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STUDENTS' MATHEMATICAL LITERACY BASED ON COVID-19 CONTEXT

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Abstrak

Literasi matematika merupakan kemampuan seseorang dalam merumuskan, menerapkan, dan menginterpretasikan matematika di kehidupan sehari-hari. Penelitian kualitatif deskriptif ini bertujuan untuk mendeskripsikan literasi matematika siswa kelas 9 dalam menyelesaikan soal konteks Covid-19. Empat siswa dipilih dengan menggunakan teknik *purposive sampling* berdasarkan kemampuan matematika tinggi dan sedang. Pengumpulan data dilakukan melalui tes literasi matematika dan wawancara. Hasil penelitian menunjukkan bahwa siswa berkemampuan matematika tinggi dapat memenuhi indikator literasi matematika tahap merumuskan, menerapkan, dan menginterpretasikan, dengan jawaban yang benar. Siswa berkemampuan sedang hanya dapat memenuhi indikator literasi matematika tahap merumuskan dan belum dapat menjawab dengan benar. Siswa berkemampuan tinggi dan sedang memiliki kemampuan yang sangat baik dalam merumuskan suatu masalah. Siswa berkemampuan tinggi memiliki kemampuan yang sangat baik dalam menerapkan pengetahuan yang dimiliki untuk menyelesaikan masalah, sedangkan siswa berkemampuan sedang memiliki kemampuan yang kurang dalam menerapkan pengetahuan yang dimiliki. Siswa berkemampuan tinggi memiliki kemampuan yang cukup dalam menginterpretasikan hasil yang didapat, sedangkan siswa berkemampuan sedang memiliki kemampuan yang kurang dalam menginterpretasikan hasil yang didapat. Siswa berkemampuan tinggi dapat menggunakan informasi tentang Covid-19 yang diberikan untuk menyelesaikan permasalahan di dunia nyata. Siswa berkemampuan sedang belum dapat menggunakan informasi tentang Covid-19 yang diberikan untuk menyelesaikan permasalahan di dunia nyata. Guru perlu memberikan masalah literasi matematika secara rutin untuk melatih siswa dalam memecahkan masalah sehari-hari.

Kata Kunci: literasi matematika, Covid-19.

Abstract

Mathematical literacy is a person's ability to formulate, apply, and interpret mathematics in everyday life. This descriptive qualitative research aims to describe the mathematical literacy of 9th grade students in solving Covid-19 context problems. Four students were selected using purposive sampling techniques based on high and middle mathematical abilities. Data collection is done through math literacy tests and interviews. Research shows that students with high math skills can fulfill the mathematical literacy indicators of the stage of formulating, applying, and interpreting, with the correct answers. Middle math ability students can only fulfill the mathematical literacy indicators of the formulating stage and have not been able to answer correctly. High and middle mathematical ability students have very good abilities in formulating a problem. High mathematical ability students have excellent abilities in applying their knowledge to solve problems, while middle mathematical ability students have less ability to apply their knowledge. High mathematical ability students have sufficient ability to interpret the results obtained, while middle mathematical ability students have less ability to interpret the results obtained. High math ability students can use the information about Covid-19 provided to solve problems in the real world. Middle math ability students have not been able to use the information about Covid-19 provided to solve problems in the real world. Teachers need to provide math literacy problems on a regular basis to train students in solving everyday problems.

Keywords: mathematical literacy, Covid-19.

INTRODUCTION

Mathematics is not only the ability to use formulas, but also the ability to solve everyday problems which is useful for students (Fatimah & Herman, 2018; Indrawati, Fiqi Annisa, & Wardono, 2019; Mulyati, 2016). To achieve these goals, students must be accustomed to solving everyday problems by thinking critically and creatively. Critical and creative thinking is a basic ability in mathematical literacy (Junianto & Wijaya, 2019). So, in order for students to be able to solve everyday problems, adequate mathematical literacy skills are needed.

