International Journal Of Humanities Education And Social Sciences ***(IJHESS)*** *E-ISSN:* **2808-1765**
Volume 4, Number 1, August 2024, *Page. 586 – 600*
Email : editorijhess@gmail.com

Analysis of Mathematical Literacy Ability Given Students' Mathematical Disposition

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Abstract

The results of the Mathematical Literacy Research discuss Indonesia's involvement in PISA since 2000, which has never experienced a significant increase in ranking until 2018. Even the 2018 PISA results showed that Indonesia was ranked in the bottom 10 in the world with an average score of Indonesian students mathematical literacy of 359, while the average was 489. This study aims to describe the mathematical literacy skills of grade X students in solving PISA questions in terms of mathematical disposition abilities. This study uses a descriptive type of research with a qualitative approach with three instruments to be used in this study, namely a mathematical disposition scale questionnaire, a mathematical literacy test, and interview guidelines. The research instrument was first consulted with the collaborating lecturer. The results of the disposition test from 33 grade X.1 students were then analyzed to determine the grouping of students' mathematical disposition abilities. The mathematical disposition scale is given to students in three groups: high, medium, and low. The subjects of this study were four students in the class with different levels of mathematical disposition abilities. Based on the results of this study, the literacy abilities of students reviewed in mathematical disposition tend to vary. Students with a high level of disposition have better literacy and problem-solving skills than those with a medium or low level of disposition.

Keywords: Mathematical Literacy, Mathematical Disposition, PISA.

INTRODUCTION

Mathematics at school helps children learn to count, measure, derive, and use commonly used mathematical formulas (Afriansyah, Herman, & Dahlan, 2021). In line with Jeheman's (2019) opinion, mathematics can solve problems and provides the thinking skills needed to solve problems. Therefore, mathematics is a pattern in life that comes from human thinking patterns. Mathematics is also often associated with all aspects of real life, called mathematical literacy.

According to Iskandar (2016), literacy is an absorption of the English word "literacy," which means the ability to read and write. On the other hand, literacy comes from the Latin word "litter," which means mastering the writing system and the accompanying conventions (Fernandes et al., 2020). Literacy skills are very important in facing changes in the industrial era 4.0 or the current era of disruption. In this era of revolution 4.0, it is important to have literacy, both existing and new (Kusmiarti & Hamzah, 2019). Nowadays, the meaning of literacy has expanded widely, not only about the ability to read and write but also related to skills in specific fields. Since 2016, the Ministry of Education and Culture of the Republic of Indonesia (Kemdikbud RI) has launched the National Literacy Movement (GLN) to increase literacy in Indonesia. *The English Oxford Dictionary* defines literacy as (1) the ability to read and write and (2) competence or knowledge in a particular field. The general idea of the meaning of literacy is absorbed in various fields, one of which is mathematics, so that mathematical literacy emerges.

Mathematical literacy is a high-level ability, per the main study of *PISA* (*Program for International Student Assessment*), namely reading literacy, scientific literacy, *and* mathematical *literacy*. Students must have high mathematical literacy skills to compete with other countries in the modern era. According to Masfufah & Apriansyah (2021), Indonesian students' literacy skills still do not need to reach optimal levels. This mathematical literacy ability can be seen from the

results of assessments carried out by the International Program for Student Assessment (PISA), which is carried out every three years. Since 2000, Indonesia has participated in the PISA assessment. However, the results of the PISA assessment so far have yet to show satisfactory results for Indonesia. PG Dikdas states that PISA assesses mathematical literacy as an important aspect of its evaluation (Pgdikdas, 2020).

The PISA assessment related to mathematics in 2000 showed that the average score of Indonesian students was 367, ranking 39th out of 41 participating countries. In 2003, Indonesia was ranked 38th out of 40 countries with an average score of 360. An increase occurred in 2006 when Indonesian students had an average score of 396. In 2009, the average score of Indonesian students decreased to 371. In 2012, the average score increased to 375; in 2015, it became 386 (Hewi & Shaleh, 2020). In mathematics, the latest PISA results in 2018 showed that Indonesia was ranked 73rd out of 79 countries, with an average score of 379 (Hewi & Shaleh, 2020; Ministry of Education and Culture, 2018).

The PISA results show that mathematics literacy skills in Indonesia remain low, as seen from the bottom ten rankings since first taking part in PISA from 2000 to 2018. PISA measures mathematical literacy, which includes three domains, namely process, content, and context. The process aspect involves formulating, applying, and interpreting. Content aspects include space and shape, change and relationship, quantity, and uncertainty & data (OECD, 2019). Mathematical literacy ability has six levels, namely level 1 to level 6. With an average score of 379, Indonesian students are generally still at level 1, where students' general abilities are (1) students can answer questions that involve existing contexts. Common or familiar, all relevant information is available, and the question is identified; (2) students can answer questions using routine procedures; and (3) students carry out actions that are almost always clear by the stimulus provided. The desire to understand how mathematics is used in everyday life, curiosity, and interest in mathematics can influence the achievement of mathematical literacy levels. Interest in mathematics can create a strong tendency called a mathematical disposition (Widyasari et al., 2016).

