

Analisis Kemampuan Literasi Numerasi Siswa SMP Ditinjau dari *Adversity Quotient* dan Jenis Kelamin

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Abstrak

Dengan adanya kebijakan baru pemerintah yang mengganti Ujian Nasional (UN) menjadi Asesmen Nasional (AN) mengharuskan seluruh peserta didik di Indonesia memiliki kompetensi, salah satunya yaitu kemampuan literasi numerasi. Dalam mendeskripsikan kemampuan literasi numerasi ini, dapat ditinjau dari segala aspek salah satunya yaitu *Adversity Quotient* (AQ). Penelitian ini bertujuan untuk mendeskripsikan perbedaan kemampuan literasi numerasi siswa SMP ditinjau dari *Adversity Quotient* antara peserta didik laki-laki dan perempuan. Penelitian ini merupakan penelitian kualitatif deskriptif, dengan subjek penelitian sebanyak 6 peserta didik kelas VIII salah satu SMP Negeri di Depok. Instrumen yang digunakan berupa instrumen tes dan non tes, yakni tes tertulis, angket dan wawancara. Penelitian ini menggunakan teknik analisis data yakni reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa peserta didik laki-laki maupun perempuan tipe *climber* menunjukkan kemampuan literasi numerasi yang tinggi dengan memenuhi semua indikator, untuk tipe *camper* menunjukkan kemampuan literasi numerasi sedang dengan laki-laki memenuhi dua indikator sedangkan perempuan memenuhi satu indikator, dan untuk tipe *quitter* menunjukkan kemampuan literasi numerasi rendah dengan tidak memenuhi satupun indikator. Perbedaan antara laki-laki dan perempuan dari masing-masing tipe hanya pada langkah-langkah penyelesaian dan mengemukakan alasan dari setiap jawaban yang dipilihnya.

Kata Kunci: *adversity quotient*, jenis kelamin, kemampuan literasi numerasi

Analysis of Numerical Literacy Ability of Junior High School Students in View of Adversity Quotient and Gender

Abstract

The government's new policy of changing the National Examination (UN) to the National Assessment (AN), requires all students in Indonesia to have competence, one of which is numeracy literacy. In describing this numeracy literacy ability, it can be viewed from all aspects, one of which is: *Adversity Quotient* (AQ). This study aims to describe the differences in the numeracy abilities of junior high school students in terms of the *Adversity Quotient* between male and female students. This research is a descriptive qualitative research, with a research subject of 6 eighth-grade students of one of the State Junior High Schools in Depok. The instruments used were test and non-test instruments, namely written tests, questionnaires, and interviews. This study uses data analysis techniques, namely data reduction, data presentation, and conclusion. The research findings indicate that both male and female *climber* students demonstrate high numeracy literacy skills by fulfilling all the indicators. *Camper* students, show moderate numeracy literacy skills, with males fulfilling two indicators and females fulfilling one indicator. As for *quitter* students, they exhibit low numeracy literacy skills as they do not fulfill any of the indicators. The difference between men and women of each type is only in the completion steps and explaining the reasons for each answer they choose.

Keywords: *adversity quotient*; gender; numeracy literacy ability

INTRODUCTION

The development of knowledge and technology has influenced various aspects of life, including education. The progress in education is marked by changes in strategies, curriculum, media, learning models, and more, all aimed at achieving quality education. Ambarwati and Kurniasih (2021) state that the purpose of the advancement of the era and technological innovation is to strive for better quality education. In 2016, the Ministry of Education and Culture, in its efforts to promote competitiveness, character development, quality of life, and enhance literacy skills, launched the National Literacy Movement (Gerakan Literasi Nasional or GLN) which includes six basic literacies that must be mastered by the Indonesian society. These six basic skills include digital literacy, scientific literacy, linguistic literacy, financial literacy, cultural and civic literacy, and numeracy literacy (Kemdikbud, 2017). Among these six basic skills, numeracy literacy is particularly important.

The Ministry of Education and Culture has also implemented new regulations to replace the National Examination with the National Assessment (Assessment Nasional) as a new evaluation tool, starting in 2021. The National Assessment consists of three aspects: the Minimum Competence Assessment (Assessment Kompetensi Minimum or AKM), the character survey, and the learning environment survey. The Ministry of Education and Culture states that the Minimum Competence Assessment (AKM) is an assessment of fundamental skills required for all students to develop their abilities and actively participate in positive community activities (Rohim, 2021). The competencies measured in the Minimum Competence Assessment include reading literacy and numeracy literacy. In this context, numeracy literacy becomes a focal point in the field of education and is also one of the competencies assessed in students through the Minimum Competence Assessment (Assessment Kompetensi Minimum or AKM). Based on the explanation above, it can be concluded that numeracy literacy is important for students at all levels of education to possess.

However, the reality is that the numeracy literacy skills of Indonesian students are still categorized as very low compared to other Southeast Asian countries. This can be seen in the results of the 2018 PISA test, which showed an average literacy score of 371 and an average numeracy score of 379 for Indonesian students (OECD, 2019). This indicates that the numeracy literacy scores of Indonesian students are below the OECD average scores of 487 and 489, respectively. A study by Ate & Lede (2022) revealed that 26.7% of students are classified as having low numeracy skills, and a staggering 73.3% of students fall into the category of very low numeracy skills. Observations and interviews conducted by researchers with students also indicated that students still struggle to interpret real-world problems correctly, resulting in ineffective strategies and concepts being applied. Therefore, it can be concluded that the category of numeracy literacy skills among Indonesian students is still significantly lacking.

According to Ambarwati & Kurniasih (2021) one of the reasons for the low numeracy literacy skills among students is that the questions in TIMSS and PISA often involve real-world contexts, which students are not accustomed to solving. They may struggle to apply their skills to real-life situations and interpret the information presented in the problems in different forms. Additionally, gender can also be a factor influencing low numeracy literacy skills. This is supported by Bahrudin et al., (2021) who state that gender differences have a significant impact on the cognitive development and thinking abilities of individuals. Zahro et al., (2022) also suggest that gender differences can lead to psychological and physiological variations among students during the learning process.