Mathematical literacy is a person's ability to solve everyday problems by formulating, applying, and interpreting mathematics (OECD, 2021; Setiawan, Dafik, & Lestari, 2014). Mathematical literacy demanding person to reason mathematically, use mathematical concepts, procedures, facts, and tools to describe, explain, or predict phenomena/events, and represent strategies with various ways. Indicators of mathematical literacy based on OECD (2021), namely (1) students can formulate mathematical problems, (2) Students can employ mathematical concepts, facts, procedures and reasoning, and (3) Students can interpret, apply and evaluate mathematical results. For formulate stage, students are expected to be able to identify mathematical concepts contained in real-world problems, identify variables in the problem, and represents problems with mathematical situations such as using symbols, verbals, diagrams, and other models. For employ stage, students are expected to be able to design strategies, implement them to find solutions to given problems, and apply mathematical concepts, facts, procedures to find solutions. For interpret stage, students are able to interpret the results obtained from the calculation back into the real-world context and give a reason why the results or mathematical conclusions obtained make sense or not to the given problem.

Mathematical literacy is very important to learn at this time. Based on Bappenas (2019); Grotlüschen, Desjardins, & Liu (2020), mathematical literacy is one of the components of ability that must be possessed to achieve the Sustainable Development Goals 2030. In addition, math literacy also helps students use mathematics in everyday life (Genc & Erbas, 2019; Hwang & Ham, 2021).

Until now, the mathematical literacy ability of Indonesian students is still relatively low (OECD, 2019; Sakinah & Avip, 2021). Based on the results of the PISA (Programme for International Student Assessment) study last year 2018 placed Indonesia in 72 out of 78 countries (OECD, 2019). PISA is an international scale assessment every 3 years since 2000 to measure the ability of 15 years old students in reading, math, and science. PISA is held to determine the quality of a country's education which focuses on everyday problems, not just applying formulas. Based on PISA results, the Indonesian government ordered to improve mathematical learning involving literacy elements (Han et al., 2017).

Besides being low, the ability of Indonesian students to solve mathematical literacy problems is also different. Different mathematical literacy abilities are related to different mathematical abilities. Mathematical ability is a person's ability to think mathematically and solve mathematical problems (Hakiki & Wijayanti, 2021). The research results of Mena, Lukito, & Siswono (2016) on students' mathematical literacy found that only one of the three research subjects was able to do it correctly. (Mahdiansyah & Rahmawati, 2014) suggested the factors that influence the achievement of mathematical literacy in Indonesia, namely: environmental factors, instructional factors, and personal factors.

Mathematical literacy problems require students to solve everyday problems using mathematical reasoning so that they can make the right decisions (Umbara & Suryadi, 2019). The factors that make it difficult for students to solve mathematical literacy problems include the fact that students are not used to solving mathematical literacy-based problems (Wijaya, van den Heuvel-Panhuizen, Doorman, & Robitzsch, 2014), limited number of teachers who provide problems in the form of math literacy (Putri & Zulkardi, 2018; Zulkardi & Kohar, 2018), lack of sources of math literacy problems in school libraries or bookstores (Wijaya, van den Heuvel-Panhuizen, & Doorman, 2015), low levels of basic mathematics skills of students (Faozi, Wardono, Haryani, Al, & Sindangjaya, 2020), and students have not been able to understand narrative problems and transform them into mathematical models (Holis, Kadir, & Sahidin, 2016).

At the time of this pandemic, every day we are faced with data both numbers and graphs about Covid-19 that are closely related to mathematics. Everyone is expected to understand the information provided regarding Covid-19. However, to understand the data, everyone must have adequate mathematical literacy skills (Aguilar & Castaneda, 2021). This is in line with the research results of Heilmann (2020); Zeuner, Pabst, & Benz-Gydat (2020) which show that there is a relationship between mathematical literacy and the ability to understand health information and make decisions based on knowledge.

Several previous studies have examined the mathematical literacy skills of students, especially in the 9th grade such as in terms of solving PISA problems space and shape content (Lilianawati, Setiawan, Suwito, & Rini, 2021), solving PISA problems in terms of gender (Lanya, Zayyadi, Sulfiah, & Roziq, 2021), solving mathematical literacy problems on uncertainty and data content (Amelia, Syamsuri, & Novaliyosi, 2020), mathematical literacy skills are reviewed from the Problem Based Learning-Realistic learning model with the Edmodo approach (Wardono, Mariani, Rahayuningsih, & Winarti, 2018), students' mathematical literacy skills are reviewed from the domain of content and processes (Rifai & Wutsqa, 2017), mathematical literacy skills based on DavidKolb's learning style (Furqon, Siswanah, & Tsani, 2021). However, the ability of 9^{th} graders in solving math literacy problems based on the context of Covid-19 has not been studied. Based on the low literacy skills of Indonesian students and the importance of understanding data about Covid-19 that appears throughout the media, researchers are interested in research students' mathematical literacy skills in solving Covid-19 context-based math literacy problems. The formulation of the problem in this study is how is the mathematical literacy of 9^{th} graders reviewed from high ability and is in solving the context of Covid-19? The results of this study can be a reference for teachers in practicing students' mathematical literacy skills.

