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CAPACITY FOR MATHEMATICAL LITERACY REVIEWING THE LEARNING STYLE

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ABSTRACT

Kemampuan literasi matematis sangat penting dimiliki oleh setiap siswa, karena literasi matematis dapat membantu seseorang untuk memahami peran atau kegunaan matematika dalam kehidupan sehari-hari. Kemampuan literasi matematis siswa di Indonesia masih tergolong sangat rendah, maka perlu peningkatan dalam proses pembelajarannya. Untuk mencapai kemampuan literasi matematis dalam pembelajaran matematika siswa perlu mengetahui gaya belajar yang dimilikinya, supaya dapat memudahkan dalam proses pembelajarannya. Penelitian ini bertujuan untuk mengetahui bagaimana kemampuan literasi matematis ditinjau dari gaya belajar. Metode penelitian ini merupakan penelitian kualitatif. Subjek penelitian yang dipilih dalam penelitian ini yaitu menggunakan teknik *purposive sampling* berdasarkan hasil gaya belajarnya yakni gaya belajar visual, auditori, dan kinestetik, dan dipilih 2 siswa SMP setiap gaya belajar. Sehingga total subjek penelitian sebanyak 6 siswa. Teknik pengumpulan data dalam penelitian ini yakni angket gaya belajar, tes kemampuan literasi matematis, wawancara, dan dokumentasi. Analisis seluruh data dilakukan dengan tahap reduksi data, penyajian data, dan tahap penarikan kesimpulan. Adapun hasil penelitian menunjukkan bahwa siswa yang memiliki gaya belajar auditori memiliki kemampuan literasi matematis yang tinggi dibandingkan dengan siswa yang memiliki gaya belajar visual dan kinestetik. Sedangkan siswa yang memiliki gaya belajar visual dan kinestetik rata-rata memiliki kemampuan literasi matematis yang sama.

The ability to read and write mathematically is crucial for all students because it allows one to comprehend the importance of mathematics in daily life. Since Indonesian students still have very poor levels of mathematics literacy, the educational process needs to be improved. In order to facilitate the learning process and attain mathematical literacy, students must be aware of their preferred learning style. The purpose of this study is to ascertain the relationship between learning methods and mathematical literacy competence. Qualitative research is the approach used in this study. Purposive sampling was utilized to choose the research subjects for this study, and two junior high school students were chosen for each of the three learning styles—visual, auditory, and kinesthetic—based on the findings of their assessments.

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1. INTRODUCTION

Since humans are essentially knowledge-based beings, they require knowledge in order to function in accordance with their nature. Understanding mathematics is crucial for daily living. In 2000, the National Council of Teacher of Mathematics (NCTM) identified five mathematical learning abilities that students need to master: mathematical problem solving, mathematical reasoning, mathematical representation, mathematical connections, and mathematical communication (Abidin, et al., 2017; Ahdhianto, & Santi, 2020; Iqrima, Zulkarnain, & Kamaliyah., 2023). In order to solve challenges in daily life, pupils need to possess and master these five abilities. These five mathematical skills can also help people reach their full potential and succeed in the global marketplace. In this instance, it may be claimed that mathematics and humans are extremely close because mathematics permeates every aspect of human existence. Mathematical literacy is the use of mathematics in all facets of life (Hamidah, 2018; Novita & Herman, 2021; Sari et al., 2023).

Stacey (2010), also Maslihah, Waluya, and Suyitno (2020), defines mathematical literacy as a student's capacity to recognize and comprehend the use of mathematics in everyday situations. Ojose (2011), also Hwang and Ham (2021), have also stated that mathematical literacy is the ability to understand and use mathematics in daily life. Sugiman (2009) further highlighted the connection between mathematical literacy and students' capacity to apply mathematics to real-world issues, making mathematical literacy appropriate for use in classroom instruction. Accordingly, mathematical literacy can assist people in realizing the application of mathematics in the real world, where it serves as a foundation for deliberation and decision-making on societal needs (Novalia & Rochmad, 2017; Rahmawati, Cholily, & Zukhrufurrohmah, 2023).

Because mathematics is so directly tied to daily life, mathematical literacy skills are extremely crucial. Human resources can be enhanced by mathematical literacy (Masjaya & Wardono, 2018; Puspita, Herman, & Dahlan, 2023). Understanding the function and value of mathematics in daily life can be facilitated by mathematical literacy (Oktaviana, Effendi, & Rosyadi, 2023). This is how different real-world scenarios and the mathematics taught in the classroom are connected. Social arithmetic is one area of mathematics that is taught in the classroom using a variety of real-world scenarios.

One of the most crucial subjects for students to study is social arithmetic since it deals with selling prices, buying prices, profits, losses, interest, discounts, taxes, gross, tare, and net. Understanding these concepts will help students solve problems in the future. Research is crucial as, despite the material's importance, students often struggle to find solutions to these issues (Dila & Zanthy, 2020; Warsito et al., 2023).

According to the findings of Masfufah and Afriansyah's research from 2021, students' proficiency in mathematics is still lacking, as seen by their effort in solving the provided problems—in this case, a variety of PISA questions (Septia & Wahyu, 2023; Tito, Muhtadi, & Sukirwan, 2024). As a result, in order for pupils to be able to think broadly, they must become used to receiving PISA-style questions in practice. The same goes for Wati, Sugiyanti, and Muhtarom's (2019) research, which found that students with high category mathematical literacy skills can perform the stages of the mathematical literacy process,

albeit not as well. These stages include recognizing known variables and the mathematical aspects of a real-life problem context, figuring out mathematical models, designing and putting into practice strategies to find solutions, reflecting, describing, and determining mathematical results, interpreting mathematical results, and evaluating mathematical solutions into real-life contexts (Jayanti & Cesaria, 2024).

Numerous factors may contribute to variations in students' mathematical literacy. Mahdiansyah and Rahmawati (2014) identified several factors that impact mathematical literacy accomplishment in Indonesia, including instructional, personal, and environmental factors. Learning styles are personal considerations. Deporter and Hernacki (2016) assert that there are numerous varieties of learning styles, including V-A-K (audio, visual, and kinesthetic) learning styles. Visual children pick up knowledge from what they observe. Children who are auditory learn by hearing, while children who are kinesthetic learn through movement and touch (Hamidah, 2018).

