

# The Relationship of Mathematical Problem Solving with Numeracy Based on Gender of Geometri and Measurement Materials for Fifth Graders

I Fadhilah Dita Nur Hidayah, Ni Luh Sakinah Nuraini, Yuniawatika

State University of Malang, Jl. Semarang No. 5 Malang, East Java, Indonesia

\*Author of correspondence, Email: [i.fadhilah.2001516@students.um.ac.id](mailto:i.fadhilah.2001516@students.um.ac.id)

## Abstract

The results of the PISA 2022 survey show that the mathematical skills of students in Indonesia is still at low criteria. The weakness of students' mathematical problem solving skills can be the cause of students' difficulty working on questions tested on the PISA test which are at a high level. This can be caused by students not being used to working on questions at a high level or non-routinely. In learning mathematical problem solving, basic mathematical abilities are needed, namely numeracy skills. Students' lack of numeracy skills can result in a lack of understanding in solving mathematical problems. This research uses a quantitative approach with a correlational type of research. Data collection was carried out using the test method. The sample in this study consisted of 91 students in fifth grades at Gugus 2 Kecamatan Plemahan. The results of this study include differences in mathematical problem solving ability between male and female students, there is no difference in numeracy skills between male and female students, and there is a significant relationship between mathematical problem solving ability and numeracy skills in male and female students with a sig value.  $0,000 \leq 0,05$ .

**Keywords:** gender; numeracy; mathematical problem solving

## 1. Introduction

Learning in the 21st century emphasizes the development of 6Cs, including character, citizenship, critical thinking, creativity, collaboration, and communication. Problem solving skills is one of the skills needed in 6C development activities, for example in critical thinking activities. This ability is needed by students so that they are able to solve problems by finding reasonable solutions. (Miladina et al., 2023). Problem solving skill needs to be trained and mastered by someone to prepare for a life full of complexity of problems. (Yuniawatika, 2015).

Problem solving skills can be developed through the learning process, one of which is learning mathematics. Problem solving in mathematics learning can be in the form of giving non-routine problems or problem-based story problems, it is a problem that requires deep thinking to find the right solution. (Alfiah et al., 2020; Nurfatanah et al., 2018). According to Roebyanto & Harmini (2017) mathematical problem solving skills is a person's skills to find solutions to overcome problems faced using mathematical skills, mathematical concepts, and mathematical processes. Students with low mathematical problem solving skills will have difficulty when working on non-routine or high level problems.

The results of the 2022 PISA survey show that mathematics skill in Indonesia are still at low criteria this is because 80% of students in Indonesia have mathematical skills still below level 2 (OECD, 2023). Indonesia received a score of 366, 106 points adrif of the OECD average score. The low PISA score obtained by Indonesia can be caused by the weak skills of students to solve problems because they are not accustomed to solving problems on non-

---

routine or high-level problems. (Kurniawati et al., 2019). This is in line with research conducted by Ramadhani et al. (2023) that the problem solving skills of fifth grades students at SDN Ngijo 02 are at low criteria with an average value of 54.76.

Learning to solve mathematical problems requires basic mathematical skills that is numeracy skills. Numeracy skills is the basic ability to use symbols, numbers, and apply mathematical concepts in solving problems in everyday life (Han et al., 2017). This is in line with Fajriyah (2022), in solving mathematical problems, numeracy literacy skills are needed. However, currently the level of numeracy skills at primary school level in Indonesia based on the Rapor Pendidikan Indonesia 2023 is in the medium category, only 46.67% of students in Indonesia who reach the minimum competency (Kemendikbud, 2023). Students who have low numeracy skills will have an impact on lack of understanding in solving mathematical problems.

Geometry and measurement domain content is one of the contents tested on AKM numeracy. This material is considered difficult because it requires a high level of understanding regarding the questions given and solving it requires problem solving skills. These results are in line with research by Sari et al (2021) where students' skills to solve geometry questions on AKM numeracy is still relatively low at 17.56% . Sahara & Nurfauziah (2021) found that students' difficulties in geometry material were a lack of mastery of concepts as well as skills and creativity in geometric concepts in solving mathematical problems.

In education, gender is thought to play a role in determining a person's ability. According to Yuniawatika (2017) gender differences are currently one of the factors that can affect cognitive development. Female students tend to look more diligent than male students. This is in line with Munawarah (2021), gender differences can significantly affect the psychological factors of student learning. In line with Lestari, et al. (2021), the difference in problem solving skills in mathematics between men and women lies in the way the problem is solved.