METHOD

The research method used is qualitative descriptive. Rukajat (2018) states that qualitative research collects data through interviews and observations by getting open information. This research aims to describe the mathematical literacy of 9^{th} grade students in view of high math ability and middle math ability in solving the problem of Covid-19 context. The research procedure is carried out in Figure 1 as follows.

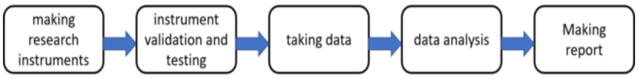


Figure 1. Research procedure

The subjects in this study were 4 students of 9^{th} graders who were selected by purposive sampling, that are 2 students who had high math skill and 2 students who had middle math skill. Low ability was not chosen because based on research Nurutami, Riyadi, & Subanti, 2018; Yulia, Kustati, & Afriadi (2021), low-skilled students do not know how to do math literacy problems, can only do routine problems. The criteria of students who have middle and high math ability are in Table 1. The score is derived from the average daily test grade of the student's mathematics subject.

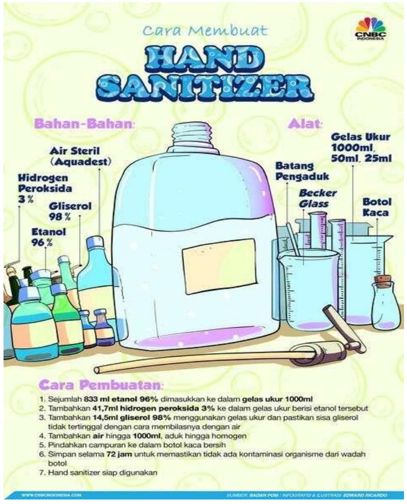
Table 1. Category of Mathematical Ability Levels

No.	Score	Level
1	Score $\geq$ 85	High
2	70 $\leq$ score < 85	Middle

Source : Nurutami, Riyadi, & Subanti (2018)

The instruments used are mathematical literacy test sheets and interview guidelines. The technique of collecting data on students' mathematical literacy results in the form of giving math literacy test questions about the making of hand sanitizer named test 1 (T1) in Figure 2. The collection of students' daily math test scores is used to determine students who have high math ability and middle math ability. Interviews are used to supplement data on students' math literacy test results and obtain more in-depth information about student work outcomes. Test results and interview data are analyzed by triangulation techniques based on Miles, Huberman, & Saldana (2014) namely: (a) the data reduction stage, i.e. researchers choose the necessary data, thus eliminating less relevant data; (b) Presentation of data, i.e. the researcher presents test results and interview results based on mathematical literacy indicators in Table 2; (c) Make of conclusions, that is the making of conclusions from all data of mathematical literacy test results and interviews in the form of descriptions of mathematical literacy of 9^{th} grade students who have high math ability and middle math ability in solving Covid-19 context problems. Here's a problem of the math literacy used in this study (T1) in Figure 2.

Pay attention the poster about the making of hand sanitizer according to WHO below!



Source : cnbcindonesia.com

To make 1 bottle of hand sanitizer measuring 1 liter, the following ingredients are needed: 96% ethanol as much as 833 ml, hydrogen peroxide 3% as much as 41,7 ml, glycerol 98% as much as 14,5 ml, and aquades as much as 1 liter. How many bottles of hand sanitizer can be made with a composition of 3000 ml of ethanol, 200 ml of hydrogen peroxide, 100 ml of glycerol, and 5 liters of aquades?

Figure 2. Mathematical literacy test instrument (T1) Adapted from Ambarita & Zulkardi (2020)

Table 2. Indicators of mathematical literacy

Mathematical Process	Mathematical Literacy Indicators
Formulate mathematical problems (F)	Identify mathematical concepts contained in real-world problems and identify variables in the problem (F-1).