Because students have such a wide variety of learning styles, it is crucial for teachers to assess their pupils' learning styles. so that educators can more easily provide more purposeful instruction based on the learning preferences of their pupils. The researcher will analyze mathematical literacy skills in terms of learning styles based on the prior discussion.

2. METHOD

There is a qualitative approach to the process. According to Moleong (in Levitt, 2021), qualitative research aims to comprehend the phenomena that the research subject experiences, such as behavior, perception, motivation, actions, and others, holistically and through verbal and linguistic description in a particular natural context by applying a variety of scientific methods.

2.1. Research Subject

This subject is a student at SMPN 3 Tarogong Kidul in class VII. There are 28 students in the sample, and six of them will be chosen depending on their preferred method of learning: two are visual learners, two are auditory learners, and two are kinesthetic learners.

2.2. Data Collection

To gather research data, a number of methods were used, including learning questionnaires, interviews, documentation, and tests of mathematical literacy. A closed questionnaire type is used in this questionnaire procedure. A closed questionnaire is one in which the answers have already been provided, allowing the respondents to select their own responses. Prior to taking an exam, students are given a questionnaire about their learning preferences. Additionally, students who demonstrate a preference for a certain learning style and who score at or near the top of each learning style's maximum are chosen.

Essay-style and descriptive question types are the instrument used in this testing approach. An exam that asks for written comments or responses based on knowledge is known as a descriptive test. Students chosen to be research subjects will receive an exam consisting of six descriptive questions. The purpose of this tool is to assess students' mathematical literacy in social arithmetic content.

Interviews were done with each student to get detailed information. Researchers can learn how pupils approach arithmetic issues by conducting interviews. Students'

information is gathered using this technique in order to support the findings of the test of mathematical literacy. A day following the administration of the mathematical literacy aptitude test, the interview took place.

Data collection and assessment are accomplished through documentation. In order to facilitate the provision of documentation that can bolster and validate the data gathered, researchers in this study are utilizing electronic media as instruments, such as digital cameras and mobile phones. This record consists of student work results, images from the activities, and the math report card scores from the second semester of the students.

2.3. Data Analysis

Triangulation or combination will be used for data collecting, and qualitative analysis will be used for data analysis. completing the questionnaire about learning styles. The data analysis method employed in this study is based on the Miles and Huberman model in (Astutik, 2018), which says that analysis and qualitative work are done in an interactive manner and are done constantly until the data is saturated. Data reduction, data visualization, and conclusion drawing/verification are these tasks.

The PISA mathematical literacy ability indicator will be used to score six essay questions on the mathematical literacy ability test that will be administered. documentation and interviews to strengthen the reliability of the information gathered. The PISA mathematical literacy skill level indicators are the ones that are employed in this study as indicators. PISA divides mathematical literacy skills into six levels. According to Kafifah, Sugiarti, and Oktavianingtyas (2018), level one is the lowest level and level six is the highest. Table 1 below displays the PISA metrics for mathematical literacy.

Table 1. Aspects of Ability in Mathematical Literacy

Level	Aspects of Ability in Mathematical Literacy
1	Pupils can respond to inquiries with a broad understanding of the situation, and all pertinent data is readily accessible. able to recognize information and comply with any instructions given in the context of the current scenario. able to perform a task in accordance with the provided simulation.
2	Pupils possess the ability to analyze and identify circumstances that call for clear conclusions. capable of selecting pertinent data from a single source and presenting it using just one technique. capable of working with simple algorithms, applying formulas, protocols, or agreements to solve issues. able to accurately infer inferences from the solution's outcomes.
3	Pupils can perform operations with clarity, including those that need for making decisions in order. able to choose and implement basic problem-solving techniques. able to use and interpret representations according to many sources of information. able to provide an explanation based on their interpretation's findings and justifications.
4	Pupils can navigate through complicated but real-world scenarios with specific techniques, even when there are hurdles or presumptions. capable of choosing and utilizing a variety of representations, including symbols. capable of using their expertise in a setting that is obvious. able to defend their positions with arguments and reasoning based on their comprehension.
5	Pupils can create and manipulate models for intricate scenarios, recognize issues, and formulate hypotheses. able to choose, assess, and compare approaches for resolving challenging model-related issues. capable of applying logic and reasoning to properly relate symbol representations to the current circumstance. capable of formulating and describing the outcomes of their job.
6	Pupils possess the ability to analyze, extrapolate, and apply knowledge through analysis and modeling in intricate circumstances. able to adaptably connect and translate information from many sources. Capable of putting their comprehension to use through mastery of mathematical operations and symbols, as well as developing fresh methods and tactics for handling novel circumstances. capable of properly expressing the outcomes of their work by

taking into account their conclusions, interpretations, opinions, and correctness in practical contexts.

Every youngster with a varied upbringing has a unique way of learning. They gather and analyze information in a unique way. It is known as the "learning style." Three student learning styles—Visual, Auditory, and Kinesthetic, or VAK for short—are recognized (Amaliyah, 2019; Zuana et al., 2023). Information is acquired by those with a visual learning style through their sense of sight. Individuals that learn best visually prefer to follow directions, read books, look at pictures, go over events in-person, and so forth. The ear senses are used by those with auditory learning styles to gather information. Those who learn best by hearing can learn through debate, talks, radio shows, lectures, and other audio sources. Those who prioritize their sense of touch and bodily motions when learning are said to have kinesthetic learning styles. Lessons that involve movement, feeling, or action are easily understood by those with a kinesthetic learning style.

3. RESULT AND DISCUSSION

3.1. Result

The research participants completed a learning style questionnaire that was tailored to the markers of visual, auditory, and kinesthetic learning styles in order to identify their preferred learning style. Each subject received twelve statements, the number of which was determined by calculating the maximum number of "yes" responses to each learning style. This allowed researchers to total the number of "yes" responses per learning group style and calculate the maximum number of responses. The outcomes of ascertaining the six research subjects' learning styles (refer to Table 2) are as follows.

Table 2. Findings of the Learning Style Determination

No.	Coding	Learning Style
1	S-V1	Visual
2	S-V2	Visual
3	S-A1	Auditory
4	S-A2	Auditory
5	S-K1	Kinesthetic
6	S-K2	Kinesthetic

According to the study's findings, students with an auditory learning style are more mathematically literate than those with a visual or kinesthetic learning style. Take note of the findings from the examination of the students' interviews and tests of mathematical literacy provided below.