According to Pulungan (2022), literacy refers to the ability to speak, write, read, and use language. On the other hand, numeracy, as defined by Alberta is the ability, willingness, and confidence to make decisions based on information in the context of everyday life (Mahmud et al., 2019). Considering both definitions, numeracy literacy can be understood as students' ability to analyze, apply, communicate, and interpret basic mathematical symbols to solve routine problems in various forms (such as stories, tables, graphs, diagrams, etc.) and reach a conclusion (Mahmud & Pratiwi 2019). This means that in mathematics, numeracy literacy skills are important for students because mathematics is not only about memorizing formulas but also requires critical thinking or higher-order reasoning in solving mathematical problems, especially those related to everyday life activities.

Mathematics problems in everyday activities are usually presented in the form of story problems. These story problems provide a realistic depiction of issues that occur in daily life activities (Darmawan, Kharismawati, Hendriana, & Purwasih, 2018). However, mathematical problems in the context of daily life often make students struggle to solve them. Rahmawati, Mardiyana, & Usodo (2015) also argue that in numeracy literacy, students are confronted with non-routine mathematical problems or problems related to daily life activities, which makes it challenging for students to overcome difficulties in numeracy literacy. Based on these issues, students need to have the ability to overcome difficulties in facing problems related to numeracy literacy (Mawardhiyah & Manoy, 2018).

The abilities possessed by each individual will inevitably differ from one another, as many individuals may have high intelligence or IQ but have not succeeded in showcasing their abilities. The Intelligence Quotient (IQ) or Emotional Quotient (EQ) that individuals possess is not a measure of one's success (Nilasari & Anggreini, 2019). There is a new type of intelligence that is distinct from IQ or EQ, pioneered by Paul G. Stoltz, called Adversity Quotient (AQ). According to Stoltz, AQ is a new framework, a reference point, and a simple tool to identify and understand a person's skills when faced with difficulties (Nilasari & Anggreini, 2019). When related to numeracy literacy, AQ represents the form of expertise that students need to face challenges in solving problems related to numeracy literacy.

Stoltz suggests that there are three types of AQ: high AQ is called the climber, medium AQ is called the camper, and low AQ is called the quitter (Mulyani, Wahyuningsih, & Natalliasari, 2019). The climber is a type of individual who is always enthusiastic about learning, consistently makes efforts, and remains confident when encountering difficulties. The camper, on the other hand, is someone who does not want to exert all of their abilities in learning and tends to stop trying when they feel they can't do anything else. The quitter is a type of student who is unwilling to make an effort and easily gives up when faced with challenges (Nilasari & Anggreini, 2019). The different levels of AQ intelligence that individuals possess certainly contribute to differences in their thinking patterns.

Previous studies examining students' numeracy literacy skills have been conducted by several researchers, including Pardosi, Budiarto, & Rahaju (2022) which indicated that in the problem formulation stage, all types of students could identify important information in the problems. In the application stage, climbers, campers, and quitters could devise strategies effectively, but quitters did not know the methods used. In the interpretation stage, climbers would recheck and interpret their answers, whereas campers and quitters did not recheck their answers or interpret them. Another study by Ivo, Budiayanti, & Prayito (2022) demonstrated that both climbers could fulfill all three stages of mathematical literacy skills, starting from problem formulation, using concepts, facts, and procedures, to interpreting, applying, and evaluating the results of calculations in solving PISA's SPLDV model problems. Lastly, Awalyah, Nuraida, & Sunaryo (2022) conducted a study on numeracy literacy skills from a gender perspective, which showed that female students had better numeracy literacy skills compared to male students.

Based on the previous explanation, it appears that previous research on numeracy literacy skills has only been examined based on adversity quotient or gender alone. Therefore, there has not been any research found that investigates numeracy literacy skills considering both adversity quotient and gender, especially among junior high school students. This presents a research gap discovered by the researchers, making this study a novelty compared to previous ones. In this study, the researchers analyze the numeracy literacy skills of junior high school students concerning their adversity quotient and gender. This research aims to describe the numeracy literacy skills of junior high school students who fall under the categories of climber, camper, and quitter in both males and females.

METHOD

This study is a descriptive research with a qualitative approach, making it a qualitative descriptive study. According to Denzin & Lincoln (1994), qualitative descriptive research is a study that includes descriptions and portrayals of natural phenomena involving various existing methods (Adlini, Dinda, Yulinda, Chotimah, & Merliyana, 2022). The researcher aims to describe the numeracy literacy skills of junior high school students in relation to Adversity Quotient (AQ) and different genders, thus obtaining data that is naturalistic in nature. The study was conducted from mid-April to May 2023 at

one of the public junior high schools in Depok City during the second semester of the 2022/2023 academic year.

In subject selection, the researcher used a purposive sampling technique with specific considerations according to the research needs. The research subjects consist of 6 students in grade VIII. In collecting data, the researcher used non-test instruments in the form of a questionnaire called the Adversity Quotient scale, which consists of 30 daily life events, each with 2 positive and negative statements. The non-test instrument used is an adaptation of the instrument by Hidayat, Herdiman, Aripin, Yuliani, & Maya (2018). Additionally, the researcher used an essay test instrument to measure numeracy literacy and conducted interviews. Prior to distribution to the students, these instruments underwent construct validation by expert lecturers and relevant subject teachers. The following are the details of the data and data sources used by the researcher in collecting data:

Table 1. Data and Data Source

| Aspect To Be Measured | Data Collection Technique | Number of Instrument | Data Source |
|-------------------------|---------------------------|---|---------------|
| Adversity Quotient | Non test (Questionnaire) | 60 Statement Item | Peserta Didik |
| Numeracy Literasi Skill | Test (Essay) | Essay Question Sheet (5 Question Sheet) | Peserta Didik |

The data collection procedure begins with distributing the Adversity Quotient questionnaire to all 8th-grade students, consisting of 10 classes with a total of 307 students as respondents. Respondents will choose one answer on a Likert scale with 5 response options, including Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). The questionnaire provided is based on the dimensions of the Adversity Quotient. The dimensions of the Adversity Quotient according to Soniatri & Syukur (2019) are control, origin and ownership, reach, and endurance.

From distributing the Adversity Quotient questionnaire to the 307 students, the researcher processed the raw data using Microsoft Excel and then examined it with the Rasch model using the Winstep application. The results of the data analysis using the Winstep application can be seen in Figure 1 below.

