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Mathematical Literacy Ability of Junior High School Students on the Material of Ranked Numbers and Root Forms

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ABSTRACT

The purpose of this research is to provide a descriptive account of junior high school students' knowledge of mathematics, specifically their fluency with ranking numbers and root forms. A qualitative research approach with a descriptive focus is used in this study. Fifty-four students from Sidoharjo, Indonesia, a public junior high school, participated in the research. There were quizzes and interrogations to get information. Triangulation of methods was utilised to ensure the accuracy of the data collected. The analysis of data in this study consists of three parts: data reduction, data display, and conclusion drawing. There are no gaps in high school pupils' ability to read, write, and do computations at a proficient level. Students in this group can build mathematical models and comprehend mathematics, but they struggle with the second question's requirement that they use such models to describe, explain, or estimate a phenomenon or event. Students in the lowest ability level will only be able to answer the first question correctly if they use concepts, processes, and facts to describe, explain, or estimate a phenomenon or event.

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1. INTRODUCTION

Mathematics is one of the fields of an exact science that is more concerned with understanding than memorization. Therefore, knowing mathematical concepts is essential to grasping a mathematical topic and applying that topic's solution to real-world problems (Prabawati 2018). Further, mathematics serves as a tool for intellectual growth and is significant in many other fields (Dina et al. 2019). Learning how to read and write numbers is essential for success in mathematics. The ability to reason mathematically and use concepts, processes and facts to describe, explain, or forecast a phenomenon is a key part of mathematical literacy, as defined by Wicaksana & Ridlo (2017). Literacy in mathematics is the capacity to understand, work with, and communicate mathematical ideas in a variety of settings. This encompasses the ability to reason mathematically and use mathematical ideas, methods, data, and

instruments to elucidate and clarify experience. In order to have a population that constructs, cares for, and thinks, it is essential that its members have the mathematical literacy to understand the relevance and utility of mathematics in everyday life (Rumiati 2011).

Mathematical literacy skills are very important because in everyday life, the activities experienced by humans are very much related to mathematics, which requires understanding literacy in solving them and mathematical literacy helps a person to know mathematics in the world and make considerations and decisions needed as a citizen (OECD 2013). A person's mathematical literacy ability can be seen from the skills to formulate, apply, and interpret mathematics in various contexts, including the ability to perform mathematical reasoning and use concepts, procedures, and facts to describe, explain or estimate phenomena or events. (Chasanah et al 2020).

Noviana & Murtiyasa (2020) mentioned that the mathematical literacy ability of Indonesian students is still relatively low, with an average score of 367, thus causing Indonesia to be ranked 39th out of 41 participants. Meanwhile, the 2003 PISA results followed by 40 countries placed Indonesian students in 38th place with an average score of 360 and these two results were not much different from the PISA results in the following years (2006, 2009, 2012, 2015, 2018) which placed Indonesia in the bottom position. PISA is considered very important because PISA is an international-scale study, one of which is an examination in terms of literacy, mathematics, and science achievement of students who are aged between 15 years and research conducted by PISA obtained an international average score of mathematical literacy ability is 500 (level 3), while the average mathematical literacy score of Indonesian students is 375 (level 1), where level 1 is the lowest level of the 6 levels of mathematical literacy ability set by PISA (Asmara et al. 2017)

In fact, most students in the ninth-grade struggle with solving everyday-life story difficulties. When attempting to answer questions, many pupils make blunders. Most of the students who responded thought the questions were too challenging, and those who did comprehend them reported feeling puzzled about how to apply mathematics to the story problems. Researchers found that only 10% of pupils were able to formulate a mathematical model. According to an interview with one of the mathematics teachers, some students at a Sidoharjo, Indonesia, state junior high school still struggle to solve everyday-life narrative problems. Students who try to answer story questions in their heads rather than on paper often struggle to grasp the question's intent. Students sometimes resort to circumventing the story style in favour of a more straightforward approach to an issue, which is the root cause of many common errors (Akbar et al. 2017).