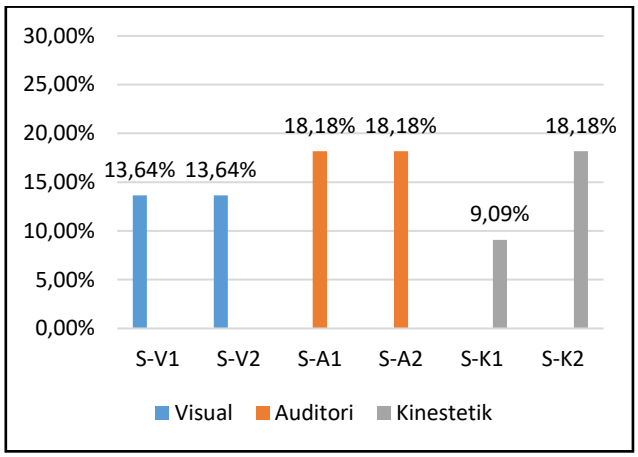

Figure 1. Results of the Mathematical Literacy Ability Test

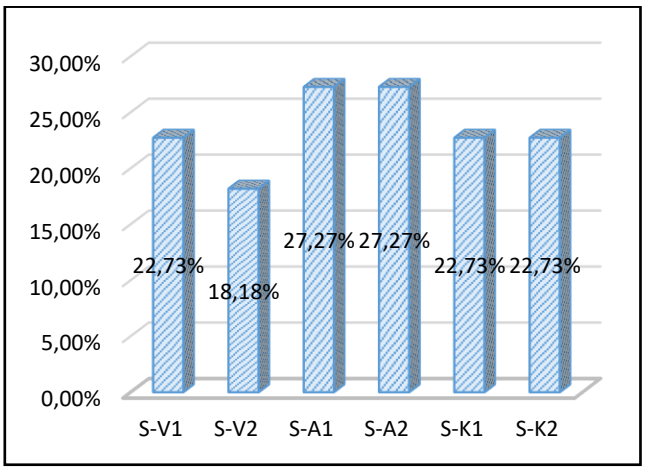

Figure 2. Findings from the Analysis of the Mathematical Literacy Ability Interview

Based on the results of the mathematical literacy ability exam, which are 13.64%, mathematical literacy ability with visual learning method has the same mathematical literacy ability (see Figure 1). Nevertheless, as can be observed from Figure 2's results of the mathematical literacy ability interview analysis, S-V1 and S-V2 differ from one another by 22.73% and 18.18%, respectively. The results of the examination of the mathematical literacy ability test, which is a sub-indicator, impact this disparity. Three sub-indicators—sub-indicator 1.1, sub-indicator 2.1, and sub-indicator 3.1—were accomplished by S-V1. Three sub-indicators—sub-indicator 1.1, sub-indicator 2.1, and sub-indicator 2.4—were accomplished by S-V2. According to the results of the analysis of the mathematical literacy ability interview, S-V1 was able to meet five sub-indicators: sub-indicators 1.1, 2.1, 2.4, and 3.1. Four sub-indicators can be met by S-V2: sub-indicator 1.1, sub-indicator 2.1, sub-indicator 2.2, and sub-indicator 2.4.

The level 2 indicator of S-V1's mathematical literacy skills was able to meet the level 2 sub-indicators, namely sub-indicators 2.2 and 2.4, after being interviewed on question number 2. Previously, in the results of the mathematical literacy ability test analysis, S-V1 was unable to meet sub-indicators 2.2 and 2.4; however, it turned out that S-V1 and S-V2 were able to meet these sub-indicators after being interviewed. This increase in mathematical literacy skills was reported in the interview analysis results. The following findings from the examination of the S-V1 mathematics literacy ability test should be noted.

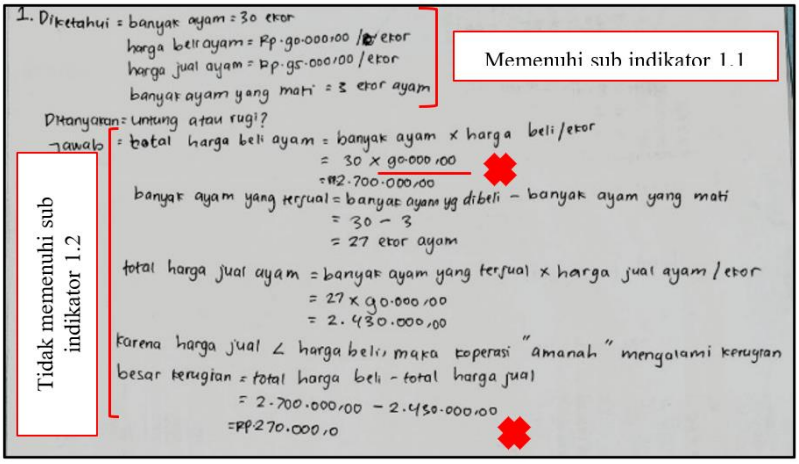

Figure 3. First Answer to the S-V1 Test

According to Figure 3, S-V1 satisfies sub-indicator 1.1 mathematical literacy ability in answering the test questions since it can recognize the provided information and questions with clarity. S-V1, however, does not meet sub-indicator 1.2 mathematical literacy ability since it is unable to respond to the provided stimulus and do routine tasks to answer questions with a general context. Based on the S-V1 report card data, the mathematics score is 82 with a KKM of 65, indicating that S-V1 have strong mathematical abilities. Nevertheless, there is a mistake in the computation used to determine the chicken's overall selling price. like in the dialogue from the interview below.

Dialog 1

P	:	"Is the first question simple to understand or not?"
S-V1	:	"Comprehensible."
P	:	"In the context of the inquiry, what information can you understand?" "Determining profit or loss in business activity" is covered in S-V1. "How do you solve the question using the formula?" "I utilize the profit or loss formula, Sis," says S-V1. "How do you approach answering the question?"
S-V1	:	"My approach to answering the question is to calculate the total cost of the chicken purchase first, then determine how many chickens were sold, calculate the total cost of the chicken sale, and finally compare the total cost of the chicken purchase and the total cost of the chicken sale. There is a loss since the overall selling price was less than the entire cost of purchasing the chicken; the next step is to determine how much of a loss there is.
P	:	"You calculated the chicken's total selling price incorrectly on the response sheet. It is known that although you submitted Rp90,000.00 as the selling price of the chicken in the question solution, you had written Rp95,000.00 per head for the bird.
S-V1	:	"Sis, I did not do it with adequate caution."
P	:	"You failed to write the answer's conclusion at the end of the response. Why is it the case?
S-V1	:	"Sis, I forgot."
P	:	"So, did the question present any challenges for you?"
S-V1	:	"No, Miss."

