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EXPLORATION OF MATHEMATICAL LITERACY SKILLS IN SOLVING HIGHER ORDER THINKING SKILL TASK

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Abstract

Mathematical literacy skill is the ability of students to formulate, apply and interpret mathematics to solve problems in everyday life. This study aims to explore and describe students' mathematical literacy skills in solving math problems with the HOTS type. The research method used is descriptive qualitative. Data collection techniques using tests and interviews. The research subjects were 31 grade VIII students of SMPN 1 Geger, Madiun Regency, East Java. Subjects were determined based on the results of the mathematical literacy test in solving the HOTS questions about Pythagoras. Subjects were selected based on the students' most correct and complete answers. The results of this study indicate that students' mathematical literacy skills in solving HOTS type questions include students' abilities in mathematical thinking and reasoning, mathematical communication, modeling, proposing and solving problems, representation, symbols, and the use of tools and technology.

Keywords: HOTS, mathematical literacy skills, Pythagoras

Abstrak

Kemampuan literasi matematika merupakan kemampuan siswa dalam merumuskan, menerapkan serta menafsirkan ilmu matematika untuk menyelesaikan permasalahan dalam kehidupan sehari-hari. Penelitian ini bertujuan untuk mengeksplorasi dan mendeskripsikan kemampuan literasi matematika siswa dalam menyelesaikan soal matematika dengan tipe HOTS. Metode penelitian yang digunakan adalah deskripstif kualitatif. Teknik pengumpulan data menggunakan tes dan wawancara. Subjek penelitian adalah 31 siswa kelas VIII SMPN 1 Geger Kabupaten Madiun Jawa Timur. Subjek ditentukan berdasarkan hasil tes kemampuan literasi matematika dalam penyelesaian soal HOTS tentang Pythagoras. Subjek dipilih berdasarkan jawaban siswa yang paling benar dan lengkap. Hasil penelitian ini menunjukkan bahwa kemampuan literasi matematika siswa dalam penyelesaian soal tipe HOTS meliputi kemampuan siswa dalam berpikir dan bernalar matematis, komunikasi matematis, pemodelan, pengajuan dan pemecahan masalah, representasi, simbol, serta penggunaan alat dan teknologi.

***Kata kunci**: HOTS, kemampuan literasi matematika, Pythagoras*

INTRODUCTION

At the beginning of 2020, all countries in the world were experiencing the Covid-19 pandemic, including Indonesia. Due to the COVID-19 pandemic, a lot of information circulating requires mathematical literacy and numeracy skills to interpret it(Heyd-Metzuyanim, Sharon, & Baram-Tsabari, 2021). According to (Istiandaru, Prasetyo, & Istihapsari, 2021; Prabawati, 2018)

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mathematical literacy ability is the ability to formulate, apply and interpret mathematics into various life contexts. Mathematical literacy is a skill to formulate, use, interpret, and understand how mathematics is useful in various contexts of everyday life problems efficiently to make decisions (Rizki & Priatna, 2019). Mathematical literacy has several main competencies: mathematical thinking and reasoning, mathematical argumentation, mathematical communication, modeling, proposing and solving problems, representation, symbols, tools and technology. The ability of students in mastering the components of mathematical literacy shows the existence of mathematical literacy abilities.

Mathematical literacy strongly supports students' ability in solving mathematical problems. However, students' mathematical literacy skills are not optimal. PISA results show that from 2003 to 2018 Indonesian students were always in the bottom 10 in the field of mathematical literacy (Nilasari & Anggreini, 2019). Some research results also show that students' mathematical literacy skills in solving PISA problems are still very low, especially in shape and space (Ekawati, Susanti, & Chen, 2020; Hidayati, Wulandari, Maulyda, Erfan, & Rosyidah, 2020; Munfarikhatin & Natsir, 2020). This is very concerning and needs to be addressed immediately, considering that mathematical literacy is a skill needed in life in the 21st century.

