

## MATHEMATICAL LITERACY SKILLS OF JUNIOR HIGH SCHOOL STUDENTS OF 21 CENTRAL BENGKULU IN THE INDEPENDENT CURRICULUM

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### ABSTRACT

Mathematical literacy focuses on students' ability to analyze, solve, and interpret mathematical problems in a variety of contexts. These abilities need to be measured so that they can be a reference to find ways to improve students' mathematical literacy skills. The shift to an independent curriculum can be a new gateway for learning in Indonesia to improve students' mathematical skills. The purpose of this study is to determine the mathematical literacy ability of grade VII students of SMP Negeri 21 Bengkulu Tengah in implementing the independent curriculum. This study investigated 25 students who used the independent curriculum. As a method of data collection, written tests, interviews, and documentation were used. The results of the study show that most students are still at a low level of mathematical literacy. 8 students reached level 1c, 2 students were at level 1b, and only 1 student reached level 1a. On the PISA scale, level 1c is the lowest level, where students can only answer questions with very explicit information, while level 3 shows the ability to use reasoning and apply mathematical concepts in more complex contexts. This low achievement is influenced by the lack of habit of solving contextual problems, difficulty understanding the information in the problem, and limited ability in basic calculation operations. These findings show the need for improvement in the approach to mathematics learning with an emphasis on contextual problems, and the practice of applied numeracy skills.

**Keywords:** independent curriculum; mathematical literacy; pisa; sosial arithmetic

### ABSTRAK

Literasi matematis berfokus pada kemampuan siswa untuk menganalisis, memecahkan, dan menafsirkan masalah matematis dalam berbagai konteks. Kemampuan tersebut perlu diukur sehingga dapat menjadi acuan untuk mencari cara bagaimana meningkatkan kemampuan literasi matematis siswa. Pergeseran ke kurikulum merdeka dapat menjadi gerbang baru bagi pembelajaran di Indonesia untuk meningkatkan kemampuan matematis siswa. Tujuan penelitian ini adalah untuk mengetahui kemampuan literasi matematis siswa kelas VII SMP Negeri 21 Bengkulu Tengah dalam menerapkan kurikulum merdeka. Penelitian ini menyelidiki 25 siswa yang menggunakan kurikulum merdeka. Sebagai metode pengumpulan data digunakan tes tertulis, wawancara, dan dokumentasi. Hasil penelitian menunjukkan bahwa sebagian besar siswa masih berada pada level literasi matematis rendah. 8 siswa mencapai level 1c, 2 siswa berada di level 1b, dan hanya 1 siswa mencapai level 1a. Dalam skala PISA, level 1c merupakan tingkat terendah, di mana siswa hanya dapat menjawab soal dengan informasi yang sangat eksplisit, sedangkan level 3 menunjukkan kemampuan menggunakan penalaran dan menerapkan konsep matematika dalam konteks yang lebih kompleks. Rendahnya capaian ini dipengaruhi oleh kurangnya kebiasaan menyelesaikan soal kontekstual, kesulitan memahami informasi dalam soal, serta terbatasnya kemampuan dalam operasi hitung dasar. Temuan ini menunjukkan perlunya perbaikan dalam pendekatan pembelajaran matematika dengan menekankan pada soal-soal kontekstual, dan latihan keterampilan berhitung yang aplikatif.

**Kata kunci:** aritmatika sosial; kurikulum merdeka; literasi matematis; pisa.

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## Introduction

Mathematics education plays an important role in improving student competence. This includes not only computational skills but also the ability to understand, analyze, and solve problems related to mathematical concepts (Lee et al., 2023). With the implementation of the Independent Curriculum in Indonesia, there has been a major change in the way of teaching and learning, including in mathematics subjects (Zafirah et al., 2024). The curriculum emphasizes a more flexible approach to learning that focuses on student capacity building and gives teachers the freedom to design learning that suits students' needs and circumstances (Nafi'ah et al., 2023; Tulak et al., 2024). Mathematics learning not only aims to equip students with numeracy skills, but also encourages the development of logical and critical thinking and the ability to communicate effectively in facing various life challenges. One of the important skills is math literacy (Asmara & Sari, 2021).

Mathematical literacy refers to students' cognitive abilities in analyzing, formulating, solving, and interpreting mathematical problems that arise in various life contexts (Agustina & Hidayati, 2024; Indrawati et al., 2019). This literacy not only includes the ability to answer mathematical problems, but also includes understanding mathematical concepts that are applicable in various situations. Therefore, this ability is important to be measured in order to determine effective strategies in improving students' mathematical literacy (Rachman & Nuriadin, 2022).