Researchers have done some preliminary work in the past. A study by Nuurjannah et al. (2018) on the mathematical literacy skills of 15-year-olds compared those with and without a basic or intermediate level of education. Hidayati et al. (2020) also studied primary school teacher candidates' mathematical literacy in regard to their ability to solve PISA tasks involving shape and space. Mahiuddin et al. (2019) were inspired to study this issue because of students' dismal performance on standardised mathematical literacy exams. Widianti and Hidayati's (2021) study attempts to assess students' proficiency in trigonometry and quadratics at levels 1, 2, and 3. Utomo et al. (2020) investigated the relationship between students' cognitive styles and their proficiency in mathematics. Agustiani et al. (2021) studied the impact of self-directed instruction on the mathematical literacy of middle school students.

Both the ranking number and the shape of its root are topics covered during the odd semester of grade nine. Knowing how to decipher the significance of symbols and mathematical concepts is essential when dealing with the contentious issue of ranking numbers and root forms. The topics covered include scientific notation, zero ranks, negative ranks, root forms, and properties of multiplication and division in ranks. Considering the foregoing, the problem statement in this investigation concerns the mathematical literacy of students at a state junior high school in Sidoharjo regarding numbers in rank and root form.

2. METHODS

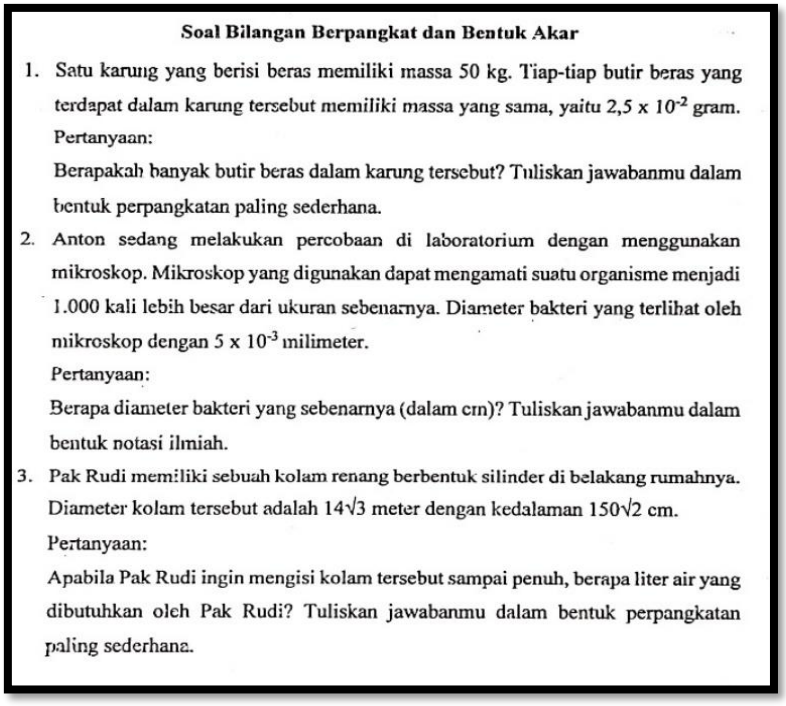
This type of research is descriptive qualitative. This research was conducted on April 12-14, 2022 at a state junior high school in Sidoharjo. The subjects in this study were 3 class of grade IX students. In this case, there are 54 students of class IX A and IX I based on three categories, namely high (S1), medium (S2), and low (S3) (Table 1).

Table 1. Categories of Mathematical Literacy Level

Score Range	Category
Score ≥ $(\bar{X} + SD)$	High
$(\bar{X} - SD)$ > Score < $(\bar{X} + SD)$	Medium
Score ≤ $(\bar{X} - SD)$	Low

Sumber: (Arikunto & Jabar 2018)

The test question instruments in this research are in the form of 3 items of description questions, as well as interview guidelines developed based on indicators of mathematical literacy: (1) formulating mathematical models in various contexts, (2) applying mathematics in various contexts, (3) interpreting mathematics in various contexts, (4) conducting mathematical reasoning mathematically, (5) using concepts, procedures, and facts to describe, explain or estimate a phenomenon/event. The test questions used are presented in Figure 1 below.