Mathematical disposition reflects an individual's attitude towards mathematics, showing curiosity, perseverance, self-confidence, and interest in the field (Mayratih, Leton, and Uskono 2019). Disposition is also related to students' tendency to reflect on their thinking. According to Mahmudi and Saputro, mathematical disposition involves motivation, awareness, a strong tendency to study mathematics, and positive behavior in solving mathematical problems. This includes aspects such as (1) self-confidence, (2) perseverance, (3) flexibility and openness of thinking, (4) interest and curiosity, and (5) monitoring one's thinking processes and performance (Lestari and Andinny 2020). Research was conducted on mathematical literacy abilities based on the mathematical disposition abilities of different students.

With a positive mathematical disposition, a person will be more motivated to study mathematics, have self-confidence when facing mathematical challenges, show perseverance in solving problems, and show high interest and curiosity. In addition, a good mathematical disposition also includes flexibility and openness of thinking, allowing a person to see various perspectives and approaches to understanding mathematical concepts. Mathematical disposition also involves the ability to monitor and evaluate one's thinking and performance so that individuals can improve their mathematical understanding and performance effectively (Wirawan, Yuhana & Fatah, 2023)

Mathematical disposition builds positive thinking and behavior habits toward mathematics, namely, a strong desire, tendency, awareness, and dedication to positively think and carry out mathematical activities (Hendriana et al., 2016). Students with good mathematical disposition abilities will form a personality with self-confidence, curiosity, and perseverance in learning mathematics (Widyasari et al., 2016). Students very much need this to solve problems.

It is explained in the PISA 2022 draft that mathematical literacy is closely related to solving problems that occur in real life (OECD, 2018). Thus, the better the mathematical disposition of students, the better their mathematical literacy abilities will be. Sumarmo reinforces this by explaining that the attitude to think and act mathematically can impact mathematical literacy (Wati & Suendarti, 2022).

Based on the description above, the aims of this research are (1) To describe the mathematical disposition of class X high school students, (2) To describe the mathematical literacy abilities of class X high school students for students with a moderate mathematical disposition, (4) To describe the mathematical literacy abilities of the class.

RESEARCH METHODS

This research uses descriptive research with a qualitative approach, which aims to describe students' mathematical literacy abilities in solving PISA questions regarding mathematical disposition abilities. Moleong (2016) suggests that qualitative descriptive research is carried out to determine the phenomena felt by research subjects regarding behavior, views, etc., by describing words through various scientific methods. The analysis carried out in this research is an analysis of student achievement indicators for each level of mathematical literacy ability.

From the results of PISA data from 2000 to 2018, the main target of this PISA test is 15-year-olds in class 9 or 10. Therefore, this time, the researchers tried to take research test targets from class X. This research was conducted at SMAN 2 Kuningan. The research subjects in this study were three students in this class with different levels of mathematical disposition abilities. The data analysis technique in this research went through 3 stages based on *Miles and Huberman* (Miles & Huberman, 1994), namely: (1) Data reduction, (2) Presentation of data, and (3) Conclusion. The test results were analyzed using qualitative data analysis based on the mathematical reflective thinking ability process.

According to Sugiyono (2017), a research instrument is a tool used to measure specifically observed natural and social phenomena. All of these phenomena are called research variables. This research uses math instruments: a disposition scale questionnaire, a mathematical literacy test, and an interview guide. The research instrument was first consulted with the collaborating lecturer. The disposition test results of 33 class X.1 students were then analyzed to determine the grouping of students' mathematical disposition abilities. A mathematical disposition scale is given to students in three groups: high, medium, and low.

Table 1. of Mathematical Disposition Scale questionnaire assessment scores

QUESTION TYPE	ANSWER CATEGORIES	SCORE	NUMBER OF QUESTIONS	TOTAL
Positive Statements	Agree	1 point	12 questions	26 points/ 26 questions
	Don't agree	0 points		
Negative Statements	Agree	0 points	14 questions	
	Don't agree	1 point		

The table shows the scores for the mathematical disposition scale questionnaire assessment. After being given a mathematical disposition scale questionnaire, the selected subjects were given a mathematical literacy test containing 3 PISA questions. After finding three research subjects in the categories of students who had high, medium, and low mathematical dispositions and obtained the results of the mathematical literacy test, interviews were conducted to dig up information and determine the achievement of indicators that were not visible during the mathematical literacy test. Subject selection is based on mathematical disposition criteria.

1. High mathematical disposition, if the scores obtained $18 \leq x \leq 26$ by the subjects representing the high mathematical disposition category are two students who have the highest scores and those who get scores in the high category.
2. Medium mathematical disposition $9 \leq x \leq 17$, if the score obtained by the Subject representing the moderate mathematical disposition category is a student with the middle score of this group.
3. Low mathematical disposition $0 \leq x \leq 8$, if the score obtained by the Subject representing the low mathematical disposition category is a student with the middle score of the low group.

Next, from the results of the student disposition of the instrument, it is continued with the analysis of mathematical literacy test data and interviews,

The mathematical literacy test questions are declared valid because they have gone through a validation test. Question validation was done by two validators, one teacher, and one lecturer. Both validators assessed the product from the material/content, construct, and language aspects (Yusrizal, 2016). Validation is in the form of feasibility scores and suggestions regarding the questions, which are then re-developed so that the questions can be said to be valid. The results of the validity of the questions are in the following table.