	Represents problems with mathematical situations such as using symbols, verbals, diagrams, and other models (F-2).
Employ mathematical concepts, facts, procedures and reasoning (E)	Design strategies and implement them to find solutions to given problems (E-1).
	Apply mathematical concepts, facts, and procedures to find solutions (E-2).
Interpret, apply and evaluate mathematical results (I)	Interpret the results obtained from the calculation back into the real-world context (I-1).
	Give a reason why the results or mathematical conclusions obtained make sense or not to the given problem (I-2).

Source : OECD (2021)

RESULT AND DISCUSSION

Researchers selected 2 high math ability students (C and T) and 2 middle math ability students (R and H) of 9th grade. 9th grade was chosen because it routinely does AKM (Assesmen Kompetensi Minimum) to support mathematical literacy skills. The selection of subjects is based on the average of daily math test scores and interviews with math teachers. The 4 selected research subjects have mathematical averages as in Table 3 below.

Table 3. The mathematical averages score of subjects C, T, R, and H

Research subject	Score	Level
C	92	high
T	90	high
R	80	middle
H	76	middle

The results of the work of 4 subjects were analyzed using indicators of mathematical literacy. Here are the results obtained shown in Table 4.

Table 4. The results of the analysis of mathematical literacy of subjects

Mathematical process	C	T	R	H
Formulate mathematical problems (F)	can identify what is known and asked on problem	can identify what is known and asked about the problem	can identify what is known and asked about the problem	can identify what is known and asked about the problem
	uses number symbols to represent problems	uses number symbols to represent problems	uses number symbols to represent problems	uses number symbols to represent problems
Employ mathematical concepts, facts, procedures and reasoning (E)	can design strategies correctly and apply them	can design the strategy correctly and apply them	devised the wrong strategy	designed the wrong strategy
	apply concept, to find solutions with comparative concepts	apply concept, to find solutions with the concept of division and rounding	Apply concept, but the strategy that she use is wrong	apply concept, but the strategy that he use is wrong
Interpret, apply and evaluate mathematical results (I)	can find solutions correctly and can interpret the results to the real-world context	less complete in interpreting the results according to the real-world context	does not include conclusions on his work and wrong in interpreting the results	does not include conclusions on his work and wrong in interpreting the results
	can give a reason correctly and clearly based on the conclusion taken	less able to give a reason correctly and clearly to the conclusions taken	unable to give a correct and clear reason for the conclusions taken	unable to give a correct and clear reason for the conclusions taken

Although the subjects have received AKM training to practice mathematical literacy skills, only subjects with high mathematical abilities can solve mathematical literacy problems correctly and meet the three indicators of mathematical literacy. Meanwhile, subjects with middle mathematical ability can only fulfill the formulating indicator. Description of the results of the subjects' work for each indicator as follows.

High Math Ability Students' Work Results

Subject 1 (C)

The results of C's work are shown in Figure 3 below.

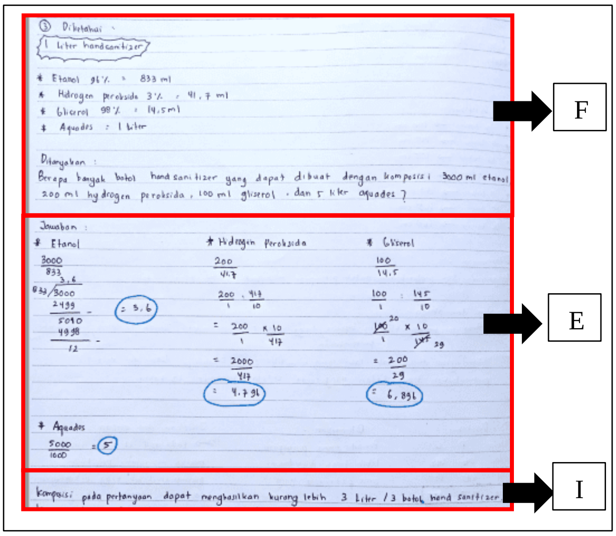


Figure 3. C work's result

At the formulation stage, here is an interview excerpt to find out C's ability to understand the problem of T1.