The Programme for International Student Assessment (PISA) has six levels of achievement to measure students' mathematical literacy, with Level 1 being the lowest level of performance and Level 6 being the highest (Hidayat et al., 2023). The results of the 2022 PISA survey show a decrease in Indonesia's mathematical literacy score by 13 points, from 379 in PISA 2018 to 366, although it is still better than the international average which also decreased by 21 points, from 487 in 2018 to 472 (OECD, 2022). Indonesia's ranking also increased by 5 positions, namely ranking 70 out of 81 countries, compared to PISA 2018 which placed Indonesia in 70th place out of 77 countries (Nadia, 2023). Students with low mathematical abilities tend to have difficulty understanding the entire math content because they are not able to easily interpret contextual and abstract problems (Safitri et al., 2022). Asmara (2023) revealed that one of the factors for the low achievement of PISA is the lack of teaching questions by teachers that refer to the PISA format. The independent curriculum, which began to be implemented on a limited basis in 2021 and expanded in 2022, is the Indonesian government's response to various educational challenges, including Indonesia's consistently low PISA results (Masjudin et al., 2024). The results of PISA are one of the important foundations in the formulation of the Independent Curriculum, while the Independent Curriculum is expected to be able to increase the achievement of PISA in the future.

Based on research Fadillah & Munandar (2021), it shows that many students do not meet the three aspects of literacy, namely formulation, application, and interpretation. These findings show that students have limitations in mathematical

literacy skills (Elisya et al., 2025). Students have difficulty writing answers systematically and tend to only write answers directly. One of the causes of students' low mathematical ability is the lack of interest in reading.

Ramadani (2023) explained that math story problems are closely related to students' daily lives because the questions focus on situations they encounter in their daily lives. Social arithmetic is the branch of mathematics that is most relevant to real problems in everyday life (Hidayat et al., 2023). Social arithmetic involves activities related to trade, which are often found in traditional markets, modern markets, general stores, or supermarkets (Jumarniati et al., 2021). Paramitha (2018) states that every discussion in social arithmetic material always includes story problems.

SMP Negeri 21 Bengkulu Tengah has implemented the Independent Curriculum in grades VII and VIII. The curriculum is designed as an option for recovery during the transition from the pandemic to the new normal. The Merdeka Curriculum is a new step for Indonesia to improve the PISA score through a better learning approach. In addition, the Independent Curriculum also emphasizes the importance of literacy by teaching students to read in various real-life situations.

Therefore, it is important to know the extent to which the implementation of the Independent Curriculum can affect students' mathematical literacy skills. The purpose of this study is to determine the mathematical literacy ability of grade VII students of SMP Negeri 21 Central Bengkulu in the implementation of the independent curriculum.

## **Research Methods**

This research is classified as a descriptive research, which aims to determine the ability of grade VII students of SMP Negeri 21 Central Bengkulu in mathematical literacy when implementing the independent curriculum. The source of data for this research is students who follow the Independent Curriculum in grade VII of SMP Negeri 21 Central Bengkulu. Data is collected through tests, interviews, and documentation. To test the validity of the instrument, the validator checks social arithmetic problems by paying attention to the question items and mathematical literacy indicators. In addition, the interview instrument containing a series of questions is designed to explore students' understanding of mathematical concepts and their ability to apply them to contextual problems. Interviews were conducted with 6 students, consisting of 3 students with the highest final scores and 3 students with the lowest final scores, with the aim of revealing students' mathematical literacy abilities and finding out the challenges they faced in answering questions.

The data analysis techniques used include data reduction, data presentation, and conclusion drawn. After obtaining the results of the students' tests, the researcher will analyze how students solve the problems and group them based on their level of mathematical literacy. Furthermore, based on the results of the test, six speakers were selected to be interviewed to gain further insight into students' mathematical literacy skills.

Data presentation is the next step after the data is reduced. In this study, data is presented in three categories, namely "capable", "undercapable", and "incapable", to describe the level of mathematical literacy of students based on the results of the analysis carried out.