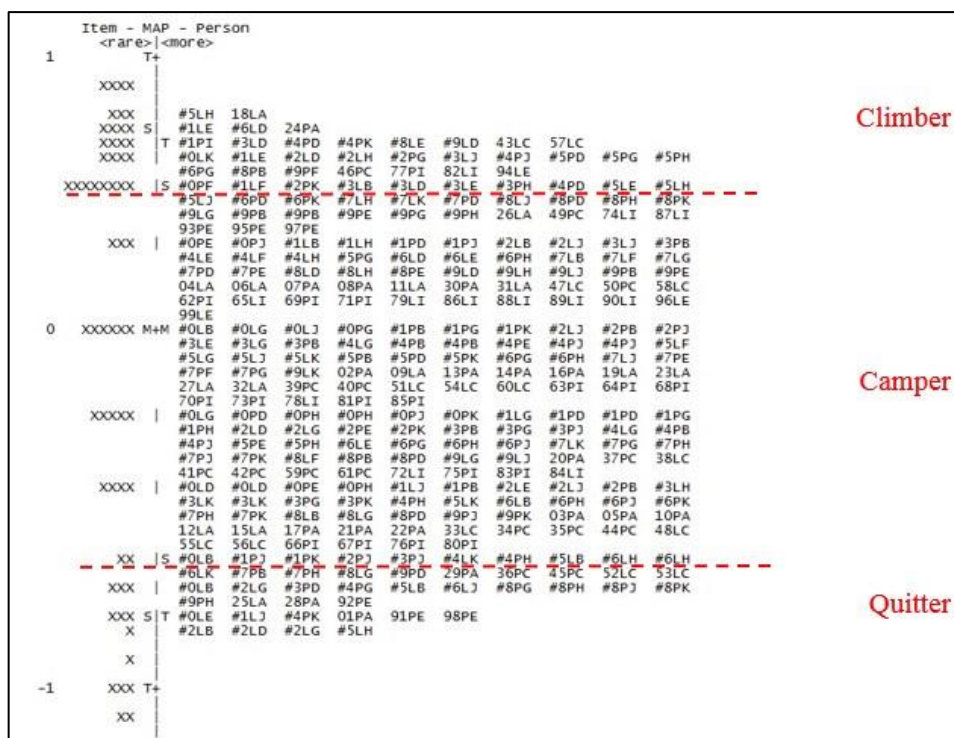


Figure 1. Wright Map dari Item Map Person

In Figure 1 above, there are a total of 40 students with the climber type, consisting of 22 male students and 18 female students, 233 students with the camper type, consisting of 98 male students and 135 female students, and 34 students with the quitter type, consisting of 15 male students and 19 female students. In this case, it can be concluded that the majority of students have the camper type, while the least common type is the quitter type. The classification of AQ types is based on research conducted by Rahayu & Alyani (2020).

From the analysis of the data from the 307 students, a selection will be made to form 6 subjects. This selection will consist of 2 subjects, both male and female, with the climber type, 2 subjects with the camper type, and 2 subjects with the quitter type. The selection will be done randomly but still based on the data analysis mentioned earlier. Subsequently, the six subjects will be given an essay test instrument to measure their numeracy literacy skills, and interviews will be conducted to obtain primary data or to validate the subjects' responses from the numeracy literacy test they have completed. The indicators of numeracy literacy skills according to Salvia, Sabrina, & Maula (2022) include analyzing information presented in various forms (tables, graphs, charts, diagrams, etc.), using various numbers and mathematical symbols to solve problems in various everyday life contexts, and interpreting analysis results to predict and make decisions. This aligns with the stages of numeracy literacy outlined by Susetyawati & Kintoko (2022), which involve formulating situations mathematically, applying mathematical concepts, facts, procedures, and reasoning, as well as interpreting, using, and evaluating results mathematically. Based on these considerations, the indicators of numeracy literacy abilities in this study are as follows: (1) Students are able to formulate problems presented in various forms (tables, graphs, diagrams, images, etc.). (2) Students are able to apply mathematical concepts, numbers, and symbols needed to solve problems. (3) Students are able to interpret and evaluate analysis results in relation to the given problems. From the selected six subjects, the researcher will create subject codes so that the research data can be categorized according to the codes created by the researcher.

Table 2. Subject Coding

| Number | Category of Adversity Quotient | Gender | Kode |
|--------|--------------------------------|--------|------|
| 1. | <i>Climber</i> | Male | LB1 |
| | | Female | PB2 |
| 2. | <i>Camper</i> | Male | LP1 |
| | | Female | PP2 |
| 3. | <i>Quitter</i> | Male | LQ1 |
| | | Female | PQ2 |

In data analysis techniques, researchers utilize the techniques described by Miles and Huberman. The data analysis technique by Miles and Huberman consists of three stages: data reduction, data display, and conclusion drawing (Sugiyono, 2013). In terms of data validity testing, researchers employ triangulation and member checking to ascertain the alignment of the received data with the data provided by the data source. This ensures that the information received and used for report writing aligns with the intentions of the informant or data provider (Sugiyono, 2013). In this case, after the subjects complete the test instrument to measure numeracy literacy skills, the data obtained from the test will be used as interview material to corroborate the subjects' answers from the numeracy literacy test they have undertaken.

RESULT

Referring to the previously explained method, the data presented in the results of the test instrument and interviews with research subjects are in descriptive form. Following the initial step, research subjects fill out the AQ questionnaire instrument. After obtaining the results, the researcher performs an analysis to categorize them according to the AQ types. The categorized data according to AQ types can be seen in Figure 1. Subsequently, the researcher randomly selects six subjects from each type with different genders, as indicated by the coding in Table 2.

After determining the six subjects, the researcher proceeds to administer an essay test to assess the numeracy literacy skills of these subjects, followed by an interview. The interview results are then

transcribed, and a detailed presentation of the interviews with each research subject is conducted to obtain an overview of the numeracy literacy abilities possessed by climber, camper, and quitter students. The results of the test instrument and interviews are presented below.