Table 2. of expert validation results on test instruments

	Material	Construction	Language	Average
Validator 1	91.666%	87.5%	100%	93.053%
Validator 2	91.666%	91.666%	100%	94.230%
Criteria	Very worthy	Very worthy	Very worthy	Very worthy

The table above shows that the results of the two validators in the material, construction, and language aspects obtained an average score of 93.053% from validator 1 and 94.230%, with the respective categories being "very feasible." Sugiyono (2017) states that valid means that the instrument can measure what should be measured. Therefore, the PISA Test Questions are used to consider suggestions and assessments from the validator.

The literacy test instrument develops mathematical description questions from the PISA COMAT book on COVID-19. Arikunto (2021) explains that essay tests have the advantage of supporting students' points of view in solving problems and allowing students to express ideas, so using them to measure students' problem-solving abilities is appropriate. The indicators for the results of the mathematical literacy test are adjusted according to *the OECD* (2013:28-30); the process, content, and context of mathematics learning, which are indicators for assessing students' mathematical literacy abilities, are as follows:

Table 3. of Mathematical Literacy Ability Assessment Indicators

Mathematical literacy process	**Indicator**
Formulate	Identify several situations mathematically for problems presented in contextual form.
Implement (Employ)	Design and apply reasoning strategies to solve mathematically formulated problems to obtain mathematical conclusions.
Interpret (Interpret)	Interpret the results of mathematical answers/ solutions to the initial problem.
	Evaluate the suitability of mathematical solutions in the context of real-world problems.

RESULT AND DISCUSSION

Mathematical disposition test data from 33 students was obtained through a questionnaire distributed via Google form: https://forms.gle/kz4NW4vuHzG41yoq7. The results of the disposition analysis can be seen in the following table.

Table 4. Recapitulation table of disposition test results per category

CRITERIA	INTERVAL/ RANGE	AMOUNT
Low	1-9	Six people
Currently	10-17	18 people
Tall	18-26	9 people

Then, four research subjects from this group were selected and considered representative of each group. This selection was also based on students' self-confidence in assessing their mathematical disposition abilities. Therefore, the researchers took four subjects from each category. Then, the subject will be given a literacy skills test through PISA questions and an interview. The following is a question about mathematical literacy.

PINJAMAN UANG

Pemerintah Indonesia mendorong lembaga keuangan Indonesia untuk secara bergotong-royong membantu pemulihan ekonomi nasional. salah satunya adalah memberikan jaminan kepada bank dan koperasi di Indonesia yang memberikan program pinjaman uang kepada pelaku usaha mikro kecil dan menengah atau MKM agar bangkit di tengah pandemi Covid-19.

Bu Ulfa merupakan salah satu pelaku UMKM di bidang makanan di daerah Sumatera Selatan. Bantulah Bu ulfa untuk membuat keputusan yang harus diambilnya. Perhatikan informasi pada gambar berikut.

Koperasi Nusantara	Bank ABC
Pengajuan pinjaman: Rp 8.000.000,-	Pengajuan pinjaman: Rp 10.000.000,-
Suku Bunga : 15% per tahun	Suku Bunga : 13% per tahun
Cicilan : 150.000/bulan	Cicilan : 150.000/bulan

Setelah satu tahun memiliki pinjaman di koperasi Nusantara, Bu ulfa memiliki hutang sebesar Rp7.400.000,-

Pertanyaan 7.

Untuk melunasi hutangnya, Bu Ulfa mengalami kebingungan apakah harus meminjam uang dari koperasi Nusantara atau bank ABC. Bantulah Bu Ulfa untuk memilih KoperasiNusantara atau bank ABC.

Apakah dua keuntungan finansial lainnya untuk bu ulfa jika ia memilih lembaga peminjaman uang tersebut.

1. .....
2. .....

Figure 1 Mathematical Literacy Question Number 1

PERKEMBANGAN KASUS HARIAN COVID-19

Perhatikan Informasi pada gambar berikut.

Pertanyaan 5

Berdasarkan informasi pada gambar di atas apakah pernyataan pernyataan ini benar?

Lingkari iya atau tidak, selanjutnya tunjukan proses perhitungan matematismu.

Pernyataan	Apakah pernyataan ini benar?
Terdapat 2.113.170 pasien positif COVID -19 di indonesia pada 26 Juni 2021.	Ya/ Tidak
Pada 27 Juni 2021, 17 orang meninggal dunia setiap jamnya akibat COVID-19	Ya/ Tidak
Sebanyak 129.891 orang diduga kuat terkena virus COVID-19 pada 27 Juni 2021.	Ya/ Tidak
Sampel yang diuji pada pasien COVID-19 di Indonesia pada tanggal 27 Juni 2021 sebanyak 207.685 pasien	Ya/ Tidak

Figure 2 Mathematical Literacy Question Number 2

Berikut ini , manakah trend (diagram garis) yang benar untuk menunjukan situasi physical distancing pada orang yang mengantri di kasir, Lingkari A,B,C, atau D. Kemukakan alasanmu.