Kecamatan Plemahan is sub-district in Kabupaten Kediri which is divided into 3 clusters. Cluster 2 consists of 11 elementary schools. Several schools in Gugus 2 Kecamatan Plemahan are also still in the medium numeracy skills category, such as SDN Ngino, 56.67% of students have achieved minimum competency in the Rapor Pendidikan 2023 and SDN Ringinpitu, 48.15% of students have achieved minimum competency in the Rapor Pendidikan 2023. There are also schools in Gugus 2 Kecamatan Plemahan which are still at a low level of numeracy ability, namely SDN Plemahan 2 66.67% of students are below the minimum competency in the Rapor Pendidikan 2023. Meanwhile, schools in Gugus 2 Kecamatan Plemahan, are in the high numeracy ability category, such as SDN Sukoharjo 86.67% of students have achieved minimum competency in the Rapor Pendidikan 2023.

Previous research conducted by Wulan (2022) in SDN Sawojajar 5 on fraction material, there is a relationship between problem solving skills and numeracy skills. Other research conducted by Alfiah et al. (2020) the results showed a significant relationship with an influence of 54.6%. In the numeracy variable with students' mathematical problem solving skills in class VIII SMP Negeri 1 Pacitan in the 2019/2020 academic year. Research related to numeracy skills was also conducted by Firdausy et al (2023) which shows that numeracy has an influence on the skills to solve a problem in the form of student story problems as much as 38.4%.

Based on the description that has been presented, researchers are interested in analyzing differences in mathematical problem solving skills and numeracy skills based on gender and the

relationship between mathematical problem solving skills and numeracy skills based on gender in geometry and measurement materials in elementary schools, especially in in Gugus 2 Kecamatan Plemahan. The aim of this research is to describe the differences in mathematical problem solving ability and numeracy ability based on gender and analyze the relationship between the two variables based on gender.

## 2. Method

This research was carried out at the Gugus 2 elementary school, Kecamatan Plemahan, Kediri Regency. The population in this study was 262 fifth grade students in the 2023/2024 academic year. The sampling technique used in this research is *random sampling* by randomizing the elementary school that will be used for research. The schools that will be used in this research are 3 elementary schools located in Gugus 2 Kecamatan Plemahan, including SDN Plemahan 2, SDN Ngino, SDN Ringinpitu 1. The research sample consisted of 91 students consisting of 38 male students and 53 female students.

This research uses a quantitative approach with a correlational type of research. The data collection method in this research is the test method. The instruments used are a mathematical problem solving skills test instrument which consists of 4 descriptive questions and a numeracy skills test instrument which consists of 6 objective questions. The maximum score on each item of the mathematical problem solving skills test is 20, the correct answer to each problem solving indicator will score 5. Meanwhile, each item on the numeracy ability instrument will score 1 on the correct answer and the wrong answer will score 0.

Before the implementation of the experiment, an instrument test will be carried out to determine the feasibility of the instrument in measuring students' mathematical problem solving and numeracy skills. The test instrument was tested on students outside the population of 20 fifth grade students in SDN Puhjarak 2. The test instruments used in this study have been analyzed based on validity, reliability, difficulty level of questions, and differentiation of questions. The instruments used are valid and reliable.

There are three working hypotheses in this study including working hypothesis 1 ( $H_a$  1), namely there are differences in mathematical problem solving skills between male and female students in Gugus 2 Kecamatan Plemahan, working hypothesis 2 ( $H_a$ 2) there are differences in numeracy skills between male and female students in Gugus 2 Kecamatan Plemahan, and working hypothesis 3 ( $H_a$  3) there is a relationship between mathematical problem solving skills and numeracy skills based on gender in Gugus 2 Kecamatan Plemahan.

Before hypothesis testing, the data obtained in the study will be tested for prerequisite assumptions first, including normality test using *Shapiro-Wilk Test*, linearity test through test of *linearity*, and homogeneity test using *Levene test*. The data distribution of mathematical problem solving ability and numeracy ability in this study is not normally distributed with a sig. value of  $0.005 < 0.05$ . Based on the *test of linearity* both variables have a sig value.  $0.000 < 0.05$  so it can be concluded that the two variables are not linear. The variable of mathematical problem solving ability in this study is homogeneous with a sig. value of  $0.518 \geq 0.05$ . Furthermore, on the numeracy ability variable, the data variance is also homogeneous because it has a Sig value.  $0,948 \geq 0,05$ . Based on the prerequisite assumption test, all hypothesis tests in this study will be analyzed using non-parametric alternative tests.