Soal Bilangan Berpangkat dan Bentuk Akar

1. Satu karung yang berisi beras memiliki massa 50 kg. Tiap-tiap butir beras yang terdapat dalam karung tersebut memiliki massa yang sama, yaitu 2,5 x 10^{-2} gram.
   Pertanyaan:
   Berapakah banyak butir beras dalam karung tersebut? Tuliskan jawabanmu dalam bentuk perpangkatan paling sederhana.
2. Anton sedang melakukan percobaan di laboratorium dengan menggunakan mikroskop. Mikroskop yang digunakan dapat mengamati suatu organisme menjadi 1.000 kali lebih besar dari ukuran sebenarnya. Diameter bakteri yang terlihat oleh mikroskop dengan 5 x 10^{-3} milimeter.
   Pertanyaan:
   Berapa diameter bakteri yang sebenarnya (dalam cm)? Tuliskan jawabanmu dalam bentuk notasi ilmiah.
3. Pak Rudi memiliki sebuah kolam renang berbentuk silinder di belakang rumahnya. Diameter kolam tersebut adalah 14√3 meter dengan kedalaman 150√2 cm.
   Pertanyaan:
   Apabila Pak Rudi ingin mengisi kolam tersebut sampai penuh, berapa liter air yang dibutuhkan oleh Pak Rudi? Tuliskan jawabanmu dalam bentuk perpangkatan paling sederhana.

Figure 1. Literacy Test Questions

Triangulation methods, including the utilisation of multiple data sources (such as tests, interviews, and written documentation), were used to ensure the results' reliability. There are three branches to the data analysis methodologies used in this qualitative study: data reduction, data presentation, and conclusion drawing (Sutama 2019). In order to present a clearer image of the research results, it is

necessary to narrow down the data by selecting the major elements by focusing on important aspects. This study makes its data easily comprehensible through the use of tables and explanatory language. Data that has been distilled and presented logically is used for conclusions. Figure 2 presents the overall design of the study.

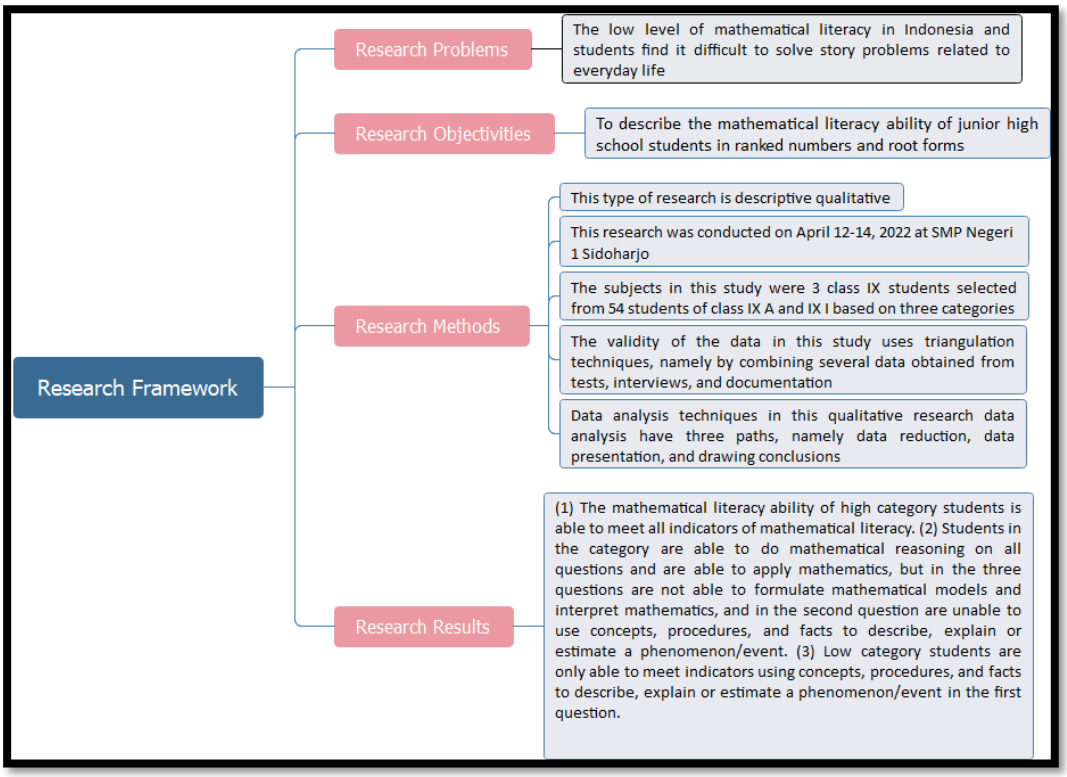


Figure 2. Research Framework

3. FINDINGS AND DISCUSSION

2.1. Findings

The results of the student literacy test can be given in Table 2 below.