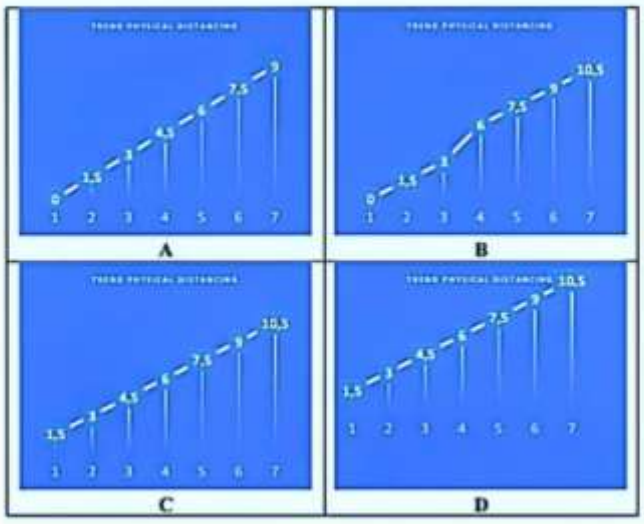

Figure 3 Mathematical Literacy Question Number 3

The results and discussion of students' mathematical literacy tests in solving PISA questions are as follows:

1. Results and Discussion of Mathematical Literacy of Students with **High Mathematical Disposition** in Solving PISA Questions.

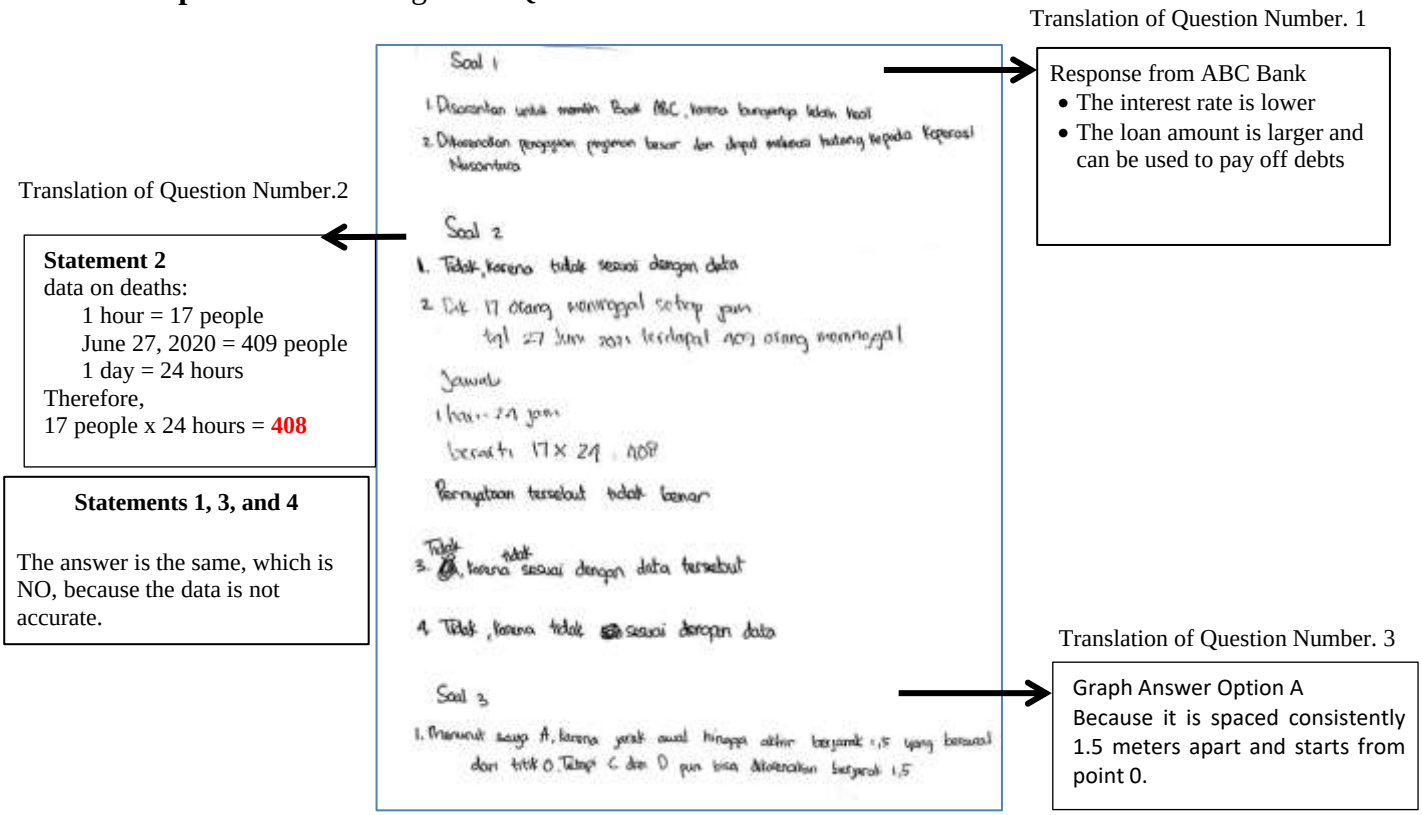

Figure 4. Results of Answers from Subjects with High Mathematical Disposition

Based on Figure 4, it was found that subjects with a moderate mathematical disposition were able to solve all the questions given. In question number 1, the solution obtained by the Subject is correct. Based on the mathematical literacy indicators in formulating the problem and Figure 4, the Subject identified several important aspects and statements in question number 1. The Subject understood the issue by comparing some of the information provided in the form of what was known and what was asked in the question. The answer given by the Subject also relates to the intended purpose of the question. Based on indicators of mathematical literacy in applying concepts and images to question number 1, the Subject designed and implemented a strategy to solve the problem based on the initial ideas that had been thought of. The subject answered correctly when comparing the different types of borrowing, only that the answer given was the main answer without a description of the process. The subject should also explain the results of calculations and compare the two types of solutions that might be chosen.