Based on the results of the interview, S-V1 met the requirements for sub-indicator 1.1 but not for sub-indicator 1.2.

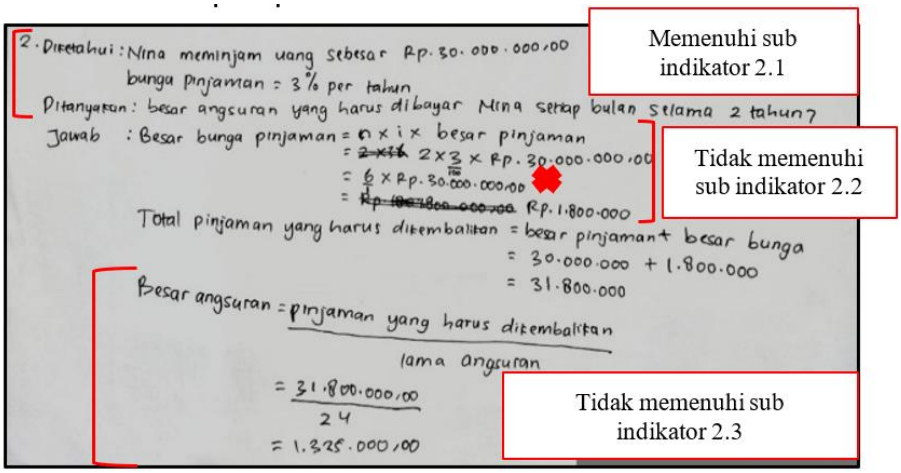

Figure 4. Second Answer to the S-V1 Test

In completing the exam questions, S-V1 satisfies sub-indicator 2.1 based on Figure 4 as he can locate pertinent information from a single source. Due to his inability to employ fundamental algorithms and perform fundamental operations or provisions, S-V1 does not satisfy sub-indicator 2.2. Due to his inability to comprehend the event in a context that necessitates drawing straightforward conclusions, S-V1 does not satisfy sub-indicator 2.3. Sub-indicator 2.4 is not met by S-V1 since he is unable to understand the results. Based on the documentation of the report card findings, S-V1 received an 82 in mathematics and a 65 KKM, indicating proficient mathematical skills. But S-V1 was unable to answer Question #2. Due to carelessness, S-V1 failed to record the end of his response, as shown in the transcript of the interview below.

Dialog 2

P	:	"Is question #2 simple to comprehend or complex?"
S-V1	:	"Comprehensible."
P	:	"In the context of the inquiry, what information can you understand?"
S-V1	:	"About the monthly installment payments for a two-year loan of Rp30,000,000.00 with 3% interest."
P	:	"What is the question's problem?"
S-V1	:	"Calculating the monthly installment amount."
P	:	"How do you approach solving the problem?"
S-V1	:	"Read, comprehend the question, then figure out the answer."
P		"How do you approach answering the question?"
S-V1	:	"My approach to answering this question is to calculate the interest rate on the loan first, then the total amount that needs to be repaid, and last, the payment amount."
P	:	"You did not write the answer's conclusion at the end of the response. Why is it the case?
S-V1	:	"Sis, I forgot."
P	:	"So, was it difficult for you to work on the problem?"
S-V1	:	"No, Miss."

According to the results of the interview, S-V1 was able to achieve sub-indicator 2.2. However, because of his inaccuracy, he made a mistake in writing the calculation, even though the results were correct. He was also able to achieve sub-indicator 2.4, but because he was careless, he neglected to record the conclusion of the answers he received.

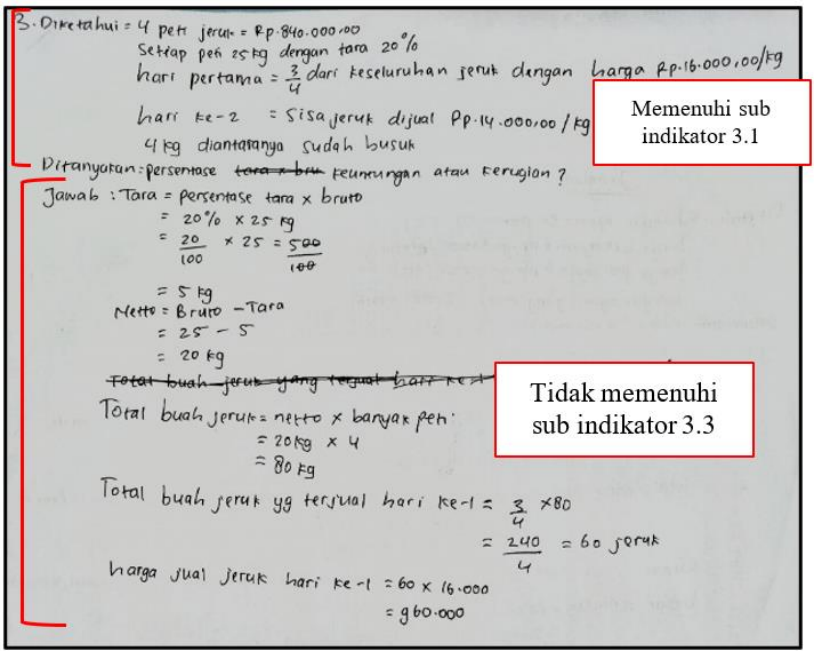

Figure 5. Test Answer Number 3 for S-V1

Because S-V1 can employ representations depending on information sources, it satisfies sub-indicator 3.1 when working on the test questions, as shown in Figure 5. S-V1 does not meet sub-indicator 3.2 because it is unable to use basic problem-solving techniques. S-V1 does not meet sub-indicator 3.3 because it is unable to perform actions that call for sequential decision-making. S-V1 fails to meet sub-indicator 3.4 since it is unable to convey the conclusions and logic. Based on the S-V1 report card data, the mathematics score is 82 with a KKM of 65, indicating that S-V1 have strong mathematical abilities. But it is unable to respond to inquiry number 2. as in the following clip of the interview.