Numeracy Literacy Ability of Male Climber Subject

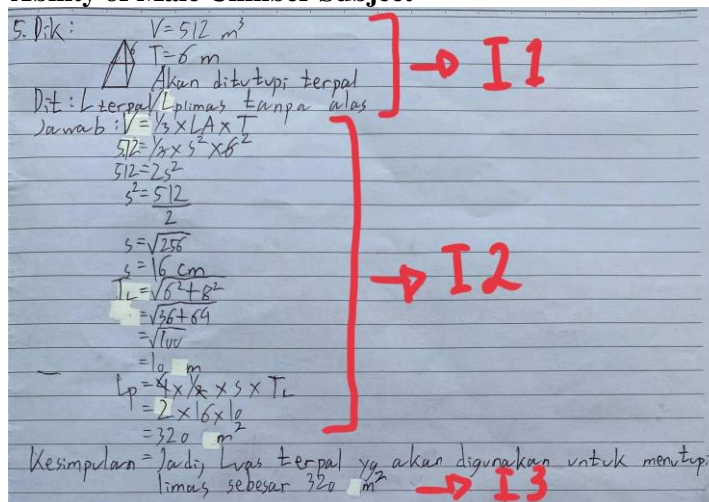


Figure 2. LBI's Subject Answer to Question Number 5

To further review the analysis of numeracy literacy skills in subject LBI's ability to solve mathematics problem number 5, the researcher transcribed and presented the interview data with subject LBI as follows.

- Researcher : "State what is known from the problem of question number 5. Explain with your own language."
 LBI : "It is known that there is a pyramid with a rectangular base whose volume is 512 m^3 , the height of the pyramid is 6 m, this pyramid will be covered by a tarpaulin."
 Researcher : "Okay. Next, what is asked from question number 5?"
 LBI : "What is the area of the tarpaulin or what is the surface area of the pyramid without the base? Because it's just the tarpaulin covering the top, we can't calculate the base for sure."
 Researcher : "Try to explain what method you used to solve question number 5?"
 LBI : "This is what we know about the volume of the pyramid, while we want to find the the area on its surface. First of all, write down what the volume of the pyramid looks like, The formula for the volume of the pyramid is $\frac{1}{3} \times LA \times t$, then the volume 512 m^2 , the height is 6 m. We calculate $\frac{1}{3} \times 6 = 2$ so it will be $512 = 2s^2$, because find this side, we move, so $s^2 = \frac{512}{2}$, then taking the square root we get $s = 16 \text{ m}$. This is a typo that should be m. Next to find the surface area without the base formula $4 \times \frac{1}{2} \times s \times t$. Because here it's not the height of the pyramid but the slanted height of the triangle, we first find the height using the Pythagorean formula where $\sqrt{6^2 + 8^2}$ yield 10 m. Now that we know the height, we will continue to calculate the surface area. The formula is $4 \times \frac{1}{2} \times s \times t_1$. This is $4 \times \frac{1}{2}$ which is 2, then $2 \times 16 \times 10$. The result is 320 m^2 ."
 Researcher : "So what is the conclusion for number 5?"
 LBI : "So, the area of the tarpaulin needed to cover the pyramid is 320 m^2 ."
 Researcher : "Do you have any difficulties in working on question number 5?"
 LBI : "The difficulty got stuck when looking for the height of the tilted triangular pyramid this, i was confused there but also found a solution."
 Researcher : "Are you sure about the answer? Have you checked again?"
 LBI : "Yes I'm sure and have checked again."

Based on the answers provided by the subject in question number 5, as presented in Figure 2, and the results of the interview, it is found that for the problem formulation process indicator (I1), subject LB1 is able to formulate the problem presented in the question by writing down the given and required information completely and accurately and presenting it in the form of an image. During the interview, subject LB1 was also able to explain the meaning of the problem and express it in mathematical terms. Moving on to the indicator of applying mathematical concepts, numbers, and symbols necessary to solve the problem (I2), subject LB1 is capable of applying concepts with appropriate strategies and using the required mathematical concepts, numbers, and symbols in calculations accurately and completely. During the interview, subject LB1 was also able to explain the concepts used in their calculations thoroughly and accurately, from the beginning to the end. Furthermore, in the interpretation and evaluation of results stage (I3), subject LB1 is able to interpret and evaluate the results by drawing conclusions from their calculations accurately and according to the context of the problem. During the interview, subject LB1 could verbally communicate the interpretation and evaluation of the results in line with the context of the problem accurately.

Numeracy Literacy Ability of Female Climber Subject

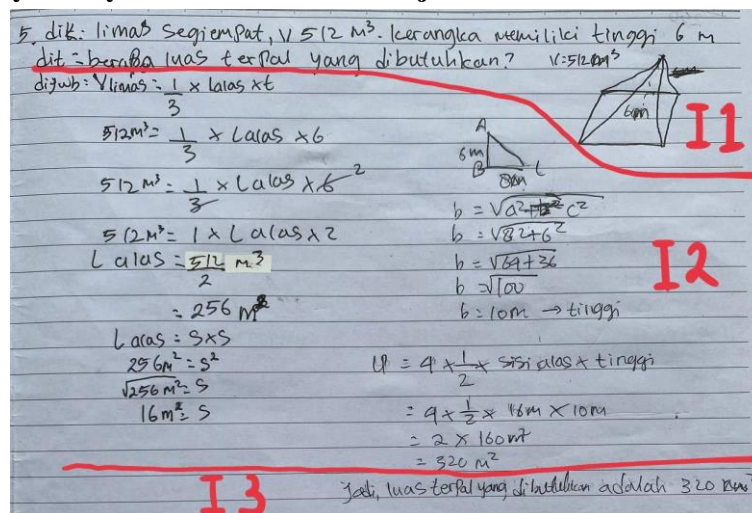


Figure 3. PB2's Subject Answer to Question Number 5

To further review the analysis of numeracy literacy skills in subject PB2's ability to solve mathematics problem number 5, the researcher transcribed and presented the interview data with subject PB2 as follows.

- Researcher : "State what is known from the problem of question number 5. Explain with your own language."
- PB2 : "The volume of the rectangular pyramid is 512 m³ and the high frame is 6 m."
- Researcher : "Okay. Next, what is asked from question number 5?"
- PB2 : "How much tarpaulin is needed.."
- Researcher : "Try to explain what method you used to solve question number 5?"
- PB2 : "First I use the pyramid volume formula. The volume of the pyramid is $\frac{1}{3} \times LA \times t$, The volume of the pyramid is known to be written under V so it is $512 \text{ m}^3 = \frac{1}{3} \times LA \times 6$. Because this $\frac{1}{3}$ and 6 can be divided into 2. $512 \text{ m}^3 = 1 \times LA \times 2$ because you are looking for the area of the base, then $\frac{512 \text{ m}^3}{2} = 256 \text{ m}^2$. $LA = s^2$ because I know the area of the base, $256 \text{ m}^2 = s^2$ and get $s = 16 \text{ m}$. Next, look for the surface area, but before that, find the height of the upright side using the Pythagorean formula and get a height of 10 m. Then find the surface area of the pyramid without a base by means of $4 \times \frac{1}{2} \times s_{\text{atas}} \times t = 4 \times \frac{1}{2} \times 16 \text{ m} \times 10 \text{ m}$. The surface area is 320 m^2 ."