Q: Have you ever seen problem like T1? **(F-1)**
C: Ever. In elementary school once found such a problem but the result is integer not comma. **(F-1)**
Q: What is asked and known about T1? **(F-1)**
C: It is known the composition of 1 bottle of hand sanitizer and asked how many bottles of hand sanitizer can be made with the existing composition.
Q: What mathematical concepts can you apply to solve the problem? **(F-1)**
C: Comparison. **(F-1)**

Based on the results of C's work on Figure 3 of the F code and supported by interview excerpt, C can identify mathematical concepts contained in real-world problems and identify what is known and asked on problem T1, in accordance with F-1 indicator. These results are in line with the research results of Farida, Qohar, & Swasono (2020). C also corresponds to the F-2 indicator, which uses number symbols to represent problems to mathematical forms. C experienced in working on T1 because it has appeared in elementary school.

At the implementation stage, here is an interview excerpt to find out C's ability to implement strategies in solving the T1 problem.

Q: What strategies have you used to complete T1? **(E-1)**
C: Divide each composition of the substance I have with the composition of the substance of each bottle, then look for the smallest result so that the comparison of the composition is correct, fulfilled all. **(E-1)**
Q: Why use this strategy? Any other way? **(E-1)**
C: Because only this strategy is logical. There are other ways of adding everything I have, divided by the composition of 1 bottle, but the comparison of each substance becomes unclear, and the hand sanitizer is not successfully made. **(E-1)**

Based on the results of students' work on Figure 3 of code E and supported by interview excerpt, C can design strategies correctly and apply them to find solutions, in accordance with E-1 indicator. C has another way that actually the way it is not appropriate to solve the problem. C also fulfill the E-2 indicator, that is apply concepts, facts, and mathematical procedures to find solutions with comparative concepts. The results of C's work in accordance with the indicators E-1 and E-2 are in line with the results of research Farida, Qohar, & Swasono (2020).

At the interpretation stage, here is an interview excerpt to find out the ability of C to interpret the results obtained in solving the problem T1.

Q: What conclusion have you got? **(I-1)**
C: The existing composition can produce 3 bottles of hand sanitizer. **(I-1)**
Q: Are you sure of your conclusions? Why? **(I-2)**
C: Sure because if more than 3 bottles, then the composition comparison is not appropriate and the level is not appropriate. The worst possible hand sanitizer was not successfully made. **(I-2)**

Based on the results of C's work on Figure 3 code I and supported interview excerpt, C can find solutions correctly and can interpret the results according to the real-world context in accordance with I-1 indicator. C is also in accordance with the indicator I-2 which can give a reason correctly and clearly based on the conclusion taken. The results of C's work in accordance with indicators I1 and I2 are in line with the results of research Farida, Qohar, & Swasono (2020).

Subject 2 (T)

The results of C's work are shown in Figure 4 below.

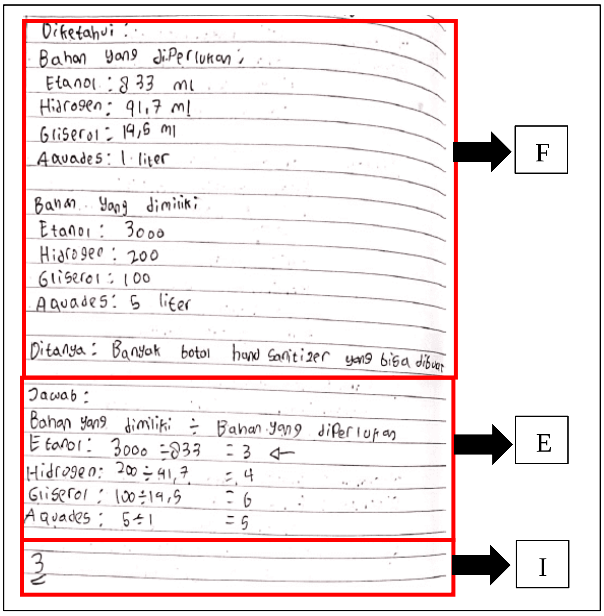


Figure 4. T work's result

At the formulation stage, here is an interview excerpt to find out T's ability to understand the problem of T1.