Table 2. Student Literacy Test Results

Literacy Indicators	Question 1			Question 2			Question 3		
	S_1	S_2	S_3	S_1	S_2	S_3	S_1	S_2	S_3
1	√	-	-	√	-	-	√	-	-
2				√	√	-			
3	√	-	-	√	-	-	√	-	-
4	√	√	-	√	√	-	√	√	-
5	√	√	√	√	-	-	√	√	-

Information:

√ = Meet the indicators

- = Does not meet the indicator

■ = Not using indicators applying mathematics

From Table 2, it can be seen that the mathematical literacy ability of students with high-ability subjects (S1), medium-ability subjects (S2), and low-ability subjects (S3). S1 is able to meet all indicators in all questions. S2 is capable of mathematical reasoning. S2 is not able to meet the indicators of formulating mathematical models and interpreting mathematics. S3 is only able to meet indicators using concepts, procedures, and facts to describe, explain or estimate a phenomenon/event.

The mathematical literacy ability of junior high school students in the material of Ranked Numbers and Root Forms can be described as follows:

Test question number 1 is used to measure mathematical literacy's ability to formulate mathematical models, interpret mathematics, perform mathematical reasoning and use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event. The mathematical literacy abilities of subject 1, subject 2, and subject 3 are presented in Table 3 below.

Table 3. Mathematical Literacy Skills in Problem Number 1.

Indicator	Subject 1	Subject 2	Subject 3
1	Able to formulate mathematical models	Not yet able to formulate mathematical models	Not yet able to formulate mathematical models
3	Able to interpret mathematics	Not yet able to interpret mathematics	Not yet able to interpret mathematics
4	Able to do reasoning mathematically	Able to do reasoning mathematically	Not yet able to do mathematical reasoning
5	Able to use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event	Able to use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event	Able to use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event

Subject 1 in solving the first mathematical literacy test question correctly because it meets all indicators. Subject 1 meets all indicators, namely formulating mathematical models, interpreting mathematics, performing mathematical reasoning, and using concepts, procedures, and facts to describe, explain or estimate a phenomenon/event. Subject 2 and subject 3 are unable to complete the second test question, both have not been able to formulate mathematical models, have not been able to interpret the mathematics and are able to use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event. The difference is that subject 2 is capable of reasoning mathematically, while subject 3 has not been able to do reasoning mathematically. The results of the work of students' mathematical literacy ability subject 3 are given in Figure 3.

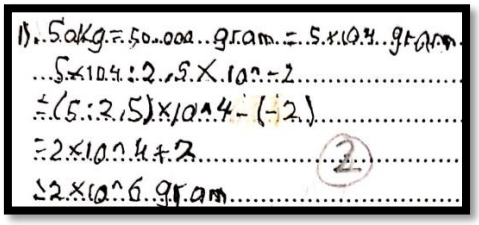


Figure 3. Answer Subject 3 Question Number 1

The results of the analysis of student work showed that subject 3 was not yet able to perform reasoning mathematically. It can be seen from figure 3 that subject 3 does not write down what is known and what is asked from the question. Subject 3 solves the question by directly answering the question without writing down the information in the question. These results are in line with the results of the researcher's interview with the following research subjects.

P : "How do you do mathematical reasoning for question number 1? Did you do it??"

S3 : "No, I don't do mathematical reasoning on question number 1"

Test question number 2 is used to measure mathematical literacy ability on indicators of formulating mathematical models, applying mathematics, interpreting mathematics, doing mathematical reasoning, and using concepts, procedures, and facts to describe, explain or estimate a phenomenon/event. The mathematical literacy abilities of subject 1, subject 2, and subject 3 are presented in table 4 below.

Table 4. Mathematical Literacy Skills in Problem Number 2.