- Researcher : "So what is the conclusion for number 5?"
 PB2 : "So, the required tarpaulin area is 320 m²."
 Researcher : "Do you have any difficulties in working on question number 5?"
 PB2 : "The difficulty is just too long, so you have to do it carefully and remember the difficult concepts and formulas."
 Researcher : "Are you sure about the answer? Have you checked again?"
 PB2 : "I'm sure. Yes, I have."

Based on the answers provided by the subject in question number 5, as presented in Figure 3, and the results of the interview, it is found that for the problem formulation process indicator (I1), subject PB2 is able to formulate the problem presented in the question by writing down the given and required information completely and accurately and presenting it in the form of an image. During the interview, subject PB2 was also able to explain the meaning of the problem and express it in mathematical terms. Moving on to the indicator of applying mathematical concepts, numbers, and symbols necessary to solve the problem (I2), subject PB2 is capable of applying concepts with appropriate strategies and using the required mathematical concepts, numbers, and symbols in calculations accurately and completely. During the interview, subject PB2 was also able to explain the concepts used in their calculations thoroughly and accurately, from the beginning to the end. Furthermore, in the interpretation and evaluation of results stage (I3), subject PB2 is able to interpret and evaluate the results by drawing conclusions from their calculations accurately and according to the context of the problem. During the interview, subject PB2 could verbally communicate the interpretation and evaluation of the results in line with the context of the problem accurately.

Numeracy Literacy Ability of Male Camper Subject

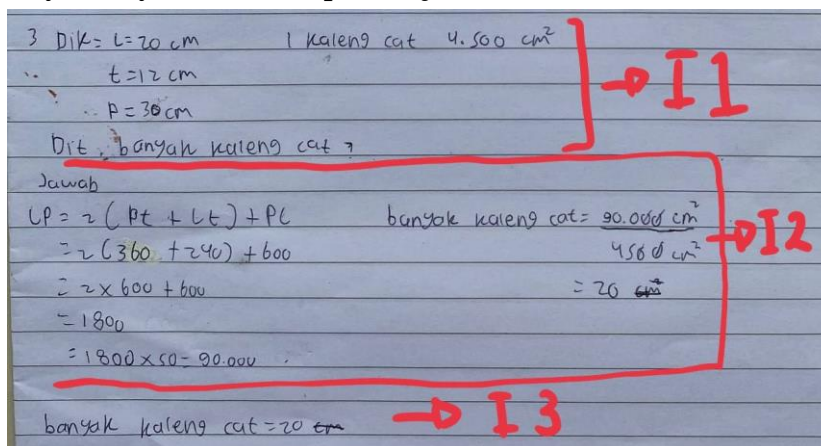


Figure 4. LP1's Subject Answer to Question Number 3

To further review the analysis of numeracy literacy skills in subject LP1's ability to solve mathematics problem number 3, the researcher transcribed and presented the interview data with subject LP1 as follows.

- Researcher : "State what is known from the problem of question number 3. Explain with your own language."
 LP1 : "It is known that the box has dimensions $l = 20$ cm, $t = 12$ cm, and $p = 30$ cm. Each one of paint can cover 4500 cm²."
 Researcher : "Is that all that is known?"
 LP1 : "Yes, that's all."
 Researcher : "Okay. Next, what is asked from question number 3?"
 LP1 : "Hmm.. lots of paint cans."
 Researcher : "Try to explain what method you used to solve question number 3?"
 LP1 : "Use the surface area of the cuboid without cover. The formula is $LP = (2(pt + lt) + pl)$, length, width, and height are already known, so I multiply it to get $LP = (2(360 + 240) + 600)$. $LP = (2(600) + 600)$. $LP = 1800$ cm. Because I wanted

to make 50 storage boxes, it would be $1800 \times 50 = 90.000 \text{ cm}$. To get that many paint cans $90.000 \text{ cm}^2 \div 4.500 \text{ cm}^2 = 20$. I'm sorry it means 20 paint cans."

- Researcher : "So what is the conclusion for number 3?"
 LP1 : "So, the number of cans of paint is 20 paint cans."
 Researcher : "Do you have any difficulties in working on question number 3?"
 LP1 : "No, I don't."
 Researcher : "Are you sure about the answer? Have you checked again?"
 LP1 : "I'm sure. Yes, I have."

Based on the answers provided by the subject in question number 3, as presented in Figure 4, and the results of the interview, it is found that for the problem formulation process indicator (I1), subject LP1 is less capable of formulating the problem presented in the question because they didn't provide complete information regarding what is known in the problem and didn't present it in the form of an image. During the interview, subject LP1 also failed to mention one of the given pieces of information in the problem, which is that 50 storage boxes will be made. Moving on to the indicator of applying mathematical concepts, numbers, and symbols necessary to solve the problem (I2), subject LP1 is capable of applying concepts with appropriate strategies and using the required mathematical concepts, numbers, and symbols in calculations accurately. However, subject LP1 is less careful in writing down the units in the final answers. During the interview, subject LP1 could explain the concepts used in their calculations thoroughly and accurately, from the beginning to the end, and could state the units in the final answers accurately. Furthermore, in the interpretation and evaluation of results stage (I3), subject LP1 is capable of interpreting and evaluating the results by drawing conclusions from their calculations according to the context of the problem. However, subject LP1 is less meticulous in writing down the final units in their conclusions. During the interview, subject LP1 could verbally communicate the interpretation and evaluation of the results in line with the context of the problem and could mention the correct final units.

