of this study was to describe the mathematical communication skills of class VIII students of a two-variable linear equation system at UPT SMP Negeri 7 Medan. The type of research used is descriptive qualitative. The samples taken in this study using purposive sampling were students at UPT SMP Negeri 7 Medan, namely class VIII. The instrument used in this research is a test of mathematical communication skills in the form of 4 essay questions. Data collection techniques using triangulation techniques, followed by data analysis which includes data collection, data reduction, data presentation, and drawing conclusions. The results of student tests that have been carried out on the material of mathematical communication skills show that most students meet the indicators of mathematical communication skills. So, it can be concluded that this study shows that the overall mathematical communication ability of students is relatively high, this can be seen from the results of mathematical communication skills at the high category level of 53%, the level of the medium category of 31%, and the level of the medium category of 31%. the low category rate is 16%.*

**Keywords:** *Mathematical Communication Skills.*

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## **INTRODUCTION**

Education is a requirement that must be met by every human being. Education is a hard work in seeking human resources (HR) to produce good quality in building a developed country (Situmorang, 2017). To keep abreast of the developments that are taking place today the right and closely related education is mathematics. (Manik, 2021) mathematics is a learning that can connect in applying everyday life. (Eta et al., 2021) mathematics can teach disciplines at the educational level that lead to having curiosity and confidence in problem solving.

The mastery of mathematics will provide basic knowledge in other fields of knowledge which are inseparable from science and technology. Learning mathematics not only makes most of the mathematical knowledge has the ability to count alone because in reality the ability is not enough in dealing with problems in everyday life. For this reason, knowledge other than the ability to count is the ability to understand concepts. With the ability to understand the concepts that have been owned, it will be able to solve the problems that occur in everyday life. Apart from the ability to count and the ability to understand the basic concepts of mathematics in solving problems that occur in everyday life there is such an ability to master both, namely the ability of numeracy literacy. (Fitria et al., 2021) numeracy literacy ability is the ability of Science in the use of numbers and symbols related to basic mathematics learning which can be used to solve problems that occur in everyday life and then the information received is analyzed and presented in the form of graphs, tables, charts and so on for conclusion.

There are three indicators of numeracy literacy skills, namely: 1) the use of numbers and symbols related to basic mathematics as a solution to existing problems in everyday life, 2) analyzing information in mathematics in the form of graphs, tables, charts, and so on, and 3) interpreting the entry of information on mathematical problems (Kemendikbud, 2017; Siskawati et al., 2020). There are also those who state that indicators of numeracy literacy

skills include: 1) working effectively with models in concrete and complex situations. 2) selecting and representing information, including on symbols, and relating them to real situations. 3) Use skills and reason with some knowledge in a hands-on context. 4) provide explanations and communicate them accompanied by reasons and arguments based on their interpretations and actions (Ambarwati & Kurniasih, 2021)

Numeracy literacy skills of students at this time is still in the low level category (Dedi et al., 2021). We can observe (Lamada et al., 2019) research results have been obtained which have shown that only 19.3% of students are able to solve numeracy literacy problems. (Eta et al., 2021) students' numeracy literacy skills at the stage of understanding problems 44%, at the stage of planning 32%, at the stage of implementing the plan 13%, while the stage of looking back 11% belongs to the category of less which is that the ability of students to question numeracy literacy is still relatively low. Judging from the results of research data that has been done is that the ability of literacy numeracy is very important in learning mathematics which needs to be developed again the ability of students.

So far, in solving all problems on the subject of the Pythagorean theorem, especially certain questions in mathematics learning are still very determined and dependent on teachers, so that students have many difficulties in understanding the material, especially those related to understanding the Pythagorean theorem concept, for example in determining the hypotenuse of a right triangle and solving Pythagorean theorem problems in the form of stories (Saragih, 2021). The difficulty of students in solving problems on the subject of the Pythagorean theorem is, where students have not been able to communicate the core problem on the Pythagorean problem, cannot determine the essential characteristics of the object and understand the problem solving process to be used (Faijah, 2022; Fitriani, 2021).

The Pythagorean theorem, also known as the Pythagorean theorem, is a theorem showing the relationship of the sides of a right triangle (Nurkhaeriyah et al., 2018). (Sari et al., 2020) the Pythagorean Theorem is a learning material that students must learn in Class VIII semester II, this material has a strong connection with previous materials. Thus the concepts related to the Pythagorean theorem material must be mastered by students, because students will have difficulty if they do not master these concepts. But in fact, students are still not optimal in understanding the concept of the Pythagorean theorem.