Table 1. Categories of mathematical literacy ability

Value Range	Category
Value $\geq 70$	Capable
$40 \leq \text{Value} < 70$	Underprivileged
Value $< 40$	Unable to Afford

Table 1. presents the categories of students' mathematical literacy skills when solving social arithmetic essay questions at levels 1 to 3. Students are categorized as "incapable" if they are unable to explain their answers, either orally or in writing, according to the expected indicators of mathematical literacy levels. Students who fall into the "underprivileged" category are those who can explain their answers, both in writing and orally, according to the expected indicators. Meanwhile, students who fall into the "able" category have the ability to explain their answers appropriately, both in writing and orally, according to the expected indicators. The final stage of data analysis involves data reduction and presentation of results to draw conclusions, where the formulation of the problem and the research objectives to be achieved are interrelated and become the basis for drawing conclusions.

### Result and Discussion

PISA categorizes students' mathematical literacy abilities into six levels, or levels show Table 2.

Table 2. Summary of eight levels of proficiency on the mathematical literacy scale

Level	What students can do
6	At Level 6, students are able to demonstrate creativity and flexible thinking when solving abstract problems and developing solutions.
5	At Level 5, students can identify or apply constraints, draw conclusions, and develop and use models for complex situations.
4	At Level 4, students demonstrate the ability to work with explicit models in substantial and complex situations, which sometimes involve two variables.
3	At Level 3, students are able to design problem-solving strategies, including strategies that require sequential decision-making and the flexibility to understand familiar concepts.
2	At Level 2, students can identify conditions that require them to develop simple strategies for solving problems, including running hands-on simulations involving a single variable as part of their solution strategy.
1a	At Level 1a, students can answer questions in simple and clear situations where all relevant information is available.
1b	At Level 1b, students are able to answer questions in an understandable context and provide all the necessary information in simple representations, such as tables and diagrams.
1c	At Level 1c, students are able to answer questions relating to a clear context where all important data is clearly presented and defined in a syntactically simple text

Based on Table 2. it shows that there are eight levels of mathematical literacy proficiency for the PISA mathematical literacy scale in 2022. The lowest achievement is indicated by the lowest level, which is level 1, and the highest achievement is indicated by the highest level, which is level 6. In PISA 2022, the six levels were expanded with the following changes: level 1 was changed to level 1a, and the competency table was expanded with the addition of levels 1b and 1c. These changes were made to provide more in-depth details in the reporting of students with lower proficiency.

The five Mathematical Literacy questions given to students were assessed with various scores. Number 1 has the highest score of 5, number 2 has the highest score of 9, number 3 has the highest score of 9, number 4 option 1 has the highest score of 18, number 4 option 1 has the highest score of 16, number 5 has the highest score of 13. The following information details show the level or level of students' mathematical literacy ability based on the scores obtained from the questions. This score is used to categorize students' ability levels in mathematical literacy, by assessing the extent to which they can understand, analyze, and solve a given problem.

1. Level 1c

To identify students' performance in solving mathematical literacy problems at level 1c, an analysis of the score distribution was conducted. The results are presented in Table 3.

Table 3. Student grades at level 1c

Score	Value	Many Students	Percentage of Large Students	Category
0	0	-	0%	Unable to Afford
1	20	-	0%	Unable to Afford
2	40	4	16%	Underprivileged
3	60	13	52%	Underprivileged
4	80	8	32%	Capable
5	100	-	0%	Capable

Based on Table 3, it was found that the students' scores at level 1c showed that only 8 students (32%) were able to solve mathematical literacy problems at level 1c correctly. Meanwhile, 17 other students (68%) were not able to complete the questions completely. This data illustrates the difference in students' ability to achieve the expected level of mathematical literacy at level 1c.

## 2. Level 1b

To further analyze students' ability in solving mathematical literacy problems, the distribution of their scores at level 1b was examined. The detailed results are presented in Table 4.

Table 4. Student grades at level 1b

Score	Value	Many Students	Percentage of Large Students	Category
0	0	0	0%	Unable to Afford
1	11,11	4	16%	Unable to Afford
2	22,22	4	16%	Unable to Afford
3	33,33	3	12%	Unable to Afford
4	44,44	3	12%	Underprivileged
5	55,55	5	20%	Underprivileged
6	66,67	4	16%	Underprivileged
7	77,78	2	8%	Capable
8	88,89	-	0%	Capable
9	100	-	0%	Capable

Based on Table 4, the student score at level 1b shows that only 2 students (8%) are able to solve the mathematical literacy problem at level 1b correctly. Meanwhile, 12 other students (48%) were less able to complete the questions completely. In addition, eleven students were unable to solve this level 1b question. This data reflects the difficulties most students face in achieving a higher level of mathematical literacy at level 1b.