Dialog 3

P	:	"Is it easy to understand question number three?"
S-V1	:	"Comprehensible."
P	:	"In the context of the inquiry, what information can you understand?"
S-V1	:	The difference in the price per kilogram of oranges between the first and second days is due to some of the oranges being rotten, which means the trader will lose money.
P	:	What issue does the question raise?
S-V1	:	"Calculating the profit or loss percentage."
P	:	"How do you approach solving the problem?"
S-V1	:	"Read, comprehend the question, then figure out the answer."
P	:	You have not finished the answer on the answer sheet. Why not?
S-V1	:	"Due to insufficient time."
P	:	"How do you approach answering the question?"

S-V1 : "The method I used to solve the problem was to calculate the Tara and Netto in the beginning, then the total number of oranges, the number of oranges sold on the first day, the selling price of the oranges, the number of oranges left after deducting the rotten oranges and their tare, and finally, the profit and loss.
P : "So, was it difficult for you to work on the problem?"
S-V1 : "No, Miss."

Only sub-indicator 3.1 was attained by S-V1 based on the received interview. S-V1 struggled to answer questions 4 through 5, hence he was unable to complete them.

The researcher's investigation yielded results that showed that the mathematical literacy capacity of this auditory learning style is 18.18%, which is the same as that of S-A1 and S-A2. Based on the results of the analysis of the mathematical literacy ability test, S-A1 and S-A2 are both able to achieve the same sub-indicators, indicating that they have the same literacy ability. This is because S-A-1 and S-A2 are careful when writing formulas, but both make small calculation errors. Notwithstanding, S-A1 and S-A2's interview results regarding their respective levels of mathematical literacy (27.27%) show no differences in this regard. S-A1 and S-A2 were able to meet the identical sub-indicators in the interview results.

The following findings from the examination of the S-A1 mathematics literacy ability test should be noted.

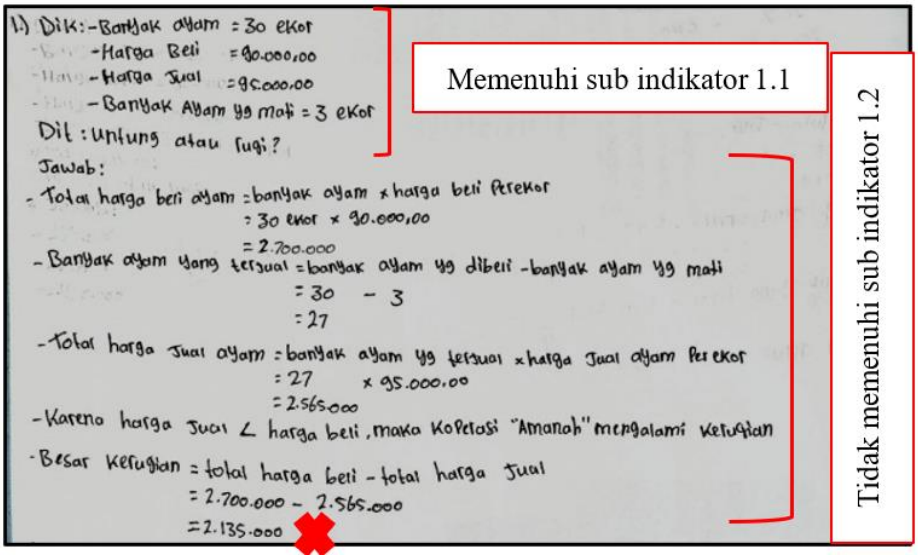

Figure 6. Number One S-A1 Test Answer

Working through the test questions, S-A1 satisfies sub-indicator 1.1 based on Figure 6 since it can clearly identify the provided information and questions. Due to its inability to perform standard methods for providing answers to questions with a broad context and its ability to respond to supplied stimuli, S-A1 does not meet sub-indicator 1.2. According to the S-A1 Report Card value documentation, the mathematics score is 83 with a KKM of 65, indicating that S-A1 has strong mathematical abilities. Nevertheless, there was a reduction error in the final computation. like in the passage of talk that follows.

Dialog 4

P	:	"Is the first question easy to grasp or not?"
S-A1	:	"Comprehensible."
P	:	"What information, in the context of the query, can you understand?"
S-A1	:	"I understand how the Amanah cattle cooperative calculates profit and loss."
P	:	"What is the question's problem?"
S-A1	:	"Is there a profit or loss for the Amanah cooperative? What is the profit and loss amount?
P	:	"How do you tackle the problem?"
S-A1	:	"I started by figuring out how much the chicken cost overall, then I counted how many chickens I sold to see if I made money or not. The formula was used to calculate the loss because there was a loss.
P	:	"You made a mistake in the end while calculating the amount of loss."
S-A1	:	"Yes, ma'am. When deducting the total of the buy and sale prices, I did not proceed with caution.
P	:	"Did you find it difficult to answer the question?"
S-A1	:	"No problem, Sis."

It is evident from S-A1's responses that while she is able to meet sub-indicator 1.2, she is not comprehensive. As a result, the computation contains a mistake and produces an inaccurate result.