The research data related to mathematical problem solving and numeracy skills of grade V students in Gugus 2, Plemahan sub-district were analyzed with descriptive statistics. The non-parametric test, namely the *Mann Whitney U Test*, was conducted to analyze differences

in mathematical problem solving and numeracy skills between male and female students. Meanwhile, to analyze the relationship between mathematical problem solving ability and numeracy ability in male and female students using *Spearman's Rank* test. Data analysis was conducted using SPSS with a significance level of 0.05.

### 3. Results and Discussion

#### 3.1 Result

The Description of differences in mathematical problem solving skills based on gender was carried out using quantitative descriptive analysis and a independent t-test. The following presents the results of the description of mathematical problem solving skills based on gender differences.

**Table 1** Description of Mathematical Problem Solving Ability Data Based on Gender

Variable	Gender	Mean	Min	Max	Std.
Mathematical Problem Solving	L	36.34	0	75	15.70
	P	49.29	12.50	100	16.10

The average results obtained during the mathematical problem solving skills test for female students were 49.29, higher than male students who had an average of 36.34. The highest score of 100 was also obtained by female students and the lowest score of 0 was obtained by male students. The analysis also categorized the data into several interval categories. The purpose of categorizing all these variables is to understand the distribution of subjects in the high, medium, and low categories. The categorization of mathematical problem solving skill data is presented in the following table 2

**Table 2** Categorization of Mathematical Problem Solving Ability Based on Gender

Variable	Category	Gender	Frequency	Percentage
Mathematical problem solving	Low	L	6	15.8%
		P	9	17%
	Medium	L	28	73.7%
		P	40	75.5%
	High	L	4	10.5%
		P	4	7.5%

Student's mathematical problem solving skills in Gugus 2 Kecamatan Plemahan is at a moderate category level based on quantitative descriptive analysis. The percentage of problem solving skills in the moderate category of mathematics for male students was 73.7% and female students 75.5%. Based on these results, it can be said that students' mathematical problem solving skills are good enough. The findings in the field show that more than 50% of male and female students have been able to achieve indicators to carry out problem planning. The following is data on the distribution of students in working on mathematical problem solving ability test items.

**Table 3** Distribution of Mathematical Problem Solving Ability Test Results for Each Question Item Based on Gender

Question	Percentage of Students									
	Man					Woman				
	0 stage	1 stage	2 stage	3 stage	4 stage	0 stage	1 stage	2 stage	3 stage	4 stage
number 1	24%	37%	29%	3%	8%	11%	4%	70%	0%	15%
number 2	3%	39%	55%	0%	3%	2%	19%	68%	0%	11%
number 3	3%	50%	42%	0%	5%	2%	25%	62%	0%	11%
number 4	5%	58%	37%	0%	0%	0%	17%	79%	0%	4%
Average	9%	46%	41%	1%	4%	4%	16%	70%	0%	10%

Table 3 shows that the largest percentage of male students at 46% is in working on the 1-stage problem, meaning that the most male students are able to meet the problem understanding indicator. The second largest percentage of 41% is in the 2-stage problem solving, meaning that students have the skills to plan problem solving. Then, only 4% of male students were able to meet all indicators of mathematical problem solving skills. Furthermore, 70% of female students have the skills to plan problem solving. The percentage of female students is also more who have reached the 4 stages of problem solving than male students, which is 10%.

The differences that have been presented cannot directly justify the differences in the mathematical problem solving skill of male and female students in Gugus 2 Kecamatan Plemahan. It is necessary to test the significance through statistical analysis between the two groups. The first hypothesis test related to differences in mathematical problem solving skills in geometry and measurement material for fifth grades students in Gugus 2 Kecamatan Plemahan was carried out using the *Mann Whitney U Test* getting a Sig value. of  $0.00 \leq 0.05$ . Based on the test results that have been carried out, there is a significant difference in mathematical problem solving ability between male students and female students, so the first hypothesis ( $H_a 1$ ) is accepted.

The following are the results of the work of male and female students taken based on the sample that has highest score in each group.