## 3. Level 1a

To provide a clearer picture of students' mathematical literacy achievement, their performance at level 1a was also analyzed. The distribution of student scores at this level is presented in Table 5.

Table 5. Student grades at level 1a

Score	Value	Many Students	Percentage of large students	Category
0	0	-	0%	Unable to Afford
1	11,11	6	24%	Unable to Afford
2	22,22	3	12%	Unable to Afford
3	33,33	8	32%	Unable to Afford
4	44,44	2	8%	Underprivileged
5	55,55	4	16%	Underprivileged
6	66,67	1	4%	Underprivileged
7	77,78	1	4%	Capable
8	88,89	-	0%	Capable
9	100	-	0%	Capable

Based on table 5, it was found that the student score at level 1a showed that only 1 student (4%) was able to solve mathematical literacy problems at level 1a correctly. The other 7 students (28%) were not able to solve the problem overall. Meanwhile, 17 students (68%) were unable to answer this level 1a mathematical literacy question. This data illustrates that most students face difficulties in achieving the expected level of mathematical literacy at level 1a.

#### 4. Level 2

To examine students' performance at a more advanced stage, their achievement in solving mathematical literacy problems at level 2 for Alternative Answer 1 was analyzed. The score distribution is presented in Table 6.

Table 6. Students' grades at level 2 for alternative answer 1

Score	Value	Many Students	Percentage of large students	Category
0	0	2	8%	Unable to Afford
1	5,55	-	0%	Unable to Afford
2	11,11	-	0%	Unable to Afford
3	16,67	1	4%	Unable to Afford
4	22,22	1	4%	Unable to Afford
5	27,78	1	4%	Unable to Afford
6	33,33	-	0%	Unable to Afford
7	38,89	-	0%	Unable to Afford
8	44,44	-	0%	Underprivileged
9	50	-	0%	Underprivileged
10	55,55	-	0%	Underprivileged
11	61,11	-	0%	Underprivileged
12	66,67	-	0%	Underprivileged
13	72,22	-	0%	Capable
14	77,78	-	0%	Capable
15	83,33	-	0%	Capable
16	88,89	-	0%	Capable
17	94,44	-	0%	Capable
18	100	-	0%	Capable

In addition, an analysis was also conducted for students' achievement at level 2 with Alternative Answer 2. The detailed distribution of scores can be seen in Table 7.

Table 7. Student grade at level 2 for alternative answer 2

Score	Value	Many Students	Percentage of large students	Category
0	0	-	8%	Unable to Afford
1	6,25	-	0%	Unable to Afford
2	12,5	8	32%	Unable to Afford
3	18,75	7	28%	Unable to Afford
4	25	-	4%	Unable to Afford
5	31,25	1	4%	Unable to Afford
6	37,5	2	8%	Unable to Afford
7	43,75	2	8%	Underprivileged
8	5	-	0%	Underprivileged
9	56,25	-	0%	Underprivileged
10	6,25	-	0%	Underprivileged
11	68,75	-	0%	Underprivileged
12	75	-	0%	Capable
13	81,25	-	0%	Capable
14	87,5	-	0%	Capable
15	93,75	-	0%	Capable
16	100	-	0%	Capable

Based on Table 6 and Table 7, the students' scores at level 2 indicate that no student is able to obtain Level 2 mathematical literacy. There were 2 students (8%) who were not able to solve the problem, while 23 students (92%) were unable to answer the question. This data shows that the majority of students have difficulty achieving mathematical literacy skills at Level 2.

### 5. Level 3

Furthermore, to evaluate students' achievement at a higher level of mathematical literacy, their performance at level 3 was analyzed. The distribution of scores is presented in Table 8.

Table 8. Student grades at level 3

Score	Value	Many Students	Percentage of large students	Category
0	0	9	36%	Unable to Afford
1	7,69	10	40%	Unable to Afford
2	15,38	3	12%	Unable to Afford
3	23,08	-	0%	Unable to Afford
4	30,77	-	0%	Unable to Afford
5	38,46	-	0%	Unable to Afford
6	46,15	-	0%	Underprivileged
7	53,85	3	12%	Underprivileged
8	61,54	-	0%	Underprivileged
9	69,23	-	0%	Underprivileged
10	76,92	-	0%	Capable
11	84,61	-	0%	Capable
12	92,31	-	0%	Capable
13	100	-	0%	Capable

Based on table 8, the student's score at level 3 indicates that no student is able to correctly answer a Level 3 mathematical literacy question. However, three students (8%) were unable to complete the questions completely, while the other twenty-two students (88%) were unable to answer them. This data indicates that most students struggle to achieve a level of mathematical literacy at Level 3.