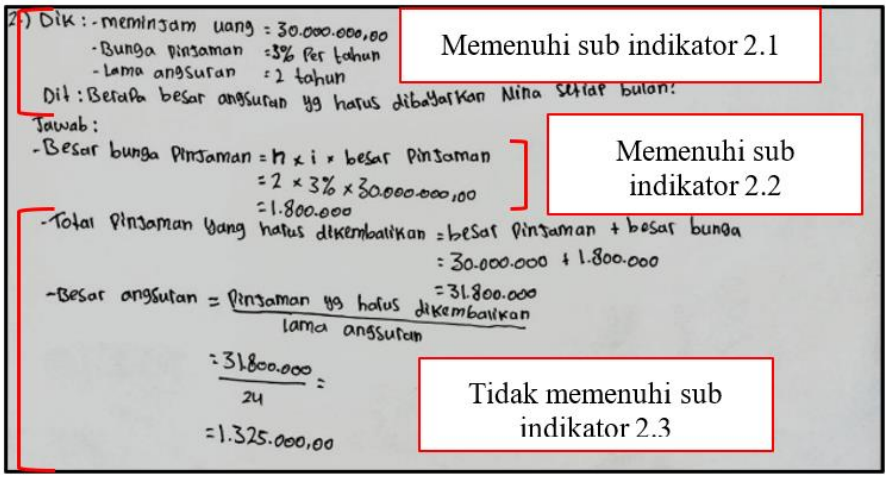

Figure 7. Second Answer to the S-A1 Test

S-A1 satisfies sub-indicator 2.1 in answering the exam questions based on Figure 7 because he can locate pertinent information from a single source. Due to his ability to employ fundamental algorithms and perform fundamental operations or provisions, S-A1 satisfies sub-indicator 2.2. Because he is unable to comprehend the issue in a context that necessitates drawing clear conclusions, S-A1 does not satisfy sub-indicator 2.3. Sub-indicator 2.4 is not met by S-A1 since he fails to interpret the findings. Based on the documentation of report card values, S-A1 received an 83 in mathematics and a 65 KKM, indicating proficient mathematical skills. S-A1 neglected to include a summary of the outcomes in the final response.

Dialog 5

P	:	"Is question #2 simple to comprehend or complex?"
S-A1	:	"Comprehensible."
P	:	"In the context of the inquiry, what information can you understand?"
S-A1	:	"I had to figure out how much of a monthly installment the trader needed to pay after receiving information on a trader who took out a bank loan."
P	:	"Tell me how you answered the question."
S-A1	:	"I computed the payment amount after first determining the interest rate on the loan and the overall amount that needed to be repaid."
P	:	"Why did not you write the conclusion at the end of the solution?"
S-A1	:	"Sis, I forgot."
P	:	"So, did you find it challenging to work on question number two?"
S-A1	:	"No problem, Sis."

According to the interview results, S-A1 was only unable to comprehend the scenario in a context that called for direct conclusions. However, he was able to analyze the results, but he was not comprehensive in doing so, which is why he neglected to record it on the answer sheet.

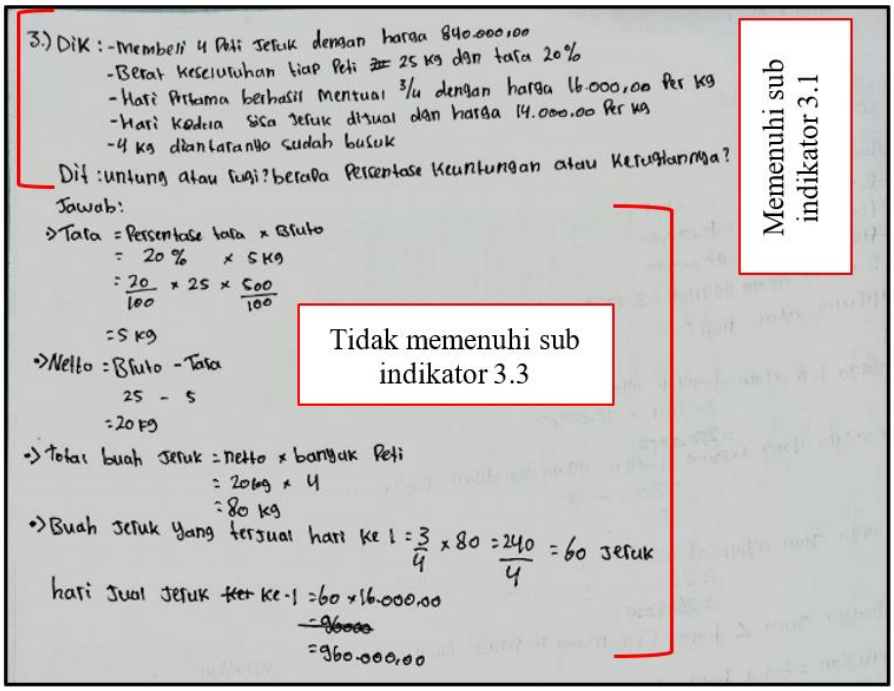

Figure 8. Test Answer Number 3 for S-A1

According to Figure 8, S-A1 satisfies sub-indicator 3.1 when completing the exam questions since he is able to employ representations derived from information sources. S-A1 does not meet sub-indicator 3.2 because he is unable to employ basic problem-solving techniques. S-A1 does not meet sub-indicator 3.3 because he is unable to do actions that call for sequential decisions. S-A1 fails to meet sub-indicator 3.4 since he is unable to explain the findings and justification. Based on the documentation of report card values, S-A1 received an 83 in mathematics and a 65 KKM, indicating proficient mathematical skills. Because of time constraints, S-A1 was not able to finish it entirely. like in the interview that follows.

Dialog 6

P	:	"Is it easy to understand question number three?"
S-A1	:	"Comprehensible."
P	:	"Why did you not complete the response?"
S-A1	:	"Because there was insufficient time to complete the response to question number three."
P	:	"You only completed computing the orange sales results on day 1 of your answer sheet. What do you think should be the next step?"
S-A1	:	"The selling price of oranges on day two must be determined next, and the proportion of profit or loss must then be determined."
P	:	"In the context of the inquiry, what information do you understand?"
S-A1	:	"I can understand Tara, Net, and Gross."
P	:	"What is the question's problem?"
S-A1	:	"Calculating profit or loss and calculating the profit or loss percentage."
P	:	"Were you able to complete the question with any difficulty?"
S-A1	:	"No, I did not encounter any problems."

It was determined from the interview findings that S-A1 worked on it without any problems. The results of the test of mathematical literacy, however, indicated that S-A1 was not able to finish the questions. Due to difficulties answering the questions, S-A1 was unable to finish answering numbers 4 through 5.