Q: Have you ever seen problem like T1? **(F-1)**
T: Ever. In the Olympics. **(F-1)**
Q: What is asked and known about T1? **(F-1)**

T: Known the ingredients needed to make hand sanitizer, asked many bottles of hand sanitizer that can be made from available materials. **(F-1)**
Q: What mathematical concepts can you apply to solve the problem? **(F-1)**
T: Division and rounding. **(F-1)**

Based on the results of T's work on Figure 4 of the F code and supported by interview excerpt, T can identify mathematical concepts according to real-world problems and identify what is known and asked about the problem, in accordance with F-1 indicator. This is in line with the results of research Farida, Qohar, & Swasono (2020). T is also in accordance with the F-2 indicator, which uses number symbols to represent problems to mathematical forms. T experienced in working on T1 because it has appeared in Olympics training.

At the implementation stage, here is an interview excerpt to find out the ability of T students in implementing strategies to solve T1 problems.

Q: What strategies have you used to complete T1? **(E-1)**
T: Divide the existing material into the required ingredients per bottle. From the results of the division, I round it because it is impossible to decimal. Because the results of the division vary, I take the smallest division, because if taken larger there will be less material. **(E-1)**
Q: Why use this strategy? Any other way? **(E-1)**
T: Because that's the only way you think, there's no other way. **(E-1)**

Based on the results of T's work on Figure 4 of the E code and supported by interview excerpt, T can design the strategy correctly and apply it to find a solution, in accordance with E-1 indicator. T also fulfill the E2 indicator, that is apply mathematical concepts, facts, and procedures to find solutions with the concept of division and rounding. The results of T's work in accordance with the indicators E-1 and E-2 are in line with the results of research Farida, Qohar, & Swasono (2020).

At the interpretation stage, here is an interview excerpt to find out T's ability to interpret the results obtained to solve the problem T1.

Q: What conclusions have you got? **(I-1)**
T: 3 bottles of hand sanitizer. **(I-1)**
Q: Are you sure of your conclusions? Why? **(I-2)**
T: Sure because my answer is in accordance with the requested question. **(I-2)**

Based on the results of the work T on Figure 4 code I and supported interview excerpt, T can find the correct solution but less complete in interpreting the results according to the real-world context that matches the indicator I-1. T only said 3 bottles of hand sanitizer. T also less in accordance with the indicator I-2 which is less able to give a reason correctly and clearly to the conclusions taken. The results of T's work in accordance with indicators I-1 and I-2 are in line with the research results of Fadillah & Ni'mah (2019).

Middle Math Ability Students' Work

Subject 3 (R)
The results of R's work are shown in Figure 5 below.

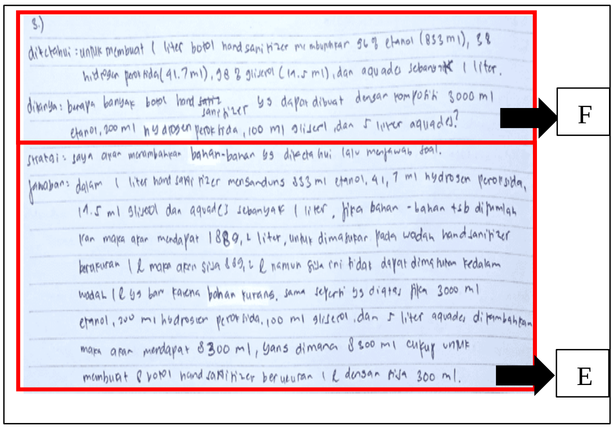


Figure 5. R work's result

At the formulation stage, here is an interview excerpt to find out R's ability to understand the problem of T1.

Q: Have you ever seen problem like T1? **(F-1)**
R: Never **(F-1)**
Q: What is asked and known about T1? **(F-1)**
R: It is known the composition to make 1 bottle of hand sanitizer and asked how many bottles of hand sanitizer can be made with the existing composition. **(F-1)**
Q: What mathematical concepts can you apply to solve the problem? **(F-1)**
R: Addition and division. **(F-1)**

Based on the results of R's work on Figure 5 of the F code and supported by interview excerpt, R can identify mathematical concepts according to real-world problems and identify what is known and asked on the problem in accordance with F1 indicator. These results are in line with the research result of Farida, Qohar, & Swasono (2020). R also fulfill the F2 indicator, which uses number symbols to represent problems to mathematical forms.

At the implementation stage, here is an interview excerpt to find out R's ability to implement strategies to solve the T1 problem.