Question: *Pada hari Minggu Mada membeli sepatu di toko Mekar Jaya yang berjarak 20 Km dari rumahnya. Toko tersebut tutup pada pukul 20.00. Mada berangkat dari rumahnya pada pukul 19.00 diantar oleh ayahnya menggunakan sepeda motor dengan kecepatan rata-rata 60 Km/jam. Setelah 15 menit perjalanan tiba-tiba hujan turun dan Ia harus berteduh selama 20 menit. Setelah hujan reda, Ia melanjutkan perjalanan dengan memperlambat kecepatannya menjadi 30 Km/jam, pada pukul berapa Mada tiba di toko sepatu? Apakah Ia akan tiba sebelum toko tutup?*

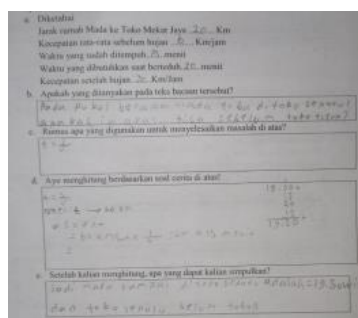


Figure 1 Results of Male Students' Work

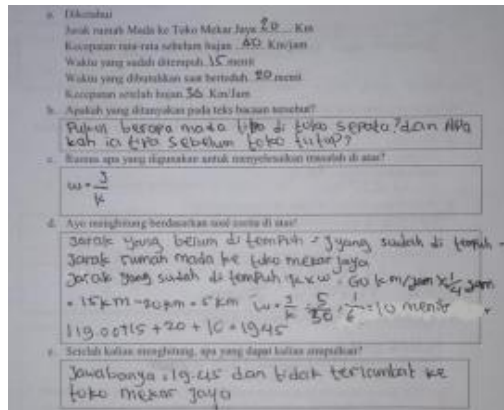


Figure 2 Female Students' Work Results

The research show that female students are more careful in solving the problems given so that there are no calculation errors or misuse of mathematical concepts. It can be seen from Figure 1 that male students are able to meet the indicators and plan problem solutions. However, the student did not understand the problem given so that procedural errors occurred and resulted in errors in the answers. Meanwhile, in Figure 2, female students understand the problem better so that the problem solving steps used are correct.

The Description of differences in numeracy skills based on gender was carried out using quantitative descriptive analysis and independent t-test. The following presents the results of the description of numeracy skills based on gender differences.

Table 4 Description of Numeracy Ability Data Based on Gender

Variable	Gender	Mean	Min	Max	Std.
Numeracy Ability	L	34.64	0	83.33	19.13
	P	38.99	0	83.33	17.58

Table 4 shows that female students obtained an average of 38.99 higher than male students of 34.64. The maximum and minimum scores for male and female students are the same, respectively 83.88 and 0. The analysis also categorized the data into several interval categories. The purpose of categorizing all these variables is to understand the distribution of subjects in the high, medium, and low categories. The categorization of mathematical problem solving ability data is presented in table 5 below.

Table 5 Categorization of Numeracy Ability Based on Gender

Variable	Category	Gender	Frequency	Percentage
Numeracy Ability	Low	L	4	10.50%
		P	10	18.90%
	Medium	L	31	81.60%
		P	36	67.90%
	High	L	3	7.90%
		P	7	13.20%

The categorization of numeracy skills shows that overall students in Gugus 2 Kecamatan Plemahan have numeracy skill classified in the medium category with a student percentage of 81.6% of 38 male students and 67.9% of 53 female students. Numeracy skills in the medium category can be said that students' numeracy skills are quite good. The difference in numeracy skills between male and female students can be seen from the cognitive level that

shows the thinking process in solving problems or problems. The difference in numeracy ability is shown in table 6 below.

**Table 6 Distribution of Students' Cognitive Levels on Numeracy Ability Based on Gender**

Cognitive Level	Question No	Percentage	
		Man	Woman
L1 - Knowledge and Understanding (knowing)	1	47%	60%
	3	5%	11%
	4	55%	81%
	6	21%	30%
L2 - Applying	2	61%	28%
L3 - Reasoning	5	18%	23%

This shows that male students superior at the application level of thinking while female students superior at the knowledge and understanding and reasoning levels of thinking. At the cognitive level of knowledge and understanding (*knowing*) shows the average percentage of male students by 32% and female students by 46%. At the application cognitive level, more than half of the male students were able to work on problems with a cognitive level of 61% while female students were only 28%. Furthermore, both male and female students were less than half of the total number of students able to solve problems with the cognitive level of reasoning. It can be said that female students are superior in identifying, remembering, calculating, classifying, retrieving/obtaining, and measuring as well as inferring, analyzing, evaluating, concluding, and making justifications while male students are superior in selecting, stating or making mathematical models, and applying concept.