The researcher's investigation revealed that the mathematical literacy abilities of those with this kinesthetic learning style varies according to the results of the test; these differences are represented by the scores S-K1 of 9.09% and S-K2 of 18.18% (see Figure 1). This disparity arises from the fact that each distinct sub-indicator is met by S-K1 in the case of sub-indicator 2.1 and sub-indicator 2.2, but S-K2 in the case of sub-indicator 1.2, sub-indicator 2.2, sub-indicator 2.4, and sub-indicator 3.1. This influences the variation in S-K1 and S-K2's attainment of mathematical literacy skills. It was discovered that there was no difference in the mathematical literacy abilities between S-K1 and S-K2, as both were able to reach 5 sub-indicators, or 22.73%, after the researcher's interview data were reviewed (see Figure 2). The results of the interview analysis revealed that S-K1 and S-K2 had improved their literacy skills because S-K1 had met five sub-indicators—sub-indicators 1.2, 2.1, 2.2, 2.4, and 3.1—that had been previously identified in the results of the analysis of the mathematical literacy ability test. Five sub-indicators were met by S-K2: sub-indicator 1.1, sub-indicator 1.2, sub-indicator 2.2, sub-indicator 2.4, and sub-indicator 3.1. S-K1 was unable to meet any of these sub-indicators, and sub-indicator 3.1, which S-K2 was previously unable to meet according to the analysis of the results of the mathematical literacy exam.

The following findings from the S-K1 mathematical literacy ability test analysis should be noted.

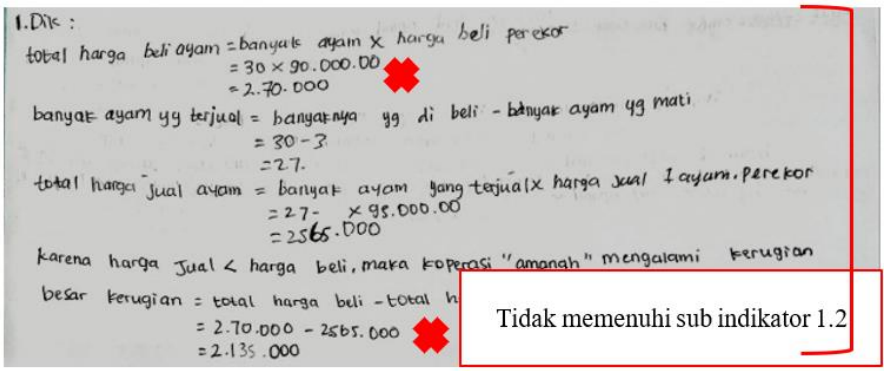

Figure 9. First Answer for S-K1 Test

Working through the S-K1 test questions does not satisfy sub-indicator 1.1 based on Figure 9 since the questions and information are not identified. Because S-K1 is unable to follow standard methods for responding to inquiries with a broad context and is unable to act in response to the stimuli provided, it does not satisfy sub-indicator 1.2. The previous computation contains a mistake. Based on the S-K1 Report Card value documentation, the mathematics score is 78 with a KKM of 65, indicating that S-K1 possesses strong mathematical abilities. like in the interview that follows.

Dialog 7

P	:	"Is the first question simple to understand or not?"
S-K1	:	"Comprehensible."
P	:	"In the context of the inquiry, what information can you understand?"
S-K1	:	"I obtain knowledge regarding earnings and expenses."
P	:	"What is the question's problem?"
S-K1	:	"Calculating the amount of profit or loss"
P	:	"Why do not you start by listing the recognized and frequently requested questions?"
S-K1	:	"Sis, I forgot."
P	:	"How do you answer the question?"
S-K1	:	"I started by figuring out how much the chicken cost overall, then I counted how many chickens I sold to see if I made money or not. The formula was used to calculate the amount of loss because there was a loss.
P	:	"You calculated the chicken's total purchasing price incorrectly when solving the question. What should be the right answer when multiplying the quantity of chickens and the cost of each chicken?
S-K1	:	“Yeah, I was careless, Sis. The outcome ought to be Rp 2,700,000.00.
P	:	"That is correct, indeed. Does that imply you understood the multiplication was incorrect?
S-K1	:	"Yes, sir."
P	:	"Did you encounter any obstacles when tackling the issue?"
S-K1	:	"No problem, Miss. Simply put, you did not work on it carefully enough.

Based on the interview findings, it was determined that S-K1 was able to rectify flaws in the replies that were not flawless, but S-K1 was unable to identify the information and questions that were clearly supplied.

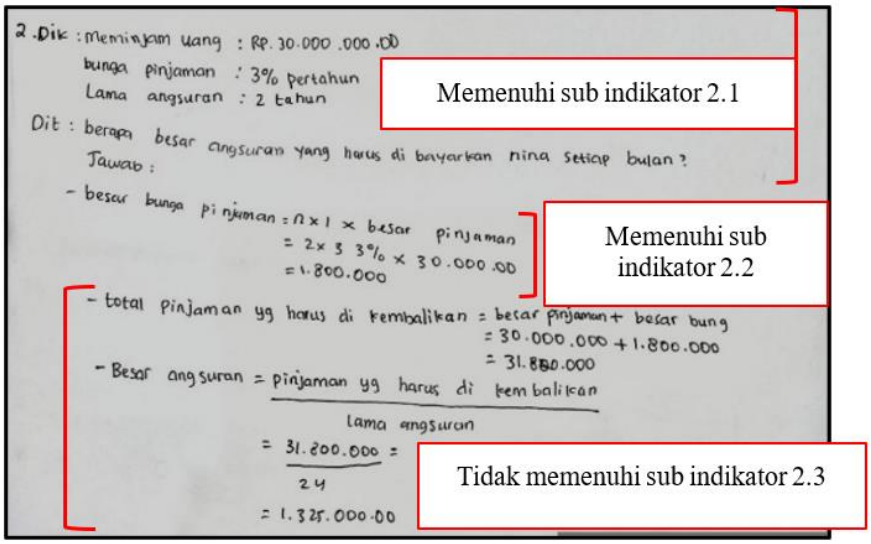

Figure 10. Second Answer to the S-K1 Test

S-K1 satisfies sub-indicator 2.1 in answering the test questions based on Figure 10 because it can locate pertinent information from a single source. Due of its ability to use simple algorithms and perform simple operations or provisions, S-K1 satisfies sub-indicator 2.2. Because S-K1 is unable to comprehend the scenario in a context that necessitates drawing clear conclusions, it does not satisfy sub-indicator 2.3. Due to its failure to interpret the results, S-K1 does not comply with sub-chapter 2.4. According to the S-K1 Report Card documentation results, the mathematics score is 78 with a KKM of 65, indicating that S-K1 possesses strong mathematical abilities. S-K1 can answer the problem in question number 2, but two sub-indicators are not met. As in the following interview conversation.