Q: What strategies do you use to complete T1? **(E-1)**
R: Add the composition of all existing ingredients then divide it by 1 liter. Get 8 bottles left over 300 ml. **(E-1)**
Q: Why use this strategy? Any other way? **(E-1)**
R: Because all I think about is that, I don't think of any other way. **(E-1)**

Based on the results of R's work on Figure 5 of the F code and supported by interview excerpt, R devised the wrong strategy and the solution also wrong, not in accordance with the E1 indicator. This is in line with the results of research Nuurjannah, Amaliyah, & Fitrianna (2018). R in accordance with E2 indicator that is applying mathematical concepts, facts, and procedures to find solutions with the concept of addition and division. However, because the strategy used is wrong, the concepts, facts, and procedures used in the T1 problem are also wrong.

At the interpreting stage, here is an interview excerpt to find out R's ability to interpret the results obtained to solve the problem T1.

Q: What conclusions did you get? **(I-1)**
R: 8 bottles of hand sanitizer. **(I-1)**
Q: Are you sure of your conclusions? Why? **(I-2)**
R: Sure because of my own answer. **(I-2)**

Based on the results of R's work on Figure 5 code I and supported by interview excerpt, R does not include conclusions in the results of her work, and R is wrong in interpreting the results according to the real-world context in indicator I1. This is in line with the research results of Fadillah & Ni'mah (2019) and Farida, Qohar, & Swasono (2020). R is also not in accordance with the I2 indicator, which is unable to give a correct and clear reason for the conclusions taken.

Subject 4 (H)

The results of H's work are shown in figure 6 below.

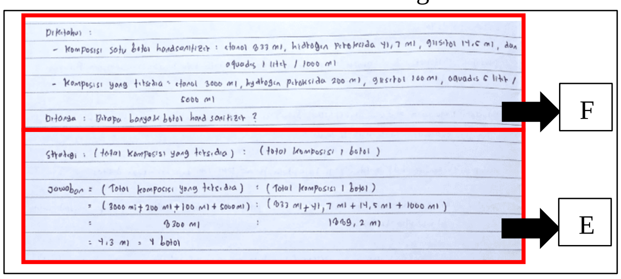


Figure 6. H work's result

At the formulation stage, the following is an interview excerpt to determine H's ability to understand T1's problems.

Q: Have you ever seen problem like T1? **(F-1)**
H: Ever. In AKM training. **(F-1)**
Q: What is asked and known about T1? **(F-1)**
H: Known composition of 1 bottle of hand sanitizer and available composition. Asked how many bottles of hand sanitizer can be made? **(F-1)**
Q: What mathematical concepts can you apply to solve the problem? **(F-1)**
H: Addition and division. **(F-1)**

Based on the results of H's work in Figure 6 of F code and supported by interview excerpts, H can identify mathematical concepts according to real-world problems and identify what is known and asked about the questions in accordance with F1 indicator. This is in line with the research results of Farida, Qohar, & Swasono (2020). H is also in accordance with the F2 indicator, that is using number symbols to represent problems in mathematical form.

At the implementation stage, the following is an interview excerpt to determine H's ability to apply strategies to solve the T1 problem.

Q : What strategy have you used to complete T1? **(E-1)**
H : Find the total composition of the available ingredients divided by the composition in 1 bottle. **(E-1)**
Q: Why use that strategy? Is there another way?
H : Another way I do not know. So I just use what I know. **(E-1)**

Based on the results of H's work in Figure 6 of code E and supported by interview excerpt, H designed the wrong strategy and the solutions found were also wrong, not according to the E1 indicator. This is in line with the results of research by Nuurjannah, Amaliyah, & Fitrianna (2018). H can fulfill the E2 indicator, that is applying concepts, facts, and mathematical procedures to find solutions with the concepts of addition and division. However, because the strategy used was wrong, the concepts, facts, and procedures used in the T1 questions were also wrong. Even though H had seen a problem similar to T1 in the AKM practice, H had forgotten how to solve it.

At the interpretation stage, the following is an interview excerpt to determine H's ability to interpret the results obtained to solve the T1.