Q : "In your opinion, that is the most profitable answer for Bank ABC, right?"
S1 : "Yes, because the interest is smaller, and the loan application is bigger."
Q : "So you think my mother's debt will be paid off, right?"
S1 : "Yes. So from the mother's debt of 8 million, she will get 10 million, so it can be paid off just more like that."

In question number 2, the Subject answered the four statements, with two statements being true and the other being false. The Subject explained the reasons and results of his calculations quite briefly. In the first statement, the Subject answered correctly without interpreting the results of completing the correct answer. In the second statement, the Subject

responded incorrectly. Because the Subject made a mistake when identifying and analyzing the information, the answer should have been obtained from the information in the table and divided by 24 hours. Still, instead, the Subject adjusted the information from the question and multiplied it by 24 hours, so the answer was incorrect. Then, in the third statement, the Subject answered incorrectly without explaining the correct question number from several statements that had been provided. The interview results showed that the Subject made mistakes when identifying and interpreting the information in the question, so the Subject thought the statement contradicted the data. Then, in the last statement, the subject answered correctly. The Subject analyzes the terms and adjusts the statements and data in the question; then, the Subject concludes that the answer in the statement is wrong and there should be 98,904 people.

Q : "Let's move on to the second question. Is the first statement inappropriate?"
S1 : "No, because it doesn't match the data. On the 26th, it was 2,115,304 but If the one here is 2,113,170, then it doesn't match."
Q : "As for the second question, why?"
S1 : "No, because the correct calculation is that should be 409 people daily.
Q : "Where did the results come from?"
S1 : "Yes, the calculation result is 17 times 24 hours, so it should be 409 people a day."
Q : "For the third statement, the answer is no?"
S1 : "The problem is that the number of people infected is the number of people infected, so that's the data instead which is strongly suspected, the figure is the opposite, in my opinion. So it's not appropriate."
Q : "What about the last one, the problem is whether the samples tested agree or not no."
S1 : "No, because that's the sample that was asked, while the sample it should be 98,000. So the answer is not appropriate."

In question number 3, the Subject explains the reasons for solving the problem and considers the answer he chose until he finds the correct answer. Based on indicators of mathematical literacy in identifying information and interpreting the results of solving problem number 3, the Subject interprets the results of the mathematical answer to the initial problem. It evaluates the suitability of the mathematical solution in the context of real-world problems. Subjects thoroughly checked the displayed steps again until they found the correct solution. The answer obtained by the Subject in question number 3 is based on the information and objectives contained in the question. The answer he chose was also the result of comparing other answers that were not quite right. The Subject explained the reasons for selecting an answer starting from 0, which indicates the Subject's accuracy in carrying out information literacy from the image.

Q : "Next, here's question 3, which image do you think is most appropriate to describe the physical distancing situation.”
S1 : ”That's A because it starts from 0, which is also the appropriate distance of 1.5 meters."
Q : “Can you explain why here it can be 3 m and then it will also rise 4.5 meters”
S1 : " Yes, because it's constant plus 1.5 meters. But C and D actually be the same."
Q : "Then why don't you choose C or D?"
S1 : "Yes, only it doesn't start from 0 but from 1.5 meters for people first."

2. Results and Discussion of Mathematical Literacy of Students with **Moderate Mathematical Disposition** in Solving PISA Questions.