Dialog 8

P	:	"Is question #2 simple to comprehend or complex?"
S-K1	:	"Comprehensible."
P	:	"In the context of the inquiry, what information can you understand?"
S-K1	:	"I understand what bank loans are."
P	:	"What is the question's problem?"
S-K1	:	"Calculating the monthly installment amount that is due."
P	:	"How do you figure out the issue?"
S-K1	:	"Calculating the monthly installment amount that is due."
P	:	"How do you figure out the issue?"
S-K1	:	"I figure out the interest on the loan first, then the total amount that needs to be repaid, and lastly, the payment amount."
P	:	Why did not you write down the conclusion at the end of the solution?"
S-K1	:	"I often forget, Sis."
P	:	"So did you have difficulty in working on question number 2?"
S-K1	:	"No difficulty, Sis."

Based on the interview transcript, it was observed that S-K1 encountered no difficulties answering question number 2. Sub-indicator 2.3—that is, the inability to comprehend the issue in a context that necessitates drawing clear conclusions—was not

met by S-K1. S-K1 was able to meet sub-indicator 2.4, however he was careless and neglected to record the outcome of his response on the answer sheet.

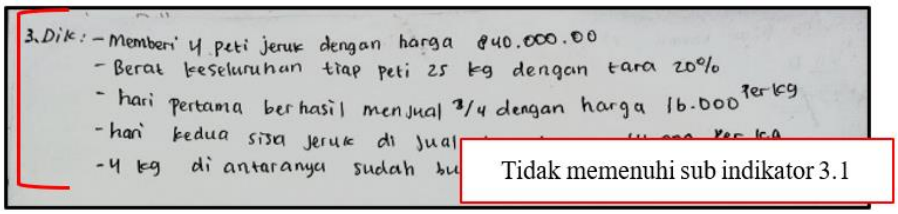

Figure 11. Third Answer to the S-K1 Test

S-K1 failed to meet sub-indicator 3.1 when completing the exam questions based on Figure 11 because he was unable to use representation based on information sources. Sub-indicator 3.2 was not met by S-K1 due to his inability to use basic problem-solving techniques. Sub-indicator 3.3 was not met by S-K1 due to his inability to use basic problem-solving techniques. Sub-indicator 3.4 could not be met by S-K1 due to his inability to perform operations that call for consecutive decisions. According to the findings of the S-K1 Report Card scores, he received a mathematics score of 78 and a KKM of 65, indicating that he possesses strong mathematical abilities. S-K1 found it challenging to complete Question #3. like in the interview that follows.

Dialog 9

P	:	"Is it easy to understand question number three?"
S-K1	:	"Comprehensible."
P	:	"Why did not you answer the question?"
S-K1	:	"I forgot the formula, thus I do not know how to accomplish it."
P	:	"In the context of the inquiry, what information can you understand?"
S-K1	:	"The profit or loss from selling fruit can be understood."
P	:	"What is the question's problem?"
S-K1	:	"Calculating profit or loss and calculating the profit or loss percentage."
P	:	"Did you find the question difficult to answer?"
S-K1	:	"Hardness, Miss. because, in my perspective, story questions are really tough.

S-K1 was able to meet sub-indicator 3.1, which is the ability to employ representation depending on information sources, according to the interview results. S-K1 struggled to solve the problem in the interim since he was unsure of the formula and how to apply it. Due to difficulties completing the questions, S-K1 was unable to answer questions 4 through 5.

3.2. Discussion

According to Stacey's (2010) perspective, mathematical literacy is a student's capacity to recognize and comprehend the significance of mathematics in everyday life. As was mentioned in the preceding discussion, mathematical literacy is the ability to solve mathematical problems in daily life. According to Mahdiansyah & Rahmawati (2014), among the variables influencing Indonesian students' success in mathematics literacy include instructional factors, personal factors, and environmental factors. Personal aspects include learning styles; in this study, it was discovered that the mathematical literacy abilities of each research subject varied based on their preferred learning style. The study's findings indicate that students who learn best visually, auditorily, or kinesthetically had

low literacy abilities. These findings are consistent with research by Masfufah & Afriansyah (2021), which found that students' mathematical literacy abilities are still low and can be seen in the way they solved the problems given to them—in this case, a variety of PISA questions.

Various elements, such as personal, instructional, and environmental factors, impact the attainment of mathematical literacy skills in Indonesia (Mahdiansyah & Rahmawati, 2014). Learning styles are personal considerations. This is consistent with the findings of a study that was carried out by researchers; specifically, the study found that students with auditory learning styles have higher mathematical literacy skills than students with other learning styles. Pupils with an aural learning style are more proficient in mathematics than those with a visual or kinesthetic learning style. In contrast to students who learn best visually and kinesthetically, who write formulas and their applications with a lot of errors, students with this auditory learning style write formulas and applications very carefully and appear to understand what they write, according to the results of the mathematical literacy test.

Furthermore, research conducted by Ishartono et al. (2021) showed that although students with visual and kinesthetic learning styles achieve the same mathematical learning outcomes, those with auditory learning styles achieve higher learning outcomes. When it comes to problem-solving, students with visual and kinesthetic learning styles are similar in that they tend to apply formulas and computations carelessly. There are a number of things that might contribute to this, including learning. According to Slameto (as cited in Khotimah & Nasrulloh, 2019), there are at least seven aspects that can affect learning outcomes: maturity, readiness, intelligence, attention, interest, talent, and reasons. This is in line with research by El-Sabagh (2021), which states that one of the most important aspects of education today is the learning style of students because their success depends on how they learn best and can be achieved by understanding each other's differences and remembering this in education. In addition to the factors that influence mathematical literacy skills reviewed from the learning style, the subject of the study is the result of online learning, which also greatly influences the way students learn.

4. CONCLUSION

Drawing conclusions from the presentation of research results, findings, and discussions, it can be said that, in terms of learning styles, students with visual and kinesthetic learning styles have similar average mathematical literacy abilities, while students with auditory learning styles have different mathematical literacy abilities from those with visual and kinesthetic learning styles. This indicates that children with an auditory learning style are also those with excellent mathematics literacy abilities across visual, auditory, and kinesthetic learning styles. It is hoped that further academics would be able to expand on the work that has already been done on mathematical literacy abilities using a wider range of social arithmetic resources.

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