The following image shows the classification graph per level of mathematical literacy ability of grade VII students of SMPN 21 Central Bengkulu based on student score information show Figure 1.

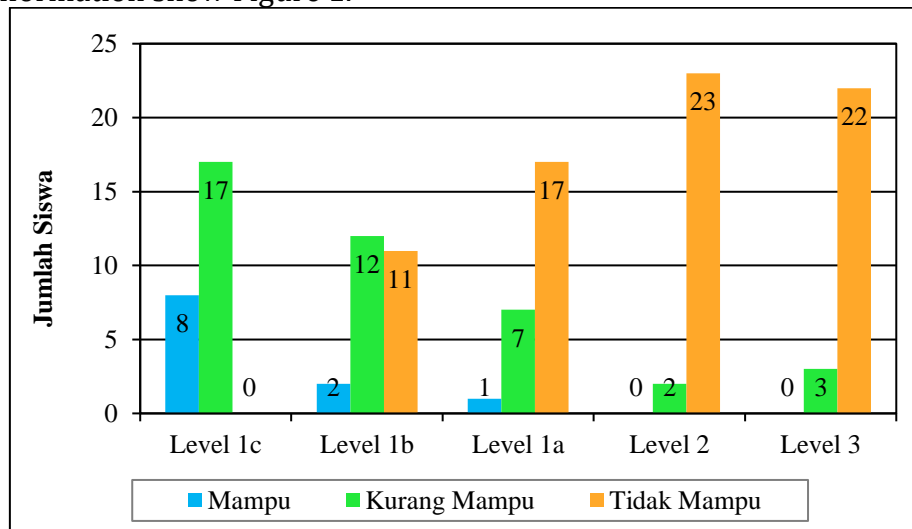


Figure 1. Category of students' mathematical literacy ability level

As shown in Figure 1, only eight of the 25 students were able to solve the problem at the lowest level, level 1c. Although level 2 is the minimum level that students must achieve, no student is able to solve problems at level 2 or level 3. Data analysis from students' math tests showed that there was a significant difference in math knowledge between students.

Based on the findings of this analysis, six students were selected for further analysis. Three of them had the highest final grades, while the other three students had the lowest final grades. This selection aims to uncover the factors that influence the differences in students' mathematical literacy abilities. To obtain more in-depth information regarding students' mathematical literacy performance, several research subjects were selected for interviews. The list of interview subjects along with their final scores is presented in Table 9.

Table 9. List of interview research subject codes

No.	Research Subject Code	Final Score
1.	SP-13	65,38
2.	SP-11	52,32
3.	SP-02	48,51
4.	SP-08	16,44
5.	SP-06	13,17
6.	SP-05	12,44

Table 9 above shows a list of selected research subject codes, which will provide a more in-depth picture of students' level of mathematical literacy in the classroom.

The following are the results of SP-05 for level 3 questions show Figure 2.

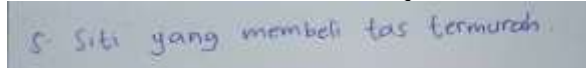


Figure 2. Results of SP-05 in level 3 questions

Based on Figure 2, the results show that SP-05 students were unable to develop solution strategies to complete tasks that required several different calculations. This can be observed from the absence of calculation steps taken to solve the problem. SP-05 is also incapable of handling issues related to percentages because calculations are not used to resolve the issue. In addition, these students are not able to interpret and use representations based on various sources. This can be seen from the formulation of questions that are known and asked but are not complete and have not been clearly formulated.

Based on the examination of the test results prepared and the analysis of the method of completion carried out by SP-05, it can be concluded that this student is not able to meet all the indicators of mathematical literacy at level 3. This shows the difficulties in understanding and applying more complex mathematical concepts, as well as in developing the solution strategies needed to solve more complex problems.

Here is a researcher interview with SP-05 for level 3 questions.

- P : "Can you interpret the question after reading it?"  
SP-05 : "I can't, ma'am"  
P : "Then what is your strategy to solve the problem?"  
SP-05 : "No ma'am"  
P : "Alright, which part of you are having trouble?"  
SP-05 : "I don't know what that means, but I don't know how to count it"  
P : "Do you find it difficult to calculate multiplication, division and percentage?"  
SP-05 : "Yes, ma'am, I don't know much about multiplication"  
P : "Next, I want to ask, do you often use questions Stories or essays for practice?"  
SP-05 : "No ma'am"

From the interviews conducted, it was known that SP-05 students were not able to design a solution strategy to solve problems that required a lot of calculation. This can be seen from the response of students who do not understand the questions well. The student also lacks the ability to interpret and use representations based on various sources of information, which indicates difficulties in connecting and interpreting existing information. This level requires students to interpret, apply, and represent mathematical concepts in a real-world context in a structured manner (OECD, 2023).