Numeracy Literacy Ability of Female Camper Subject

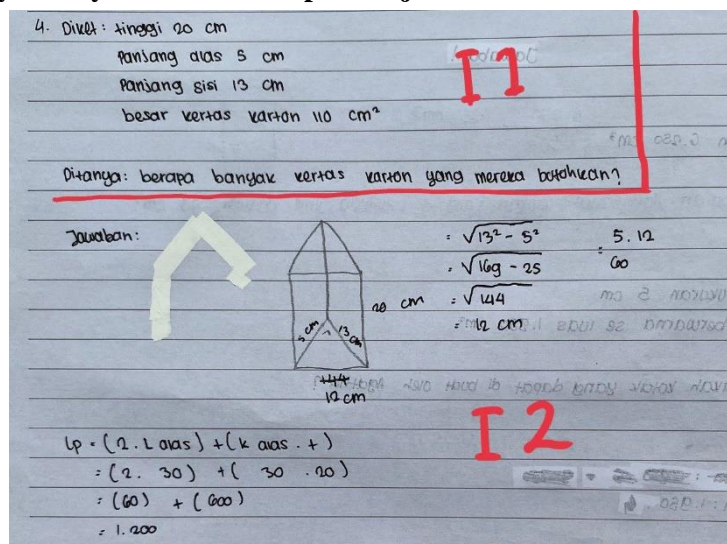


Figure 5. PP2's Subject Answer to Question Number 4

To further review the analysis of numeracy literacy skills in subject PP2's ability to solve mathematics problem number 4, the researcher transcribed and presented the interview data with subject PP2 as follows.

- Researcher : "State what is known from the problem of question number 4. Explain with your own language."
 PP2 : "The height of the prism is 20 cm, the length of the base is 5 cm, the length of the sides are 13 cm and the area of cardboard is 110 cm²."
 Researcher : "Okay. Next, what is asked from question number 4?"

- PP2 : "How much cardboard do they need?.."
 Researcher : "Try to explain what method you used to solve question number 4?"
 PP2 : "First find the base of the prism using the Pythagorean formula. $\sqrt{13^2 - 5^2}$
 $\sqrt{169 - 25} = \sqrt{144}$ then reduced to 12 cm. 12 cm is the base of the prism. To find
 the surface area of the prism, the formula is $(2 \times L_{atas}) + (K_{atas} \times t)$. Then
 (2×30)
 Researcher : "Wait a minute, where did the number 30 come from?"
 PP2 : "This is from the overall results of this calculation.."
 Researcher : "Is this wide? What is the formula for the area of the base?"
 PP2 : "Hmm..."
 Researcher : "Let me ask again. Where did the number 30 come from?"
 PP2 : "Hmm.. I forgot. As far as I can remember, I added them all up."
 Researcher : "Okay it's okay. Have you done this until the final answer yet? If you are not,
 why not continue"
 PP2 : "Doesn't seem like it yet. At that time I thought I was done here so I didn't know
 what to do next."
 Researcher : "Do you have any difficulties in working on question number 4?"
 PP2 : "Yes. The difficulty is in the formula and how to calculate it, so it doesn't work for me to
 continue again."
 Researcher : "Are you sure about the answer? Have you checked again?"
 PP2 : "No, because it looks like something is still wrong. Yes, I have."

Based on the answers provided by the subject in question number 4, as presented in Figure 5, and the results of the interview, it is found that for the problem formulation process indicator (I1), subject PP2 is capable of formulating the problem presented in the question by writing down the given and required information completely and accurately and presenting it in the form of an image. During the interview, subject PP2 was also able to explain the meaning of the problem and express it in mathematical terms. However, moving on to the indicator of applying mathematical concepts, numbers, and symbols necessary to solve the problem (I2), subject PP2 is less capable of applying concepts with appropriate strategies and using the required mathematical concepts, numbers, and symbols in calculations accurately and completely. Subject PP2 showed a lack of attention to detail in their calculations and was unable to continue their calculations due to not knowing the next concepts needed. During the interview, subject PP2 also could not explain the concepts used in their calculations thoroughly and accurately from the beginning to the end, as they were unable to complete question number 4 until the end. Furthermore, in the interpretation and evaluation of results stage (I3), subject PP2 was unable to interpret and evaluate the results of their calculations. They didn't make conclusions according to the context of the problem, and they were unable to complete the problem to obtain a final result.

Numeracy Literacy Ability of Male Quitter Subject

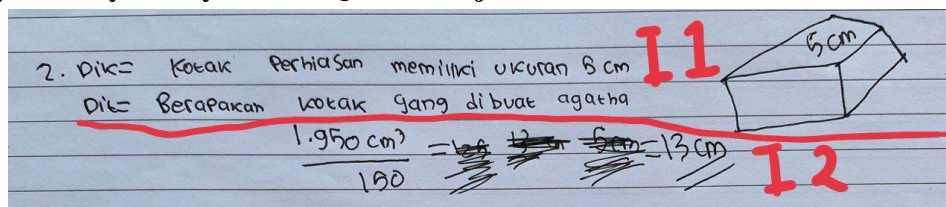


Figure 6. LQ1's Subject Answer to Question Number 2

To further review the analysis of numeracy literacy skills in subject LQ1's ability to solve mathematics problem number 2, the researcher transcribed and presented the interview data with subject LQ1 as follows.

- Researcher : "State what is known from the problem of question number 4. Explain with your own language."
 LQ1 : "Jewelry box measuring 5 cm (while reading the questions) the colored paper is it has

an area of 1.950 cm^2 .”
 Researcher : “What this 1.950 cm^2 ?”
 LQ1 : “The area of colored paper it has.”
 Researcher : “Okay. Next, what is asked from question number 2?”
 LQ1 : “How many boxes did Agatha make?”
 Researcher : “Try to explain what method you used to solve question number 2. Where 150 come from?”
 LQ1 : “From $5 \times 5 \times 5$. Ehh heemm from $6 \times 5 \times 5$.”
 Researcher : “What formula do you use?”
 LQ1 : “Heem volume formula, I’m sorry surface area cuboid eh cube.”
 Researcher : “On the answer sheet, why didn’t you write down where you got the 150 from?”
 LQ1 : “Hehe I forgot to write down the calculations.”
 Researcher : “Then this 1.950 cm^3 Why you divided by 150?”
 LQ1 : “Hmm...maybe to find his side.”
 Researcher : “Find side? Okei what is the result?”
 LQ1 : “The result is 13 cm.”
 Researcher : “What do you think about the conclusion for number 2? Do you write in the answer sheet?”
 LQ1 : “Yes it’s not written. The conclusion is a box that Agatha can make 13 cm.”
 Researcher : “Do you have any difficulties in working on question number 2?”
 LQ1 : “No, I don’t.”
 Researcher : “Are you sure about the answer? Have you checked again?”
 LQ1 : “Yes, I’m sure. Yes, I have.”