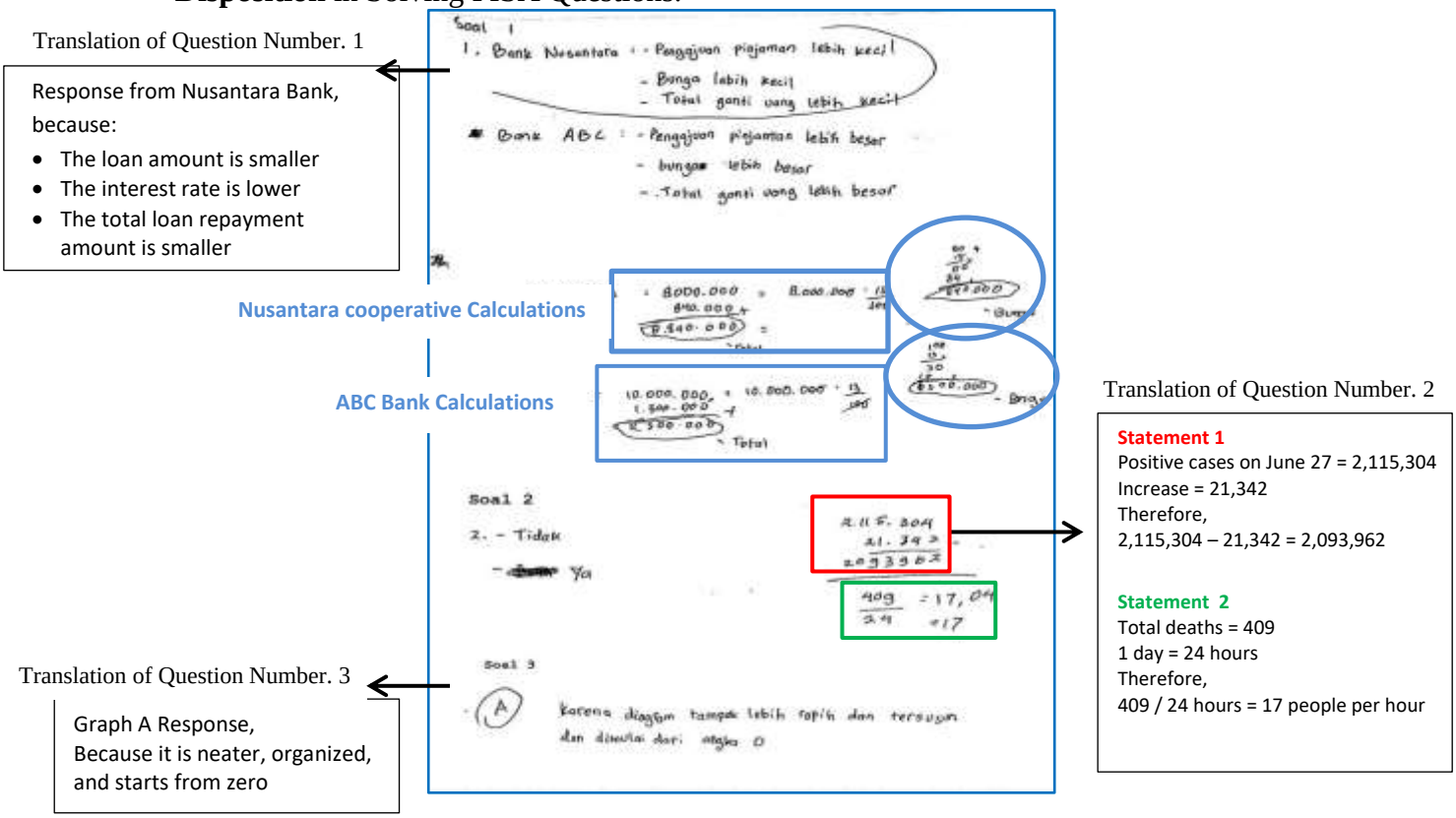

Figure 5 Answer Results of Subjects with Medium Mathematical Disposition

Based on Figure 5, it is found that subjects with a mathematical disposition are solving problems but not completely. In question 1, the solution results obtained by the Subject were wrong. Based on indicators of mathematical literacy in the process of formulating problems and identifying information, the Subject identified several important mathematical aspects and variables in question 1. The Subject understood the situation by stating the information provided in the form of what was known and completely comparing each of the advantages of applying for one loan and another. Other. In question number 1, the Subject completed the concept application process but made a mistake in re-evaluating the answer, so the results obtained by the Subject were incorrect.

Q : "The first question. Do you think there are any difficulties? what's confusing from the problem or something like that?"
S2 : "It's a bit difficult to determine this, but I can answer it."
Q : "Here you choose the answer that you think is Nusantara cooperative, the reason why anyway?"
S2 : "Because the interest is smaller, but the application for the money is smaller, so it will be right later returned also smaller "
Q : "What do you think about the calculation?"
S2 : "That's a loan of 8 million times 15%, then the interest will be 840,000, After totaling it, 8,840,000 must be returned if it's the bank nusantara."
Q : "What about Bank ABC?"
S2 : " The total interest is 1,300,000, so later you will get 11,300,000 back."
Q : "So what do you think is more profitable for Nusantara cooperative?"
S2 : " Yes, because the interest is smaller and the funds returned are also more a little"

In question number 2, the Subject did not explain the steps to solve it enough to find the correct statement. Of the several statements provided, only some were answered. The Subject's answers to the two statements appeared to be accurate. However, from the interview results, the Subject also admitted that he was not careful enough to read the questions given, so he did not realize that two statements needed to be answered again on the next sheet.

Q : " For number 2, here's statement 1. How do you find the answer yes/no?"
S2 : "This is the data for the 27th, right? Means for the 26th subtracted again from the addition data. From 2,115,304 subtract 21,342 so that means the answer should be 2,093,962 people."
Q : " What is the calculation for the second statement?"
S2 : " This is what 409 is added to, because there are 24 hours in a day then divide by 24 to get the result 17,04 rounded 17"
Q : "If statement 3 is the same as statement 4, why don't you fill it in?"
S2 : "Oh yeah, I didn't realize there was still a statement, I thought there were only two questions or not look at the next sheet."

In question number 3, the Subject answered correctly by explaining the reasons for his solution until he found the correct result. Subjects use logical reasoning to interpret the information in the questions and evaluate the correct answer. So, choose the answer to the image starting from point 0, which indicates a process of accuracy in understanding the image.

Q : "Why do you think the right table is table A?"
S2 : "Because it's neat, it starts from 0 and continues continuously."
Q : "P, but there are other tables that are also constant, hehe. What do you think? Isn't it B, C, or D?"
S2 : " If the C and D are not from 0 then the B doesn't look neat either."