Based on the results of interviews and tests, this student falls into the category of incompetent at level 3. This indicates that the student still needs further guidance to be able to improve his mathematical literacy skills, especially in designing solutions that involve several calculations and the use of more complex representations of information.

The level of mathematical literacy of students is indicated by the results of their tests and interviews, which reveal the presence of factors that contribute to students' low mathematical literacy. The findings of the data analysis show that although the Merdeka curriculum is implemented in grade VII, it has not succeeded in improving students' basic mathematical knowledge. Test results show that even at level 1c, many students are unable to complete assignments correctly. This is in line with the results of an analysis conducted by (Khoirunnisa & Adirakasiwi, 2023) regarding students' numeracy literacy skills during the Merdeka Learning period in Karawang Regency. The analysis indicates that not all indicators of numeracy literacy ability, especially those related to data presentation, can be optimally achieved by students. This reflects the challenges faced in optimizing the achievement of mathematics and numeracy literacy at the student level, despite the implementation of a more flexible and competency-based curriculum.

Although contextual story questions have an important role in improving mathematical literacy, their application in the classroom is still rare. This is acknowledged by students and teachers at SMP Negeri 21 Central Bengkulu. Some of the obstacles faced include low interest in reading story questions, difficulties in understanding questions, and the habit of answering carelessly. As a result, the goal of learning through story questions is not achieved optimally. As a practical solution, math teachers often choose to provide minimal story problem exercises, given the challenges that exist in teaching contextual material. This condition is in accordance with the findings of research conducted by Nurjannah et al. (2018) which show that students' low tendency to solve contextually oriented problems is one of the main causes of students' low mathematical literacy. In addition, according to Hidayati et al. (2024), lack of motivation and monotonous learning models are also the causes of students' low mathematical literacy. Therefore, it is necessary to increase students' understanding and interest in solving contextual story problems so that they can more effectively achieve the goal of improving their basic math knowledge.

Based on the results of the research, students experienced difficulties in understanding and interpreting the information contained in the mathematical literacy questions. This is evident from the incompleteness of the calculation writing on their answer sheets, which indicates difficulties in organizing and communicating the steps to solve the problem in a systematic manner. This result is in line with research conducted by Ayuningtyas & Sukriyah (2020) which shows that students have great difficulty in interpreting numeracy problems. Some of the factors that contribute to this problem include lack of precision, difficulty in identifying relevant information, and inability to relate the information to the mathematical concepts that have been learned. All of these factors interact with each other and cause students to have difficulty solving mathematical literacy problems correctly. Therefore, it is important to develop a learning strategy that helps

students improve their skills in interpreting problems, selecting relevant information, and relating them to appropriate mathematical concepts.

The study also found that some students had difficulty solving problems because they were not proficient enough to understand basic arithmetic operations, especially multiplication and division. Interviews with students involved in the study showed that they faced significant challenges when it came to performing such computational operations. These results are in line with research Junaedi et al. (2024) that shows that there are several factors that cause low levels of mathematics literacy in students. In particular, it includes a lack of understanding of basic mathematical concepts and a limited ability to perform arithmetic operations. The lack of learning, especially in the field of multiplication and division, and the lack of students' habits in solving numerical problems is a concerning problem. These findings show the need for improvement in the approach to mathematics learning with an emphasis on contextual problems and the practice of applied numeracy skills.

### **Conclusions and Suggestions**

The analysis of research data on the mathematical literacy ability of grade VII students of SMP Negeri 21 Central Bengkulu in the context of the implementation of the independent curriculum shows that students' mathematical literacy skills are still relatively low. This can also be seen from the results of the mathematics test, where out of 25 students tested, only 8 students (32%) reached the able category at level 1c, 2 students (8%) at level 1b, and 1 student (4%) at level 1a. Meanwhile, at levels 2 and 3, no students met the category of able. Some of the factors that can contribute to the low level of mathematical literacy of students include students' inability to solve contextual problems, difficulties in understanding the information in the problem, and limitations in performing calculation operations, especially multiplication and division.