Based on the answers provided by the subject in question number 2, as presented in Figure 6, and the results of the interview, it is found that for the problem formulation process indicator (I1), subject LQ1 is less capable of formulating the problem presented in the question because they didn't provide complete information regarding what is known in the problem and didn't present it in the form of an image. However, during the interview, subject LQ1 was able to recall and mention the given and required information in the problem completely when they read the question again. Moving on to the indicator of applying mathematical concepts, numbers, and symbols necessary to solve the problem (I2), subject LQ1 is less capable of applying concepts with appropriate strategies and using the required mathematical concepts, numbers, and symbols in calculations accurately and completely. Subject LQ1 showed a lack of completeness in writing down the initial concepts and was not accurate in writing down the units in the final answers. During the interview, subject LQ1 also could not explain the concepts used in their calculations thoroughly and accurately from the beginning to the end. They seemed hesitant and confused when explaining their calculation results. Furthermore, in the interpretation and evaluation of results stage (I3), subject LQ1 was unable to interpret and evaluate the results of their calculations. They didn't draw conclusions that aligned with the context of the problem. During the interview, subject LQ1 could communicate their interpretation and evaluation of the results, but with inaccurate mathematical units.

Numeracy Literacy Ability of Female Quitter Subject

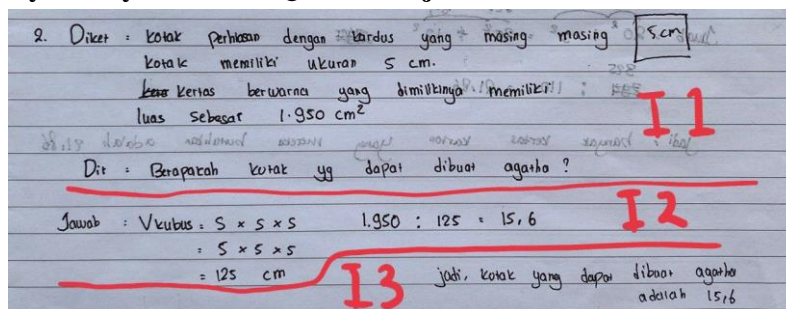


Figure 7. PQ2’s Subject Answer to Question Number 2

To further review the analysis of numeracy literacy skills in subject PQ2's ability to solve mathematics problem number 2, the researcher transcribed and presented the interview data with subject PQ2 as follows.

- Researcher : *"State what is known from the problem of question number 4. Explain with your own language."*
- PQ2 : *"It is known that the jewelry box with each box has a size of 5 cm. The box is in the form of a cuboid (reading the problem) eh cube. Then the colored paper has an area of 1.950 cm²."*
- Researcher : *"Okay. Next, what is asked from question number 2?"*
- PQ2 : *"How many boxes did Agatha make."*
- Researcher : *"Try to explain what method you used to solve question number 2?"*
- PQ2 : *"Here I use the cube volume method. $V_{kubus} = s \times s \times s = 5 \times 5 \times 5 = 125 \text{ cm}$. After that, $1.950 \div 125 = 15,6$. The result is 15,6."*
- Researcher : *"Why did you use the volume of the cube to solve problem number 2?"*
- PQ2 : *"Because I haven't studied before, I just use what I know."*
- Researcher : *"Ohh Okay. What do you think about the conclusion from number 2?"*
- PQ2 : *"So, the box that Agatha can make is 15,6."*
- Researcher : *"Are you sure about the answer? Have you checked again?"*
- PQ2 : *"No, I'm not sure. Yes, I have but I don't know about the formula."*
- Researcher : *"Do you have any difficulties in working on question number 2?"*
- PQ2 : *"I don't know what the formula is used for question number 2 and how to calculate it, I don't know either."*

Based on the answers provided by the subject in question number 2, as presented in Figure 7, and the results of the interview, it is found that for the problem formulation process indicator (I1), subject PQ2 is less capable of formulating the problem presented in the question because they only wrote down the given and required information completely and accurately, but did not present it in the form of an image. However, during the interview, subject PQ2 was able to recall and mention the given and required information in the problem completely. Moving on to the indicator of applying mathematical concepts, numbers, and symbols necessary to solve the problem (I2), subject PQ2 is not capable of applying concepts with appropriate strategies and using the required mathematical concepts, numbers, and symbols accurately in calculations. Subject PQ2 made mistakes in applying mathematical concepts, numbers, and symbols, resulting in inaccurate calculation results. During the interview, subject PQ2 mentioned that they only worked based on what they remembered without applying the correct mathematical concepts required for the problem. Furthermore, in the interpretation and evaluation of results stage (I3), subject PQ2 was unable to interpret and evaluate the results of their calculations. They didn't draw conclusions that aligned with the context of the problem. During the interview, subject PQ2 could communicate their interpretation and evaluation of the results, but the final result was not accurate.

DISCUSSION

Based on the analysis results of the climber-type students, it was found that both male and female climber-type students, during the problem-formulating process, can formulate problems presented in the questions by writing down the given information and the question clearly and accurately and presenting it in the form of an image. During the interview, both students could also explain the meaning of the problem and communicate it in mathematical terms. These findings align with the research by Mawardhiyah & Manoy (2018), which states that climber-type students explore the given information in the problem and seek solutions to the problem. Furthermore, in the process of applying mathematical concepts, numbers, and symbols required to solve the problems, both students can apply the concepts with appropriate strategies and use the necessary mathematical numbers and symbols in the calculations accurately and completely. During the interview, both students could also explain the concepts used in their calculations thoroughly and accurately from the beginning to the end. These results support the statement by Stoltz that climber types are thinkers of all possibilities and enjoy challenges (Adam, Dwijayanti, & Endahwuri, 2022). Moving on to the process of interpreting and evaluating the results,

both students are capable of interpreting and evaluating the results by concluding their calculations that are appropriate to the context of the problems. These findings align with the study by Nilasari & Anggreini (2019), which indicates that climber types reinterpret problems in the context of the real world and provide logical reasons for each of their answers. It is also evident from the interview results that both subjects faced difficulties while working on the problems, but they managed to overcome them by utilizing all their knowledge, leading to accurate outcomes. Stoltz also stated that climber types are prepared to face challenges on their way to success (Bruno, Qohar, Susanto, & Permadi, 2021). In this context, both male and female climber-type students fulfill the three indicators of numeracy literacy abilities, which are problem-formulating, applying mathematical concepts, and interpreting and evaluating processes. These research findings are in line with the study by Ivo et al. (2022), which shows that climber-type students' numeracy literacy skills are proficient in solving problems related to PISA's Systems of Linear Equations and Inequalities (SPLDV) model. Additionally, the research by Adam et al. (2022) demonstrates that climber-type students' mathematical literacy skills are proficient in solving problems related to flat-sided spatial forms and fulfill six indicators.