Indicator	Subject 1	Subject 2	Subject 3
1	Able to formulate mathematical models	Not yet able to formulate mathematical models	Not yet able to formulate mathematical models
2	Able to apply mathematics	Able to apply mathematics	Not yet able to apply mathematics
3	Able to interpret mathematics	Not yet able to interpret mathematics	Not yet able to interpret mathematics
4	Able to do reasoning mathematically	Able to do reasoning mathematically	Not yet able to do mathematical reasoning
5	Able to use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event	Unable to use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event	Unable to use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event

Subject 1 in solving the second mathematical literacy test question correctly because it meets all indicators. Subject 1 meets all indicators of mathematical literacy ability, namely formulating mathematical models, applying mathematics, interpreting mathematics, doing mathematical reasoning, and using concepts, procedures, and facts to describe, explain or estimate a

phenomenon/event. Subject 2 and subject 3 have both been equally unable to meet the indicators of formulating a mathematical model and use concepts, procedures, and facts to describe, explain or estimate a phenomenon/event. The difference is that subject 2 is able to meet the indicators of applying mathematics and doing reasoning mathematically. Meanwhile, subject 3 has not been able to meet the indicator 2 indicators. The results of the work of students of mathematical literacy ability subject 3 are presented in the following Figure 4.

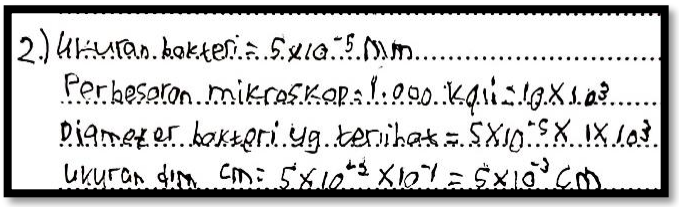


Figure 4. Subject Answer 3 Question Number 2

The results of the analysis of student work showed that subject 3 had not been able to apply mathematics and perform reasoning mathematically. It can be seen from figure 4 that subject 3 does not apply mathematics and does not write down what is asked of the question. Subject 3 solved the problem by writing down the size of the bacteria 5 x 10^{-5}, microscope magnification 1000 times, and visible diameter 5 x 10^{-5} x 10^{3}. These results are supported by the results of the researcher's interview with the research subject:

Q : "How do you do mathematical reasoning for question number 2? Did you do that?"

S3 : "I did the mathematical reasoning known from the question."

Q : "It means that you only write down what is known from the question and do not write down what is asked?"

S3 : "Yes"

Q : "How do you apply mathematics to problem number 2? Did you do it??"

S3 : "No, I don't apply math"

Test question number 3 is used to measure mathematical literacy ability on indicators of formulating mathematical models, interpreting mathematics, performing mathematical reasoning, and using concepts, procedures, and facts to describe, explain or estimate a phenomenon/event. The mathematical literacy abilities of subject 1, subject 2, and subject 3 are presented in Table 5 below.

Table 5. Mathematical Literacy Skills in Problem Number 3.

Indicator	Subject 1	Subject 2	Subject 3
1	Not yet able to formulate mathematical models	Not yet able to formulate mathematical models	Not yet able to formulate mathematical models
3	Able to interpret mathematics	Not yet able to interpret mathematics	Not yet able to interpret mathematics
4	Able to do reasoning mathematically	Able to do reasoning mathematically	Not yet able to do mathematical reasoning
5	Able to use concepts, procedures, and facts to	Able to use concepts, procedures, and facts to	Unable to use concepts, procedures, and facts to

	describe, explain or estimate a phenomenon/event	describe, explain or estimate a phenomenon/event	describe, explain or estimate a phenomenon/event

Subject 1 is correct in answering the third question on the mathematical literacy test. Using concepts, processes, and data to describe, explain or estimate a phenomenon/event, as well as developing mathematical models to do so, all fall within the purview of Subject 1. Subject 2 is able to fulfil the indications of mathematical reasoning and employs concepts, processes, and facts to describe, explain, or estimate a phenomenon or occurrence but is not able to formulate mathematical models or comprehend mathematical theorems. In solving the third problem on the mathematical literacy test. Subject 3 does not demonstrate proficiency in all of the following areas: formulating mathematical models; interpreting mathematics; performing mathematical reasoning; using concepts, procedures, and facts to describe, explain, or estimate a phenomenon or event; and to use mathematical language. Figure 5 displays the student's work on Subject 3's mathematical literacy skills.