Data triangulation conducted through interviews and classroom observations supported these findings. Interviews with students show that they have difficulty understanding the intent of the story and do not have a clear solution strategy. Meanwhile, the results of observations show that in the learning process, students are rarely given contextual practice questions, and learning is still dominated by conventional approaches. Some of the factors that contribute to this low mathematical literacy include students' unfamiliarity in solving contextual problems, difficulty understanding the information in the problem, and limitations in operating basic calculation operations such as multiplication and division. This research is expected to contribute to a deeper understanding of students' mathematical literacy. Given the limitations of the scope of this study, it is suggested that further research can explore various other aspects of mathematical literacy more broadly, including factors that influence mastery of mathematical concepts as well as more effective approaches to improving students' mathematical literacy.

### **Reference**

- Agustina, D. A., & Hidayati, K. (2024). Analisis Kemampuan Literasi Matematika Dalam Memecahkan Masalah Soal Operasi Hitung Pecahan. *Indonesian Mathematics Education Journal*, 01(02), 191–202. <https://doi.org/https://doi.org/10.21154/imej.v1i2.23>

- Asmara, A. (2023). Literasi Matematis Budaya LOKal Model BESUREK. In *PT Amazing Life Publikasi*. PT Amazing Life Publikasi.
- Asmara, A., & Sari, D. J. (2021). Pengembangan Soal Aritmetika Sosial Berbasis Literasi Matematis Siswa SMP. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, 5(3), 2950–2961. <https://doi.org/10.31004/cendekia.v5i3.982>
- Ayuningtyas, N., & Sukriyah, D. (2020). Analisis Pengetahuan Numerasi Mahasiswa Matematika Calon Guru. *Delta-Pi: Jurnal Matematika Dan Pendidikan Matematika*, 9(2), 237–247. <https://doi.org/10.33387/dpi.v9i2.2299>
- Elisya, N., Dahlan, J. A., & Yulianti, K. (2025). Epistemological Obstacles of Secondary School Students in Solving PISA-Standard Mathematical Literacy Problems Related to Functions. *Jurnal Pendidikan MIPA*, 24(4), 1771–1786. <https://doi.org/http://dx.doi.org/10.23960/jpmipa/v25i4.pp1771-1786>
- Fadillah, F., & Munandar, R. D. (2021). Analisis Kemampuan Literasi Matematis Siswa pada Soal PISA di SMPN 2 Karawang Barat. *Wahana Matematika Dan Sains: Jurnal Matematika, Sains, Dan Pembelajarannya*, 15(3), 15–25. <https://doi.org/https://doi.org/10.23887/wms.v15i3.32118>
- Hidayati, A., Sholeh, M., Fitriani, D., Isratulhasanah, P., Marwiyah, S., Rizkia, N. P., Fitria, D., & Sembiring, A. (2024). Analisis Faktor Penyebab Rendahnya Kemampuan Literasi Siswa Sekolah Dasar. *Jurnal Inovasi, Evaluasi Dan Pengembangan Pembelajaran (JIEPP)*, 4(1), 75–80. <https://doi.org/10.54371/jiepp.v4i1.381>
- Indrawati, Fiqi Annisa, & Wardono. (2019). Pengaruh self efficacy Terhadap kemampuan literasi matematika dan pembentukan kemampuan 4C. *Prisma, Prosiding Seminar Nasional Matematika*, 2, 247–267.
- Jumarniati, J., Baharuddin, M. R., & Firman, S. (2021). Deskripsi Kemampuan Literasi Matematis Pada Materi Aritmatika Sosial Berdasarkan Gender. *EQUALS: Jurnal Ilmiah Pendidikan Matematika*, 4(2), 123–132. <https://doi.org/10.46918/equals.v4i2.1094>
- Junaedi, Y., Yulianto, D., & Hayunah. (2024). Analisis Kemampuan Numerasi Siswa SMP dalam Menyelesaikan Soal AKM Program Kampus Mengajar Angkatan 6. *Prosiding Seminar Nasional Pendidikan FKIP Universitas Lampung*, 602–610.
- Khoirunnisa, S., & Adirakasiwi, A. G. (2023). Analisis Kemampuan Literasi Numerasi Siswa Smp Pada Era Merdeka Belajar. *Jurnal Pembelajaran Matematika Inovatif*, 6(3), 925–936. <https://doi.org/10.22460/jpmi.v6i3.17393>
- Lee, S. W. Y., Tu, H. Y., Chen, G. L., & Lin, H. M. (2023). Exploring the multifaceted roles of mathematics learning in predicting students' computational thinking competency. *International Journal of STEM Education*, 10(1). <https://doi.org/10.1186/s40594-023-00455-2>
- Masjudin, Suharta, G. P., Lasmawan, W., & Fatwini. (2024). Strengthening 21st Century Skillsthrough An Independent Curriculum In Mathematics Education In Indonesia: Challenges, Potential, And Strategies. *International Journal of Applied Science and Sustainable Development*, 6(4), 92–113. <https://doi.org/https://doi.org/10.36733/ijassd.v6i2.9087>
- N. Hidayat, F.S. Siskawati, & T.N. Irawati. (2023). Analisis Kemampuan Literasi Matematika Siswa Dalam Menyelesaikan Soal Aritmatika Sosial Ditinjau Dari Jenis Kelamin. *Jurnal Pendidikan Dan Pembelajaran Matematika Indonesia*, 12(2), 84–91. <https://doi.org/10.23887/jppmi.v12i2.2675>