The difference in results on descriptive analysis cannot directly justify the difference in numeracy skills between male and female students. It is necessary to test significance through statistical analysis between two groups. The second hypothesis test is to see whether or not there are differences in numeracy skills based on gender, the non-parametric *Mann Whitney U Test* obtained a Sig. value of  $0.295 \geq 0.05$ , meaning that hypothesis 2 is rejected ( $H_0 2$  accepted), so it can be said that there is no significant difference in numeracy skills between male students and female students.

The hypothesis regarding the relationship between mathematical problem solving ability and numeracy ability based on gender uses the *Spearman's Rank test* with a significance level of 0.05. Based on the results of data processing using SPSS, hypothesis testing on male and female students is presented in table 7 below

**Table 7 Correlation Test Results of Matemactical Problem Solving and Numeracy based on Gender**

	Gender	Sig. (2-tailed)	Cerrelation Coefficient
Spearman's rho	L	0,000	0,557
	P	0,000	0,738

Table 7 shows the Sig.  $0.000 \leq 0.05$  then the third hypothesis ( $H_a 3$ ) is accepted so that it can be said that in male and female students there is a relationship between mathematical problem solving ability and numeracy ability. The relationship between the two variables is quite strong in male students seen from the coefficient of 0.557 which is located in the interval 0.4-0.6. Meanwhile, the relationship between the two variables in female students at a high or strong level is seen from the coefficient of 0.738 which lies in the interval 0.6-0.8.

Therefore, it can be said that the results of the relationship between these two variables are not related to gender.

### 3.2 Discussion

Problem solving on non-routine problems requires an understanding of the problems that arise. In solving math problems on the problem, numeracy literacy skills are needed. Numeracy skills are needed so that a person is able to analyze information, use mathematical concepts, and be wise when making decisions so that every problem presented in the problem can be resolved properly. Lack of numeracy skills will have an impact on mathematical problem solving skills and vice versa because the two are interrelated. In line with the research results Iruntyasari et al (2024) which shows the results that students who have low numeracy skills have difficulty understanding the problem at hand while students with moderate numeracy skills show indicators of the skills to choose strategies to solve the problems.

Gender in schools is divided into two, that are men and women. From a cognitive perspective, men are better at mathematics while women are better at verbal abilities (Saraswati, 2015). However, female students can be more diligent than male students. The difference in problem solving skills in mathematics between men and women lies in the way the problem is solved (Lestari, et al., 2021).

In general, differences in mathematical problem solving skills between men and women are caused by differences in thinking and determining solutions in solving problems (Lestari et al., 2021). Kartono further said that women are generally more accurate and more detailed in paying attention to things than men (Yuniawatika, 2017). This opinion is in line with research by Davita & Pujiastuti (2020) which states that female students' mathematical problem solving skills are better than male students. The difference lies in the way male and female students solve problems.

The cause of the less than maximum skill to solve mathematical problems in Gugus 2 Kecamatan Plemahan is possible because students are only used to routine questions. So, when given with high level or non-routine questions, students have difficulty finding solutions to solve the problems in the questions. This is supported by the opinion of Nurfatanah et al. (2018) students who are often trained to work on high-level or non-routine questions have higher scores on problem-solving tests than children who practice less. In line with Mauliyda (2020), most students in Indonesia are only used to routine questions, when questions are changed into problems that must be solved, students have difficulty connecting their conceptual knowledge with the problems given.

Based on the result of research, show that women are superior in numeracy, especially L1-knowing and L3-reasoning because women tend to remember more easily and are more accurate than men. In line with Alfarisi et al. (2023) which states that women's psychological abilities are superior in memory. Krutetski's opinion also states that female students have more advantages in accuracy, precision, accuracy of thinking, and thoroughness (Narpila, 2019). Wood revealed that men have more developed left brains so they are able to think abstractly and think analytically (Davita & Pujiastuti, 2020). In line with Maccoby and Jacklin, men's mathematical skills are superior to women's (Narpila, 2019). Therefore, male students in this research were superior in L2-applying.

The differences in results in descriptive analysis cannot directly justify the differences in the numeracy skill of female and male students. Based on t-test, show that there is no significant difference in numeracy skills between male students and female students. The results of this study are in line with the results of research by Yustinaningrum (2021) found that there were

no differences in numeracy skills between male and female students as evidenced by the test results which showed that both were still in the low interval at  $\leq 40$ . The same results were shown in research by Mustofa (2020) The results showed that there was no difference in the numeracy skills of male and female students, this was obtained from the results of the t test and the average value of male students of 64.2 and female students of 67.4 appeared to be almost the same.