## RESEARCH METHODS

This type of research is descriptive qualitative research. Based On (Sustainable, E. K., & Yudhanegara, 2019) qualitative research is a research based on the philosophy of post positivism, used to examine natural object conditions and then subject retrieval techniques in the form of purposive sampling, namely subject retrieval techniques using certain considerations., as well as using the researcher becomes a key instrument derived such research. This study was conducted at SMP Negeri 7 Medan this study was conducted on students of Class VIII-1. The research time was carried out at the beginning of the even semester of the 2021-2022 school year. Data collection in the study using mathematical communication skills test instrument. The test is used as an effort to obtain primary data with mathematical communication skills of Junior High School students in Class VIII. The scope of the test material is the material of the system of linear equations of two variables. The instrument used in the study is a test of mathematical communication skills in the form of description (essay) totaling 4 questions. Before being used in the study, the questions have been tested for validity, discriminating power, difficulty index and also readability test by

several students. The analysis technique used in this study is descriptive analysis. Descriptive analysis is used to analyze the numeracy literacy skills of students in accordance with the indicators that have been focused before, then the researchers classify the categories of data the student's ability level can be seen by: scoring student test results based on the indicators to be achieved. Furthermore, the indicator score and the overall score of students are converted in the form of scale values (1-100) using the formula:

$$\text{value} = \frac{\text{scores achieved by students}}{\text{maximum score}} \times 100\%$$

The next step is to interpret the data according to understanding criteria based on (Rijali, 2018). Once the value in percentage has been found then the data obtained will be categorized based on the following table:

**Table 1. Student Ability Category Scale**

Value %	Categories
61-100	Height
41-60	Medium
0-40	Low

## RESULTS AND DISCUSSION

Before carrying out the research, first conducted a trial instrument to see the results of the validity and reliability of the instrument used. The results of the calculation of the validity and reliability of the instrument obtained using SPSS 25.0 for windows are as follows:

### Case Processing Summary

		N	%
Cases	Valid	32	100.0
	Excluded <sup>a</sup>	0	.0
	Total	32	100.0

a. Listwise deletion based on all variables in the procedure.

### Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
soal1	39.03	228.031	.806	.889
soal2	40.34	248.749	.488	.906
soal3	40.91	236.862	.731	.894
soal4	39.47	215.676	.803	.887
soal5	40.09	267.830	.279	.914
soal6	40.94	235.028	.653	.898
soal7	40.28	205.757	.763	.892
soal8	41.00	258.194	.417	.909
soal9	39.44	203.802	.851	.884
soal10	39.84	204.846	.825	.886

### Reliability Statistics

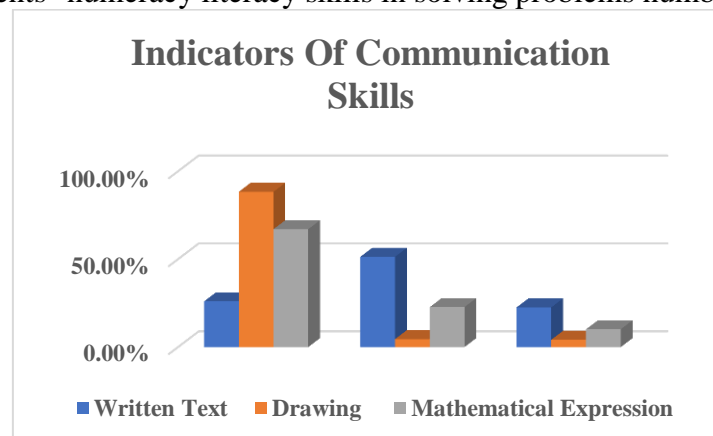
Cronbach's Alpha	N of Items
.906	10

From the calculation results obtained that of the 10 questions provided there are as many as 9 valid questions and one invalid question, namely problem number 5. This can be seen from the corrected item-total correlation which shows that the count for problem number 1,2,3,4,6,7,8,9,10 is greater than the table, where for the number of respondents 32 people the value of the table = 0.349. From 9 valid questions, 4 questions were selected to be used in the study so that questions Number 1, 4, 9, 10 were chosen to be used to see the mathematical communication skills of students. The reason for choosing questions Number 1, 4, 9, 10 is because the results of the corrected item-total correlation show that the four questions have a high validity value. From the value of Cronbach's Alpha If item Deleted shows that the four questions have a fairly high reliability value.

Furthermore, from the results obtained the following data:

<i>Indicators Of Communication Skills</i>	<i>Achievements</i>		
	<i>High</i>	<i>Medium</i>	<i>Low</i>
<i>Written Text</i>	26,02%	51,36%	22,60%
<i>Drawing</i>	88,34%	4,53%	4,20%
<i>Mathematical Expression</i>	67,07%	22,76%	10,16%

To further clarify the table above, below can be presented in the form of a bar chart percentage of students' numeracy literacy skills in solving problems number 1 to 4, as follows:

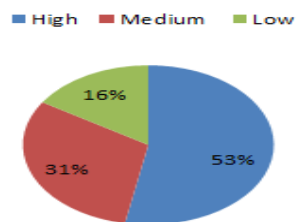


From the results of research conducted by researchers can be seen from the answers given by each student. Where the answers given are very diverse solutions. Here is a review of the literacy skills of students in solving problems numeracy system of linear equations of two variables :

Level Of Mathematical Communication Skills	Number Of Learners	Percentage
High	17	53%
Medium	10	31%
Low	5	16%
Amount	32	100%

It can be seen the comparison of the level of mathematical communication skills of students can be seen in the diagram below:

### Level Of Mathematical Communication Skills



Based on the diagram above, the mathematical communication skills of students in Class VIII-1 SMP Negeri 7 Medan reached a high level category of 53%, medium 31%, and low 16%.

### CONCLUSION

Based on the purpose of the research results that have been made by researchers, it can be seen that there is a difference in the mathematical communication skills of students in solving post-test Test Questions where the mathematical communication skills of students obtained 53% at a high level, while 31% of students who have mathematical communication skills of medium level, and 16% of students who have mathematical communication skills of low level.

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