3. Results and Discussion of Mathematical Literacy of Students with **Low Mathematical Disposition** in Solving PISA Questions

Translation of Question Number 1

Response from Nusantara Cooperative,
- Low interest ratel
- Small loan amount

Translation of Question Number 2

Statement 1
Positive cases on June 27 = 2,115,304
Increase = 21,342
Therefore,
2,115,304 – 21,342 = 2,093,962
Answer: **Disagree**

Statement 2
Total deaths = 409
Therefore,
409 / 24 hours = 17 people per hour
Answer**: Yes, agree**

Statements 3 and 4
The answer is the same, which is YES, correct, without any reasons

Translation of Question Number 3

Graph C Response,
Because the line shows an increase and the distance is consistently 1.5 meters

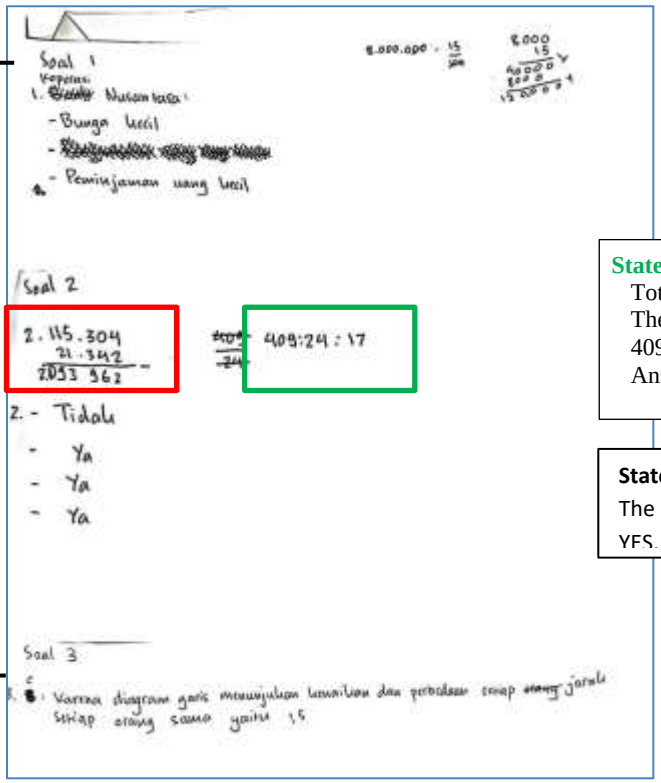

Figure 6 Results of Answers from Subjects with Low Mathematical Disposition

Figure 6 shows that subjects with a low mathematical disposition could solve all the questions from the three questions given. In problem 1, the solution results obtained by the Subject were wrong. The Subject explains the solution answer in the form of a core sentence, which is why the Subject chose that answer. While solving this question, it was seen that the Subject only fulfilled the indicators ranging from identifying to interpreting the information listed without re-evaluating the answer he chose. The Subject also did not appear to compare the two types of loans he decided, only directly stating the reasons for selecting the answer. So, the answer he chose was wrong.

Q : “For question 1 , your answer is Bank Nusantara, right? May I know the reason why?"
S3 : "Because I think the flowers are smaller."
Q : “The 15% interest rate is smaller, right? Where does the calculation come from? Why do you think so This Nusantara cooperative has smaller interest payments?"
S3 : "This is from those who applied for the loan multiplied by 15%."
Q : " Do you remember how much the result was?"
S3 : "I forgot sis hehe"
Q : " Then what are the reasons for these two besides that?"
S3 : "There's less money to borrow money there, right? Because this one is 8 million never mind that"

In question 2, the Subject can answer all four statements. Subjects answered with three true statements and one false statement. In the first statement, the Subject answered correctly by evaluating the statement using the calculation description, namely that it should be 2,093,962 people. Then, regarding the second statement, the Subject answered correctly by carrying out a re-evaluation process, as in the previous statement, 17 people were correct. Then, in the third statement, the Subject answered the statement correctly but without providing a clear rationalization for his chosen answer. For the last statement, the subject answered incorrectly without explaining the reasons for his answer again.

Q : " Next, you answer the four statements here, but why did the answer not give a reason for everything? Are there any difficulties understanding the question?"
S3 : " Yes, I'm slightly confused in the data section. Is this annual data?"
Q : "Yes, this is daily data collection. This data is as of the 27th and is for *updates* from the previous day. There was a statement of the increase next to it.
S3 : "Oh , so this is the previous data, the 27th is meaningful and the one next to it the addition, yes."
Q : " Yes, I see... for the first statement, what is the calculation process? of course?"
S3 : " I think that was wrong because I was calculating 2 million data. Subtract this, and the result is basically not the same tea."
Q : " In your opinion, the M number is inappropriate, right? As for the next statement How?"
S3 : " Yes, I just calculated 409 divided by 24 hours so the answer is 17."
Q : "So that's appropriate, right? Then where is the third statement from which you are sure?"
S3 : " This is the suspect information, so my answer is agree."
Q : " What about the last one? Why agree to this one?”
S3 : " Yes, because the sample tested was the same as the data with the number of active cases."

In Question 3, the Subject answered the question incorrectly. Based on indicators of mathematical literacy in the process of formulating problems, subjects identify several mathematical aspects and variables that are important to issues in real-world contexts. Subjects

can understand the situation by stating the information provided in the form of known distances and what they are asked about in the issue. However, the Subject was mistaken because he only focused on the constant distance required without looking at the distance of the first person standing, which should not have needed a distance of 1.5 m beforehand.