The research results contradict the opinion of Jumarniati et al (2021) say that gender differences are one of the things that can differentiate human cognitive development so that they greatly influence a person's thinking ability. Research by Alfarisi et al (2023) also shows that there are differences in numeracy skill based on gender, that male students are superior to female students. Research conducted by Nuriyatin (2022) also found differences in numeracy skills between male and female students seen from the average score obtained, female students get better scores than male students.

Furthermore, the research show that in male and female students, mathematical problem solving skills with numeracy skills has a significant relationship. It can be said that the results of the relationship between these two variables are not related to gender. Gender in mathematics can cause differences in students' skills. According to Amir (2013) male students have higher mathematical skills while females are superior in the aspects of being meticulous, diligent, and careful. Meanwhile, according to Nurfauziah et al. (2018) female students have better achievement than male students because women have great motivation when learning and are more diligent in completing school assignments. The results in this study show that female students' mathematical problem solving ability is superior while in numeracy ability there is no difference in ability based on gender. These results show that female students are also able to compete with male students. So, if someone has high mathematical solving skills they will have high numeracy skills too.

The relationship between mathematical problem solving skills with numeracy skills can be caused by the similarity of indicators on the two variables. The second indicator of numeracy ability is understanding problems by identifying problems in questions related to the first indicator in numeracy, namely analyzing information. Problem identification requires good skills in analyzing information so that there are no difficulties in solving problems, as explained by Roebyanto & Harmini (2017), a lack of understanding of the problem is one of the factors that students cannot solve problems because students cannot determine the essence of the problem being presented.

Furthermore, in the second and third indicators of mathematical problem solving, namely preparing problem plans and carrying out problem planning, problems are related to the first indicator of numeracy ability, namely being able to use various symbols or numbers in solving mathematical problems in context life daily. Problems will be easily resolved if students have many problem-solving strategies that can help them develop problem-solving plans. This strategy will be optimal if students are able to use mathematical symbols or numbers and mathematical concepts. This statement is supported by Roebyanto & Harmini (2017) problem structuring strategy, namely that students can make pictures/diagrams, make systematic lists, try and test, and so on. Good strategy realization refers to someone using appropriate problem solving techniques to find a solution.

The fourth indicator of mathematical problem solving skills is re-examining the process and results by making conclusions related to the third numerical indicator, namely being able to interpret all analysis results to retrieve decision correctly. Making conclusions regarding solving the mathematical problems faced must be accompanied by the skills to

interpret the results well. Students who are able to make conclusions have good numeracy literacy skills (Mahmud & Pratiwi, 2019). This is in line with Baharuddin et al (2021) that numeracy skills are needed to make the right decisions in solving problems in everyday life.

Based on the explanation above, it can be concluded that the two variables are interconnected, but the relationship between students' mathematical problem solving skills and numeracy in Gugus 2 Kecamatan Plemahan is not related to gender. This can be interpreted as meaning that students who have high mathematical problem solving skills will be followed by high numeracy skills, and vice versa. Getting used to practicing questions whose solution process is not routine is problem solving, requires high level thinking, the problem solution requires two or more formulas, includes mathematical interpretations in various contexts can improve students' literacy skills (Mauyda, 2020).

#### 4. Conclusion

Based on the results and discussion of research can be concluded that 1) there were differences in mathematical problem solving abilities between males and females in Gugus 2 Kecamatan Plemahan. The average value obtained by female students is 49.29, higher than male students who have an average of 36.34. The highest score of 100 was also obtained by female students and the lowest score of 0 was obtained by male students; 2) there was no significant difference in the numeracy skills of male and female students in Gugus 2 Kecamatan Plemahan. The results of the study show that female students obtained an average of 38.99 higher than male students at 34.64. The maximum and minimum scores for male and female students are the same, respectively 83.88 and 0; and 3) There is a significant relationship between mathematical problem solving skills and numeracy skills in male and female students with  $\text{sig. } 0.000 \leq 0.05$ , the correlation coefficient value for male students is 0.557 so it can be said that the two variables have a fairly strong relationship. Furthermore, for women, the correlation coefficient value is 0.738, meaning that the two variables have a fairly strong relationship. These results indicate that the relationship between these two variables is not related to gender.

Based on the above conclusions to improve numeracy and mathematical problem solving skills, students should improve their reading habits to be able to analyze the information contained in the reading, teachers should also take part in facilitating students to improve mathematical problem solving skills and numeracy skills, for example by giving non routine problems. There are differences in research results between mathematical problem solving skills and numeracy skills based on gender. In addition, it is hoped that future research can further examine the differences that exist and examine the relationship of variables based on other reviews in order to enrich the reference.