The content of shape and space is related to geometry. The Pythagoras is a geometric material that underlies advanced geometry. However, the Pythagoras material is still not well mastered by students, especially in SMPN 1 Geger Madiun. The results of interviews with mathematics teachers showed that students still had difficulty understanding the Pythagorean concept in problems. As a result, students often fail to solve problems related to Pythagoras. Even though this material is very important to be mastered by students and underlies the geometry material at the next level.

A question or problem that can be used to practice mathematical literacy skills is a question with the Higher Order Thinking Skills (HOTS) type. HOTS type questions are require students to think at a high level in the solving process so that they can improve students' logical, critical and creative thinking skills (Suryapuspitarini, Wardono, & Kartono, 2018). By giving HOTS type questions to students, their mathematical literacy skills can be trained and further improved (Habibi & Suparman, 2020; Santoso & Setyaningsih, 2020). Therefore, giving HOTS questions to students is very important so that students are accustomed to solving questions that require them to think and reason.

Research conducted by (Azhar & Sumardi, 2020) shows that students' mathematical literacy skills in solving HOTS-based questions are still very low because students are not accustomed to working on HOTS-based story questions. Santoso and Setyaningsih (2020) informs that students use 5 components of mathematical literacy in solving Algebra questions of the HOTS type: communication skills, mathematization, determining strategies to solve problems, using operations and symbolic language, formal language, and technical language, reasoning and argumentation. Research by (Nilasari and Anggreini, 2019) describes the

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mathematical literacy ability of students who have different adversity quotients in solving PISA type questions.

Based on these results, it is necessary to explore students' mathematical literacy skills in solving HOTS type questions related to Pythagoras. This study focuses on mathematical literacy competencies, there are on aspects of thinking and reasoning mathematically, mathematical argumentation, mathematical communication, modeling, proposing and solving problems, representation, symbols, and tools and technology (Rizki and Priatna, 2019). The research was conducted based on previous research that there has been no research that has revealed the mathematical literacy ability of students in solving HOTS-type questions about Pythagoras.

This study aims to explore students' mathematical literacy skills in solving HOTS type questions. The results of this study can be used as consideration for teachers in optimizing students' abilities in solving HOTS type questions, especially on Pythagorean material. The ability of students to find solutions to test questions that measure HOTS is the first step in preparing students for higher competitions such as PISA (Habibi & Suparman, 2020).

METHOD

This research is a descriptive research with a qualitative approach. The subjects in this study were 31 students of VIII A of SMPN 1 Geger, Madiun Regency of East Java. This research was initiated by giving two HOTS type questions to 31 students of class VIII SMPN 1 Geger. The results of student work were analyzed and then the research subjects were determined for further interviews related to the written results of the HOTS questions. The selection of subjects in this study were 2 students of class VIII SMPN 1 Geger. Subjects are determined based on two criteria: having the ability to solve HOTS type questions based on the results of written work from HOTS questions and being able to communicate well in writing and orally. The data from the written and interview results were then analyzed so that the conclusions of the research results were obtained.

Data collection techniques are test and interview. The main instrument is the researcher himself with supporting instruments in the form of HOTS type questions and interview guidelines. The first data collection was done by giving mathematical literacy test questions to 31 class VIIIA students of SMPN 1 Geger. Second, the researcher analyzes the student's work and determines the research subject based on the correct and most complete student work. Third, conducting interviews with selected subjects to dig deeper information related to the subject's mathematical literacy skills in problem solving.

The data analysis technique used: (1) data reduction is the process of selecting the main things, simplification, and focusing on things that are in accordance with the research objectives. (2) presentation of data in the form of information in the form of narrative texts that are compiled, summarized, and arranged so that they are easy to understand and plan further research work. (3) drawing conclusions is the stage of data analysis that has been presented in the form of a description (Sugiyono, 2016). The analysis was carried out on the data from the written test and interviews. Checking the validity of the data using the persistence/constancy of the observer and triangulation techniques.