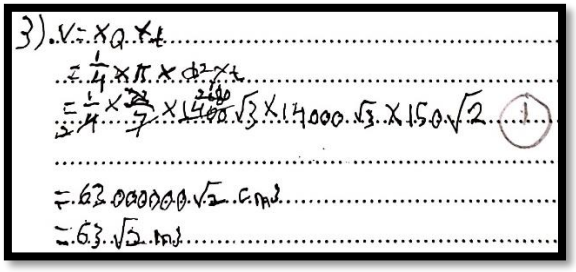


Figure 5. Answer Subject 3 Question Number 3

The student work analysis results show that subject 3 has not been able to meet the indicators using concepts, procedures, and facts to describe, explain or estimate a phenomenon/event. It can be seen from figure 5 that subject 3 is wrong in using the formula of finding volume. Subject using the volume formula $\frac{1}{4}\ x\ \pi\ x\ d^2\ x\ t$, should use the volume formula $\pi\ x\ r^2\ x\ t$ so that the subject's answer is wrong. This is supported by the results of the researcher's interview with the research subject:

Q : "Explain what you do in using concepts, procedures, and facts in doing number questions 3?"

S3 : "I'm looking for the volume x a x t = $\frac{1}{4}$ x π x d^2 x t"

Q : "Continue how much the final result is?"

S3 : "63√2 m2"

2.2. Discussion

Test research and the aforementioned interview indicate that Subject 1 in the high literacy ability category is proficient in all indicators of mathematical literacy ability, including formulating mathematical models, applying mathematics, interpreting mathematics, performing mathematical reasoning, and using concepts, procedures, and facts to describe, explain, or estimate a phenomenon or event. This agrees with the findings of Kholifasari et al. (2020), who found that "students with high literacy skills solved on indicators including the ability to formulate problems into mathematical form, with students being able to write back what is known from the problem, to model the problem into mathematical form, to apply mathematical concepts, facts, procedures, and reasoning, and to use procedures, steps to work correctly, to use symbols well, and to use formulas correctly." According to the research of Khotimah and Nasrulloh (2018), intelligent people are adept at applying mathematical models to find solutions to difficulties and doing thorough analyses of those problems. Studying at any level of mathematical literacy is possible for students with high intelligence, according to Yuberta et al.

(2020). According to Agustina et al. (2022), a highly capable subject is one who can not only write or speak about mathematical ideas, but also build mathematical models, and write and speak about the process of solving mathematical issues.

Subject 2, who is classified as having average literacy across all issues, cannot create mathematical models or understand mathematical concepts. According to the study by Fadiana and Andriani (2021), the subject is convinced that there is only one solution to the problem and hence does not bother to reevaluate if further particular considerations are needed. Students typically struggle when asked to describe, explain, or estimate a phenomenon/event in the second question. According to data analysed by Martin and Kadarisma (2020), many students still struggle to complete it because they perceive the questions to be too challenging and lack interest in attempting to solve them using mathematical models based on the stories they've been given. According to the findings of Husna & Burais (2019), effective problem-solving relies on a solid foundation of understanding, which can be aided by developing one's ability to think critically.

Subject 3, who scored as having a poor literacy level on the first question, may only demonstrate competence with indicators that need knowledge of concepts, methods, and facts to describe, explain, or estimate a phenomenon/event. Students' mathematical literacy is not fully developed in the second and third questions. According to Farida et al. (2021), children with low cognitive abilities have poor mathematical literacy skills because they cannot employ mathematical model designs appropriately to identify answers and interpret mathematical outcomes. This is consistent with the findings of Kafifah et al. (2018), who found that students with lower cognitive abilities were less likely to take careful notes on the problem and its solution. According to Widianti and Hidayati (2021), students find it challenging to understand the questions since they conduct the exercises without first writing down what is known and what is asked. It agrees with the findings of Yulita & Ain (2021), who discovered that pupils face difficulties in learning mathematics, particularly while attempting to solve story problems. Some kids aren't used to writing down varied facts contained in the questions, and kids more commonly handle problems in a direct method, which is why they make so many mistakes, as found by research by Akbar et al. (2017).

4. CONCLUSION

The following describes the mathematical literacy of junior high school students with regard to the Material of Ranked Numbers and Root Forms, as determined by the above-mentioned examinations and interviews. Students can meet all indications of mathematical literacy at the highest level of mathematical ability. Students in this group can formulate mathematical models and interpret mathematics, but they struggle with the second question, which asks them to describe, explain, or estimate some phenomenon or event, and they struggle with the second question, which asks them to apply mathematical concepts and procedures. Answering the first question's indicators requires students in the lowest ability level to rely solely on concepts, methods, and facts in order to describe, explain, or estimate a phenomenon or event.