#### References

- Alfarisi, Suryaningrum, C. W., & Firdaus, H. P. E. (2023). Analisis Kemampuan Numerasi Matematis Siswa dalam Menyelesaikan Masalah TIMSS Ditinjau dari Gender. *Delta-Pi: Jurnal Matematika dan Pendidikan Matematika*, 12(1), 64–78.
- Alfiah, S., Cahyani, D., & Apriyani, N. (2020). Hubungan antara Literasi dan Numerasi dengan Kemampuan Pemecahan Masalah Matematika Siswa VIII SMP Negeri 1 Pacitan Tahun Pelajaran 2019/2020. *Jurnal Penelitian Pendidikan*, 12(1), 1706–1711.
- Amir, Z. (2013). Perspektif gender dalam pembelajaran matematika. *Marwah: Jurnal Perempuan, Agama Dan Jender*, 12(1), 14–31.
- Baharuddin, M. R., Sukmawati, & Christy. (2021). Deskripsi Kemampuan Numerasi Siswa dalam Menyelesaikan Operasi Pecahan. *Pedagogy: Jurnal Pendidikan Matematika*, 6(2), 90–101.

- Davita, P. W. C., & Pujiastuti, H. (2020). Analisis Kemampuan Pemecahan Masalah Matematika Ditinjau Dari Gender. *Kreano, Jurnal Matematika Kreatif-Inovatif*, 11(1), 110–117. <https://doi.org/10.15294/kreano.v11i1.23601>
- Fajriyah, E. (2022). Kemampuan Literasi Numerasi Siswa pada Pembelajaran Matematika di Abad 21. *Prosiding Seminar Nasional Pendidikan*, 4, 403–409.
- Firdausy, Z. S., Sumantri, S., & Zakiah, L. (2023). Hubungan Kemampuan Literasi Numerasi Siswa Kelas V dalam Penyelesaian Masalah Bentuk Soal Cerita Matematika. *Jurnal Ilmiah PGSD FKIP Universitas Mandir*, 09(02), 2298–2308.
- Han, W., Susanto, D., Dewayan, Sofie, S.T. Nur Pandora, Hanifah, P., Miftahussururi, Nento, M. N., & Akbari, Q. S. (2017). Materi Pendukung Literasi Numerasi [Numeracy Literacy Support Materials]. *Kementerian Pendidikan dan Kebudayaan*, 36.
- Iruntyasari, N., Nuraini, N. L. S., & Mas'ula, S. (2024). Analysis of Numeracy Literacy Skills of Grade IV Students on Geometry Materials in Elementary Schools. *IndoMath: Indonesia Mathematics Education*, 7(1), 1–12.
- Jumarniati, Baharudin, M. R., & Firman, S. (2021). Deskripsi Kemampuan Literasi Matematis pada Materi Aritmatika Sosial Berdasarkan Gender. *EQUALS: Jurnal Ilmiah Pendidikan Matematika*, 4(2), 123–132.
- Kemendikbud. (2023). *Rapor Pendidikan Indonesia tahun 2023*. <https://bpmkaltara.kemdikbud.go.id/wp-content/uploads/2023/10/RAPOR-PENDIDIKAN-INDONESIA-2023.pdf>
- Kurniawati, I., Raharjo, T. J., & Khumaedi. (2019). Peningkatan Kemampuan Pemecahan Masalah untuk Mempersiapkan Generasi Unggul Menghadapi Tantangan abad 21. *Seminar Nasional Pascasarjana*, 21(2), 702.
- Lestari, W., Kusmayadi, T. A., & Nurhasana, F. (2021). Kemampuan Pemecahan Masalah Matematis Siswa Ditinjau Dari Perbedaan Gender. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, 10(2), 1141–1150. <https://doi.org/10.33603/e.v8i1.3205>
- Mahmud, M. R., & Pratiwi, I. M. (2019). Literasi Numerasi Siswa dalam Pemecahan Masalah Tidak Terstruktur. *KALAMATIKA: Jurnal Pendidikan Matematika*, 4(1), 69–88.
- Maulya, M. A. (2020). *Paradigma Pembelajaran Matematika Berbasis NCTM* (Nomor January). CV. IRDH.
- Miladina, R. A., Wulandari, T. C., & Zauri, A. S. (2023). Analisis Kemampuan Berpikir Kritis dan Pemecahan Masalah Matematis Ditinjau dari Gaya Belajar Peserta Didik pada Materi Statistika. *Jurnal Penelitian, Pendidikan, dan Pembelajaran*, 18(20), 1–21.