Q: What conclusion have you got? **(I-1)**
H: Got 4 bottles of hand sanitizer. **(I-1)**
Q: Are you sure about your conclusion? Why? **(I-2)**
H : Sure because if I use my method, 4 bottles are found. **(I-2)**

Based on the results of H's work in Figure 6 code I and supported by interview excerpt, H does not include conclusions on his work, and H incorrectly interprets the results obtained according to the real-world context on indicator I1. This is in line with the results of research by Fadillah & Ni'mah (2019) and Farida, Qohar, & Swasono (2020). H also does not match the I2 indicator, which is unable to give reasons correctly and clearly for the conclusions drawn.

Based on the results of the work and interviews with C, T, R and H, at the stage of formulating, C stated that she had seen questions similar to T1 before in elementary school, T had seen questions similar to T1 in the Olympics, H had seen questions of T1 in the AKM practice but forgot how to solve it, R never saw a problem similar to T1. Researchers suggest that educators better familiarize students with math literacy problems and make learning meaningful so that students do not forget what they have learned Manoy & Purbaningrum (2021). In terms of understanding the problem, C, T, R, and H can identify what is known and asked about the question completely. In terms of what mathematical concepts can be used to work on questions T1, C and T using the concepts of comparison, division, and rounding. For R and H using the concept of addition and division. Then, subjects C, T, R, and H used number symbols to represent problems in mathematical form. The results obtained indicate that high and middle mathematical ability students have very good abilities in formulating a problem (Muzaki & Masjudin, 2019).

In the implementing stage, C and T can design the strategy correctly and find the right solution. This is because subjects C and T have experience working on problems and remember how to solve them. Meanwhile, subjects R and H could not design a strategy properly so that the solutions found were also incorrect. Subjects C and T used the same and correct way to find a solution, that is dividing the composition of each substance by the composition of each substance for 1 bottle and then looking for the smallest integer result. On the other hand, R adds up all the existing compositions and then divides by 1 liter. Meanwhile, H divides the total of all existing compositions by the total composition in 1 bottle. This shows that high mathematical ability students have excellent abilities in applying their knowledge to solve problems Muzaki & Masjudin (2019), while middle mathematical ability students have less ability to apply their knowledge (Intan, Ismaimuza, & Pathuddin, 2020).

In the interpreting stage, C and T can find a solution correctly and can interpret the results obtained according to the real world, but T is not complete in concluding the results obtained. R and H can't find a solution correctly so they can't conclude correctly. In terms of drawing conclusions, C can give reasons correctly and clearly for the conclusions drawn. Meanwhile, T, R, and H could not give true and clear reasons for the conclusions drawn. This shows that high mathematical ability students have sufficient ability to interpret the results obtained (Muzaki & Masjudin, 2019), while middle mathematical ability students have less ability to interpret the results obtained (Fadillah & Ni'mah, 2019; Farida et al., 2020; Intan et al., 2020).

During the Covid-19 pandemic, the government recommended complying with health protocols, one of them is washing hands with soap. Hand sanitizer as a soap replacement that can be taken anywhere is expected to be made by the community themselves to be more efficient. The issue of the context of Covid-19 given to subjects with high and middle mathematical ability about making hand sanitizer is an important thing that must be understood and can be applied by students in everyday life. However, the results obtained in this study indicate that only students with high math ability can understand the information and can apply it in everyday life.

CONCLUSION

Based on the results and discussion, it can be concluded that students with high math skills can fulfill the mathematical literacy indicators of the stage of formulating, applying, and interpreting, with the correct answers. Middle math ability students can only fulfill the mathematical literacy indicators of the formulating stage and have not been able to answer correctly. High and middle mathematical ability students have very good abilities in formulating a problem. High mathematical ability students have excellent abilities in applying their knowledge to solve problems, while middle mathematical ability students have less ability to apply their knowledge. High mathematical ability students have sufficient ability to interpret the results obtained, while middle mathematical ability students have less ability to interpret the results obtained. High math ability students can use the information about Covid-19 provided to solve problems in the real world. Middle math ability students have not been able to use the information about Covid-19 provided to solve problems in the real world. Teachers need to regularly train students' mathematical literacy skills in solving everyday problems.

SUGGESTION

For other researchers who want to research on mathematical literacy skills based on the context of Covid-19, it is recommended to research in terms of other things and use more research subjects.

For teachers, it is expected to provide mathematics literacy-based problems on a regular basis to students in various contexts, especially those that are close to students' lives.

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