REFERENCES

Agustiani, S., Agustiani, N., & Nurcahyono, N. A. (2021). Analisis Berpikir Literasi Matematika Berdasarkan Kemandirian Belajar Siswa SMP. *EQUALS: Jurnal Ilmiah Pendidikan Matematika*, *4*(2), 67–78. https://doi.org/10.46918/equals.v4i2.966

Agustina, Z. F., Masfingatin, T., & Maharani, S. (2022). Analysis of Mathematics Communication Capabilities in Linear Program Problem Solving during the Covid-19 Pandemic. *AL-ISHLAH: Jurnal Pendidikan*, *14*(1), 519–528. https://doi.org/10.35445/alishlah.v14i1.830

Akbar, P., Hamid, A., Bernard, M., & Sugandi, A. I. (2017). Analisis Kemampuan Pemecahan Masalah Dan Disposisi Matematik Siswa Kelas Xi Sma Putra Juang Dalam Materi Peluang. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *2*(1), 144–153. https://doi.org/10.31004/cendekia.v2i1.62

Arikunto, S., & Jabar, C. S. A. (2018). *Dasar Evaluasi Pendidikan* (2nd ed.; F. Yustianti, ed.). Jakarta: Bumi Aksara.

Asmara, A. S., Waluya, S. B., & Rochmad. (2017). Analisis Kemampuan Literasi Matematika Siswa Kelas X Berdasarkan Kemampuan Matematik. *Scholaria*, *7*(02), 135–142.

Chasanah, A. N., Wicaksono, A. B., Nurtsaniyah, S., & Utami, R. N. (2020). Analisis Kemampuan Literasi Matematika Mahasiswa pada Mata Kuliah Statistika Inferensial Ditinjau dari Gaya Belajar. *Jurnal Pendidikan Matematika*, *10*(02), 46–56.

Dina, Z. H., Ikhsan, M., & Hajidin, H. (2019). The Improvement of Communication and Mathematical Disposition Abilities through Discovery Learning Model in Junior High School. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, *4*(1), 11–22. https://doi.org/10.23917/jramathedu.v1i1.6824

Fadiana, M., & Andriani. (2021). Metacognition Profile of Vocational High School Students in Mathematics Problem Solving Based on Logical Thinking Skills. *AL-ISHLAH: Jurnal Pendidikan*, *13*(2), 1027–1037. https://doi.org/10.35445/alishlah.v13i2.376

Farida, R. N., Qohar, A., & Rahardjo, S. (2021). Analisis kemampuan literasi matematis siswa SMA dalam menyelesaikan soal pisa konten change and relationship. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *05*(03), 2802–2815. https://doi.org/10.26877/aks.v11i2.6256

Hidayati, V. R., Wulandari, N. P., Maulyda, M. A., Erfan, M., & Rosyidah, A. N. K. (2020). Literasi Matematika Calon Guru Sekolah Dasar dalam Menyelesaikan Masalah PISA Konten Shape & Space. *JPMI: Jurnal Pembelajaran Matematika Inovatif*, *3*(3), 185–194. https://doi.org/10.22460/jpmi.v1i3.

Husna, H., & Burais, F. F. (2019). Penerapan Pendekatan Problem Solving Untuk Meningkatkan Kemampuan Pemecahan Masalah Matematis Siswa Berdasarkan Level Siswa. *AL-ISHLAH: Jurnal Pendidikan*, *11*(1), 82–95. https://doi.org/10.35445/alishlah.v11i1.97

Kafifah, A., Sugiarti, T., & Oktavianingtyas, E. (2018). Pelevelan Kemampuan Literasi Matematika Siswa Berdasarkan Kemampuan Matematika Dalam Menyelesaikan Soal PISA Konten Change and Relationship. *Kadikma*, *9*(3), 75–84. Retrieved from https://jurnal.unej.ac.id/index.php/kadikma/article/view/10918

Kholifasari, R., Utami, C., & Mariyam, M. (2020). Analisis Kemampuan Literasi Matematis Siswa Ditinjau Dari Karakter Kemandirian Belajar Materi Aljabar. *Jurnal Derivat: Jurnal Matematika Dan Pendidikan Matematika*, *7*(2), 117–125. https://doi.org/10.31316/j.derivat.v7i2.1057