- Munawarah. (2021). Pengaruh Gender Terhadap Faktor Psikologis Belajar Siswa. *Rumah Jurnal Institut Agama Islam Negeri (IAIN) Bone*, 14(2), 58–66.
- Mustofa, Z. (2020). Kompetensi Numerasi Siswa SMK Ditinjau dari Gender dan Berbagai Kesulitannya. *Jurnal Pendidikan Matematika Universitas Lampung*, 8(4), 227–237. <https://doi.org/10.23960/mtk/v8i2.pp.227-237>
- Narpila, S. D. (2019). Perbedaan Kecerdasan Spasial antara Siswa Laki-Laki dan Siswa Perempuan Kelas X SMA YPK Medan pada Materi Geometri. *Jurnal PRINSIP Pendidikan Matematika*, 2(November).
- Nurfatanah, Rusmono, & Nurjannah. (2018). Kemampuan Pemecahan Masalah Matematika Siswa Sekolah Dasar. *Prosiding Seminar Dan Diskusi Pendidikan Dasar*, 546–551.
- Nurfauziah, P., Faudziah, L., Nuryatin, S., & Mustaqimah, I. A. (2018). Analisis Self Efficacy Matematik Siswa Kelas VIII SMP 7 Cimahi Dilihat Dari Gender. *JMPM: Jurnal Matematika dan Pendidikan Matematika*, 3(1), 61–70.
- Nuriyatin, S. (2022). Hubungan Kemampuan Literasi Matematika Dengan Gender di Kelas VIII. *JEDMA: Jurnal Edukasi Matematika*, 3(1), 28–34.
- OECD. (2023). *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*. OECD Publishing. <https://doi.org/10.1787/53f23881-en>
- Ramadhani, M. H., Haryani, S., Marwoto, P., & Mulyono, S. E. (2023). Analisis Kemampuan Pemecahan Masalah Matematis Siswa SD Negeri Ngijo 02 Gunungpati. *Jurnal Educatio*, 9(1), 168–176. <https://doi.org/10.31949/educatio.v9i1.4518>
- Roebiyanto, G., & Harmini, S. (2017). *Pemecahan Masalah Matematika*. PT Remaja Rosdakarya.
- Sahara, R. I. A., & Nurfauziah, P. (2021). Analisis kesulitan siswa materi bangun ruang sisi datar berdasarkan tahap berpikir van hiele. *Jurnal Pembelajaran Matematika Inovatif*, 4(4), 911–920. <https://doi.org/10.22460/jpmi.v4i4.911-920>
- Saraswati, E. (2015). *Perbedaan Prestasi Belajar Siswa Laki-laki dan Perempuan dalam Mata Pelajaran Matematika Kelas III Semester 2 Materi Geometri dan Pecahan SD Negeri Se-Desa Caturharjo, Kecamatan Sleman, Kabupaten Sleman*. Universitas Negeri Yogyakarta.
- Sari, D. R., Lukman, E. N., & Muharram, M. R. W. (2021). Analisis Kemampuan Siswa dalam Menyelesaikan Soal Geometri pada Asesmen Kompetensi Minimum-Numerasi Sekolah Dasar. *FONDATIA: Jurnal Pendidikan Dasar*, 5(2), 153–162.

- Wulan, R. W. (2022). Hubungan Kemampuan Numerasi dengan Kemampuan Pemecahan Masalah Matematika Materi Pecahan Kelas V SDN Sawojajar 05 Malang. *Doctoral dissertation, Universitas Negeri Malang*.
- Yuniawatika. (2015). Upaya Meningkatkan Kemampuan Pemecahan Masalah Matematis Siswa dalam Pembelajaran Matematika di Sekolah Dasar. *Scientific Forum-Faculty of Education Department of Science Education (FIP-JIP) and The International Seminar*.
- Yuniawatika. (2017). Kemampuan Pemecahan Masalah Matematik Mahasiswa PGSD Ditinjau dari Perbedaan Jenis Kelamin. *Seminar Nasional Pendidikan FIP UM*, 501–509.
- Yustinaningrum, B. (2021). Deskripsi Kemampuan Literasi Numerasi Siswa Menggunakan POLYA Ditinjau dari Gender. *Sinektik*, 4(2), 129–140.