Q : " As for the third question, yes, this is the most appropriate answer, according to you, C, that is why C?"
S3 : "Because I think this is because the diagram is neat, then it starts from the distance is 1.5 and the number is the same, it continues to increase by 1.5."
Q : "If you thought it was because it was neat, why wasn't the answer A or D"
S3 : "nothing, I'm just want to choose that one hehe."
Q : " Just instinct, right hehe?"
S3 : " Yes, sis"

Table 5. Recapitulation Table Of The Number Of Answers

Student Disposition Abilities	Question 1	Question 2				Question 3	AMOUNT
		Statement 1	Statement 2	Statement 3	Statement 4		
Tall	√	√	×	×	√	√	4
currently	×	√	√	×	×	√	3
low	×	√	√	√	×	×	3

The table above summarizes the answer points from the three categories. This will make it easier to compare the number of answers correctly and incorrectly answered. This table shows no visible difference in the number of answers answered by subjects with medium or low dispositions. Both managed to answer 3 points correctly. However, if we look again at the explanation of the results of the Subject's description and interview, it was found that there was 1 question that the Subject answered with a low disposition without elaboration and using only the Subject's logic and in other questions the Subject was doubtful about the process of absorbing the information he received from the question.

Based on the discussion above, it can be concluded that each student's mathematical literacy in completing the mathematical literacy test is based on different levels of mathematical disposition. This is supported by previous research (Mayasari & Kurniasari, 2019). Subjects with a high level of mathematical disposition can complete two questions of the mathematical literacy test correctly, and two statements in question number 2 are correct, while the other two statements the Subject answered incorrectly. It can be seen from the written test given by subject 1 that he was quite detailed in giving reasons for each question. From the interview results, the Subject seemed quite confident in explaining the answers in each calculation process, starting from identifying indicators, conceptualizing, and even evaluating each answer until finding the right answer; almost all indicators of his mathematical literacy ability were achieved. Subject 1 has curiosity and interest and is persistent in solving each problem. Apart from that, subjects were also confident in solving problems and describing the results of their solutions. Subjects can also reflect on their thinking by properly re-evaluating their solutions to each question. This shows that the mathematical literacy of subjects with a high level of mathematical disposition in every process of problem formulation, application of concepts, and interpretation of solution results is better than medium and low levels of mathematical disposition. (High research subjects are supported by (Mukti & Permatasari , 2023).

Subjects with a mathematical disposition in the **moderate category** were able to complete 1 question of the mathematical literacy test correctly and answered two statements from question number 2 correctly. In contrast, the other two statements were left blank. It can be seen from the results of the written test that subject 2 almost meets all the indicators in the

mathematical literacy thinking process, except for the wrong questions and questions that were not filled in because subject 2 was bad and did not meet the indicators at the answer evaluation stage, the answer was incorrect. The subjects at the interview stage admitted that statements 3 and 4 had not been filled in due to a lack of thoroughness in checking the question sheet on the next page, so 2 statements had not been filled in. The mathematical literacy of subjects with a moderate level of mathematical disposition in problem formulation, application of concepts, and interpretation of solution results is quite good. Subjects with a moderate mathematical disposition also have sufficient curiosity and interest to solve problems and find the right answers. Apart from that, the subject was quite confident in solving the questions and describing the solutions but had less accuracy in problem literacy and evaluating the results of the answers he presented. The research subject is being supported by (Mukti, 2022).

Subjects with a low mathematical disposition can still complete the mathematical literacy test of 4 questions with 2 wrong answers and 2 correct statements in question number 2, while the other 2 questions are bad. The results of the recapitulation of the answers to the questions are indeed the same, namely, showing that the Subject succeeded in answering 3 points correctly in both the low and medium categories. However, from the explanation, the differences can be seen. From the answers described and then reinforced by the results of the interview, it was seen that the Subject was not confident in working on some of the questions, and the Subject also easily faltered and seemed a little discouraged when working on questions that were a little difficult. Even to meet the indicators when identifying and understanding the questions, in some questions the subjects did not seem to understand the information and purpose of some of the PISA questions being tested. The results show that the mathematical literacy of subjects with a low level of mathematical disposition in formulating problems, applying concepts, and interpreting solution results is significantly lower than that of subjects at high and medium levels. Subjects with a low mathematical disposition have less curiosity and interest in solving problems. Even the Subject was quite doubtful about the results of the solution he presented. It was also concluded that subjects with a low level looked discouraged when they encountered questions that were quite difficult and confusing, so they chose answers using *feeling*. Low disposition research subjects are supported by (Mayasari & Kurniasari, 2019)

This is in line with the opinion of Wanabuliandari (2016), who states that students with low disposition abilities are less careful in reading question thinking, weak in problem analysis, and less persistent in solving problems.

CONCLUSION

Based on the results of the questionnaire scale distribution instrument, literacy test, and interview guidelines, the mathematical literacy abilities of students reviewed in mathematical disposition tend to vary. From the disposition results, 18% of students with low disposition,55% with moderate disposition,27% of students have a high disposition.

This can be seen from students' work solving the problems given in several PISA questions. Students with a high level of disposition have better literacy and problem-solving abilities than students with moderate or low levels of disposition. In addition, students with increasingly high dispositions are confident in their assessment of their abilities and in interpreting and communicating the results of the interpretation and their reasons. Because disposition is related to confidence in self-assessment and ability. So, from the results of this study, the level of self-confidence in students' abilities needs to be increased again so that students can have increasingly high mathematical literacy. Therefore, in the future, it may be necessary to develop learning tools that can support improving students' mathematical literacy skills.

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