Based on the analysis results of the camper-type students, it was found that male students, during the problem-formulating process, are less capable of formulating problems found in the questions because they do not write down the given information in the question completely and do not present it in the form of an image. During the interview, these male students also struggled to mention one of the given information in the problem. These findings align with the study by Nilasari & Anggreni (2019), which indicates that camper-type students can restate the purpose of the problem but do so hesitantly and without much detail. In contrast, female camper-type students can formulate problems by writing down the given information and the question completely and presenting them in the form of images. During the interview, these female students can also explain the meaning of the problem and communicate it in mathematical terms.

On to the process of applying mathematical concepts, numbers, and symbols required to solve the problems, male students are capable of applying the concepts with appropriate strategies and using the necessary mathematical numbers and symbols in the calculations accurately. However, they are less careful in writing down the units in the final results. However, during the interview, these male students can mention the correct units for the final results. On the other hand, female students are less capable of applying the concepts with appropriate strategies and using the necessary mathematical numbers and symbols in the calculations accurately and completely. They lack accuracy in their calculations and cannot proceed with their calculations because they do not know the subsequent concepts required. During the interview, these female students also could not explain the concepts used in their calculations thoroughly and accurately from the beginning to the end. These results align with the study by Rahmawati et al. (2015), which shows that camper-type students can solve problems according to strategies and steps but lack precision in their calculations.

Regarding the process of interpreting and evaluating the results, male students are capable of interpreting and evaluating the results by concluding their calculations that are appropriate to the context of the problems. However, they are less precise in writing down the final units in their conclusions. However, during the interview, these male students can mention the correct units for the final results. In contrast, female students are not capable of interpreting and evaluating their calculation results, as they fail to draw conclusions that align with the context of the problems. These findings also align with the study by Pardosi et al. (2022), which shows that camper-type subjects do not interpret the results back into the problem context. It is also evident from the interview results that both male and female students have checked their results, but they did not attempt to try again and feel satisfied with the obtained results, supporting the statement by Stoltz that camper types are individuals who quickly feel content with their achievements without trying other approaches (Bruno et al., 2021).

As a result, male camper-type students can only fulfill two indicators of numeracy literacy abilities, namely the process of applying mathematical concepts, numbers, and symbols, and the process of interpreting and evaluating the results. On the other hand, female camper-type students can only fulfill one indicator, which is the problem-formulating stage. These research findings align with the study by Adam et al. (2022), which indicates that camper-type subjects are less capable of going through the

stages of applying and interpreting, as they are not fully engaged in finding solutions and interpreting the results into everyday life contexts.

Based on the analysis results of the quitter-type students, it was found that both male and female students, during the problem-formulating process, are less capable of formulating problems found in the questions because they do not present the problems in the form of images. Additionally, male students, also lack completeness in writing down the given information in the question. However, during the interview, both male and female students can mention the given information and the question completely and accurately. Moving on to the process of applying mathematical concepts, numbers, and symbols required to solve the problems, both students are not capable of applying the concepts with appropriate strategies and using the necessary mathematical numbers and symbols in the calculations accurately and completely. Male students lack completeness in writing down the initial concepts and are not precise in writing down the units in the final results. On the other hand, female students make mistakes in applying mathematical concepts, numbers, and symbols, resulting in inaccurate calculations. During the interview, male students cannot explain the concepts used in their calculations from the beginning to the end and are unsure of their responses. Female students, on the other hand, only use their existing knowledge without understanding the necessary concepts for the problem, leading to inaccurate results. These findings align with the study by Septianingtyas & Jusra (2020), which shows that quitter types are unable to plan the problems because they do not know the necessary methods. Regarding the process of interpreting and evaluating the results, both students are not capable of interpreting and evaluating the results because they draw conclusions from their calculations with inaccurate final results. During the interview, female students face difficulties in solving problems because they do not know the methods and concepts required, which also aligns with Stoltz's statement that quitter types are individuals who avoid difficulties, do not seize opportunities, and give up easily (Nilasari & Anggreini, 2019). As a result, both male and female quitter-type students are not capable of fulfilling the three indicators of numeracy literacy abilities. These research findings do not align with the study by Adam et al., (2022), which suggests that quitter types only attempt the problem-formulating stage, while they do not make efforts in the applying and interpreting stages.

CONCLUSION

Based on the research results and discussions presented above, it can be concluded that both male and female climber-type students are capable of fulfilling all indicators of numeracy literacy abilities, namely problem-formulating processes, applying mathematical concepts, numbers, and symbols, and interpreting and evaluating the results. In other words, male and female students with the climber type can effectively tackle real-life problems without giving up. They demonstrate a high level of numeracy literacy. On the other hand, male camper-type students can only fulfill two indicators, and female camper-type students can only fulfill one indicator of numeracy literacy abilities. This means that male camper students can only address real-life problems in the problem-formulating and applying mathematical concepts, numbers, and symbols stages. Female camper students, on the other hand, are only capable of dealing with real-life problems in the problem-formulating stage. However, both groups of camper-type students have not fully mastered the interpreting and evaluating process to align their results with the context of the problems. Hence, both male and female camper-type students demonstrate moderate numeracy literacy abilities. Lastly, both male and female quitter-type students are unable to fulfill all three indicators of numeracy literacy abilities. This indicates that quitter-type students, both male and female, have not yet developed the skills to handle real-life problems. In other words, both male and female quitter-type students exhibit low numeracy literacy abilities. The researcher also concludes that there is no significant difference in numeracy literacy skills between male and female students of the climber, camper, and quitter types. The difference lies only in the steps taken to solve problems and provide reasoning for each selected answer.

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