- Nadia, R. (2023). Teacher Professional Development In The Context Of Independent Learning. *Nusantara Education*, 2(2), 72–81. <https://juna.nusantarajournal.com/index.php/nula/article/view/73>
- Nafi'ah, J., Faruq, D. J., & Mutmainah, S. (2023). Karakteristik Pembelajaran Pada Kurikulum Merdeka Belajar di Madrasah Ibtidaiyah. *Jurnal Auladuna*, 3(1), 1–12. <https://doi.org/https://doi.org/10.62097/ad.v5i1.1248>
- Nuurjannah, P. E. I., Amaliyah, W., & Fitrianna, A. Y. (2018). Analisis Kemampuan Literasi Matematis Siswa SMP di Kabupaten Bandung Barat. *Jurnal Math Educator Nusantara: Wahana Publikasi Karya Tulis Ilmiah Di Bidang Pendidikan Matematika*, 4(1), 15. <https://doi.org/10.29407/jmen.v4i01.12016>
- OECD. (2022). PISA 2022 Assessment and Analytical Framework. *Publishing, Paris*. <https://doi.org/doi.org/10.1787/dfe0bf9c-en>
- OECD. (2023). Assessment and Analytical Framework: Mathematics, Reading, Science and Creative Thinking. *OECD Publishing*. <https://doi.org/https://doi.org/10.1787/8d6b2f95-en>
- Paramitha, N. (2018). Analisis Proses Berpikir Kreatif dalam Memecahkan Masalah Matematika Materi Aritmatika Sosial Siswa SMP Berkemampuan Tinggi. *Jurnal Mitra Pendidikan*, 1(10).
- Rachman, A. B. R., & Nuriadin, I. (2022). Peningkatan Kemampuan Numerasi Peserta Didik dengan Model Problem Based Learning dan Pendekatan TPACK. *Kognitif: Jurnal Riset HOTS Pendidikan Matematika*, 2(2), 81–93. <https://doi.org/10.51574/kognitif.v2i2.522>
- Ramadani, V. (2023). Analisis Kemampuan Literasi Matematis Siswa dalam Menyelesaikan Soal Cerita Pisa Kelas VIII SMP N 30 Muaro Jambi. *Doctoral Dissertation*. Universitas Jambi.
- Safitri, R. A., Andari, T., & Apriandi, D. (2022). Prosiding Konferensi Ilmiah Dasar Analisis Kemampuan Literasi Matematis Siswa dalam Menyelesaikan Masalah Aritmatika Sosial Ditinjau dari Self Confidence. *Prosiding Konferensi Ilmiah Dasar*, 3, 1611–1618. <http://prosiding.unipma.ac.id/index.php/KID>
- Tulak, A. M., Gasong, D., & Baan, A. (2024). Efektivitas Kompetensi Guru Bahasa Indonesia dalam Pembelajaran Berdiferensiasi Berbasis Kurikulum Merdeka di SMP Negeri 1 Sopai. *Indonesian Research Journal on Education*, 4(3), 832–839. <https://doi.org/https://doi.org/10.31004/irje.v4i3.901>
- Zafirah, A., Gistituati, N., Bentri, A., Fauzan, A., & Yerizon, Y. (2024). Studi Perbandingan Implementasi Kurikulum Merdeka dan Kurikulum 2013 Pada Mata Pelajaran Matematika: Literature Review. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 8(1), 276–304. <https://doi.org/10.31004/cendekia.v8i1.2210>