Khotimah, K., & Nasrulloh, M. F. (2018). Kemampuan Literasi Mahasiswa dalam Menyelesaikan Masalah Matematika Ditinjau dari Gaya Belajar Global dan Kemampuan Matematika. *Prosiding Silogisme Universitas PGRI Madiun*, 8–14. Retrieved from http://ejurnal-stitpringsewu.ac.id/index.php/jmpi/article/view/33%0Ahttp://prosiding.unipma.ac.id/index.php/PSNPM/article/view/598

Mahiuddin, W. P., Masi, L., Kadir, K., & Anggo, M. (2019). Analisis Kemampuan Literasi Matematis Siswa SMP Di Kabupaten Konawe Dalam Perspektif Gender. *Jurnal Pendidikan Matematika*, *10*(1), 55–65. https://doi.org/10.36709/jpm.v10i1.5644

Martin, I., & Kadarisma, G. (2020). Analisis Kemampuan Pemecahan Masalah Matematis Siswa SMA Pada Materi Fungsi. *Jurnal Pembelajaran Matematika Inovatif*, *3*(6), 641–652. https://doi.org/10.22460/jpmi.v3i6.641-652

Noviana, K. Y., & Murtiyasa, B. (2020). Kemampuan Literasi Matematika Berorientasi PISA Konten Quantity Pada Siswa SMP. *JNPM (Jurnal Nasional Pendidikan Matematika)*, *4*(2), 195–211. https://doi.org/10.33603/jnpm.v4i2.2830

Nuurjannah, P. E. I., Amaliyah, W., & Fitrianna, A. Y. (2018). Analisis Kemampuan Literasi Matematis Siswa SMP di Kabupaten Bandung Barat. *Jurnal Math Educator Nusantara*, *4*(1), 15–28. https://doi.org/10.29407/jmen.v4i01.12016

OECD. (2013). Autistic states in children. In *Autistic States in Children*. https://doi.org/10.4324/9781003090366

Prabawati, M. N. (2018). Analisis Kemampuan Literasi Matematik Mahasiswa Calon Guru Matematika. *Mosharafa*, *7*(1), 113–120. https://doi.org/10.31980/mosharafa.v7i1.347

Rumiati, S. W. (2011). Instrumen Penilaian Hasil Belajar Matematika SMP : Belajar dari PISA dan TIMSS. In S. W. Danoebroto (Ed.), *Yogyakarta: Pusat Pengembangan dan Pemberdayaan Pendidik dan Tenaga Kependidikan (PPPPTK) Matematika*. Yogyakarta.

Sutama, S. (2019). *Metode Penelitian Pendidikan Kuantitatif, Kualitatif, PTK, Mix Method, R & D* (1st ed.). Surakarta: CV. Jasmine.

Utomo, M. F. ., Pujiastuti, H., & Mutaqin, A. (2020). Analisis Kemampuan Literasi Matematika Ditinjau dari Gaya Kognitif Siswa. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *11*(2), 185–193. https://doi.org/10.15294/kreano.v11i2.25569

Wicaksana, Y., & Ridlo, S. (2017). Analisis Kemampuan Literasi Matematika dan Karakter Rasa Ingin Tahu Siswa pada Pembelajaran Berbasis Proyek Berbantuan Schoology. *Unnes Journal of Mathematics Education Research*, *6*(2), 167–174.

Widianti, W., & Hidayati, N. (2021). Analisis Kemampuan Literasi Matematis Siswa Smp Pada Materi Segitiga Dan Segiempat. *Jurnal Pembelajaran Matematika Inovatif*, *4*(1), 27–38. https://doi.org/10.22460/jpmi.v4i1.27-38

Yuberta, K. R., Nari, N., & Gustia, E. (2020). Kemampuan Literasi Matematis Siswa Dengan Menerapkan Model Pembelajaran Creative Problem Solving (Cps). *Jurnal Saintika Unpam : Jurnal Sains Dan Matematika Unpam*, *3*(1), 68–80. https://doi.org/10.32493/jsmu.v3i1.6269

Yulita, & Ain, S. Q. (2021). Analysis of Students' Learning Difficulties in Learning Mathematics at Elementary Schools. *AL-ISHLAH: Jurnal Pendidikan*, *13*(2), 892–899. https://doi.org/10.35445/alishlah.v13i2.745