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The triangulation techniques is testing the credibility of the data by checking the data from the results of tests and interviews. The research supporting instruments used in this study were 2 questions containing HOTS about the Pythagorean concept.

RESULT AND DISCUSSION

This study explore and describes students' mathematical literacy skills in solving problems about Pythagoras based on HOTS. The results of determining the research subject obtained two students with the most complete and correct answers. The answer od the subjects on identifying problem's part are showed in Figure 1 and 2.

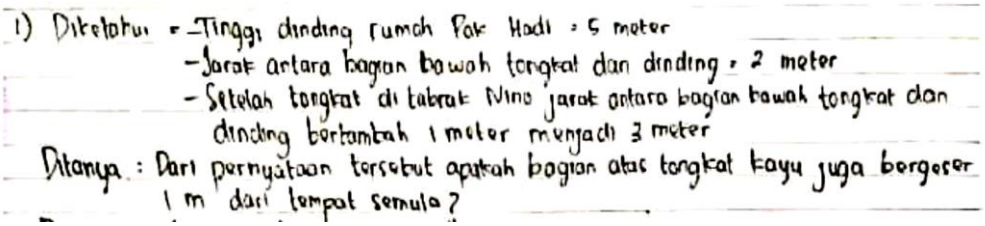

Figure 1. Subjects 1 Identifying problem number 1

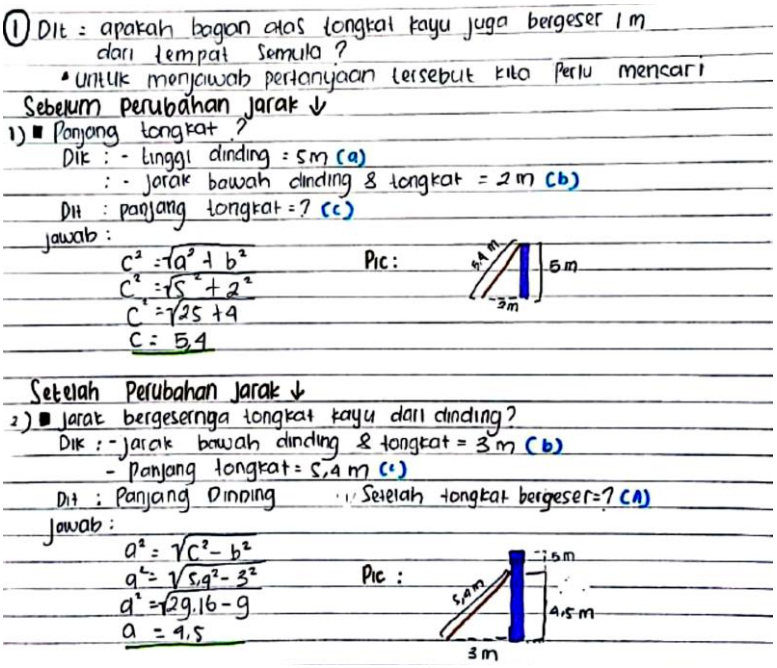

Figure 2. Subjects 2 Identifying problem number 1

Based on Figure 1 and 2, subjects 1 and 2 are able to identify and write down problems into important information. The two subjects wrote the questions in different forms of bullet points. Subjects identify information that is known and what is being asked in the question. Subjects write down the information contained in the questions completely and clearly, the information written includes things that are known and asked about from the questions. Subject 1 can also explain the information contained in the question properly and correctly.

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Subjects 1 and 2 represent the problem in problem 1 by making a sketch. It can be seen in Figure 3 and 4. The two subjects made illustrations related to the problems presented in the context of the questions. Both subjects can translate reality into the images they create. Both subjects can logically show in the sketch/drawing that there is a mutually perpendicular relationship in the problem, namely the walls are perpendicular to the floor. Both subjects were able to relate the problem to the concept of the Pythagorean theorem by writing down the Pythagorean formula based on the images made.

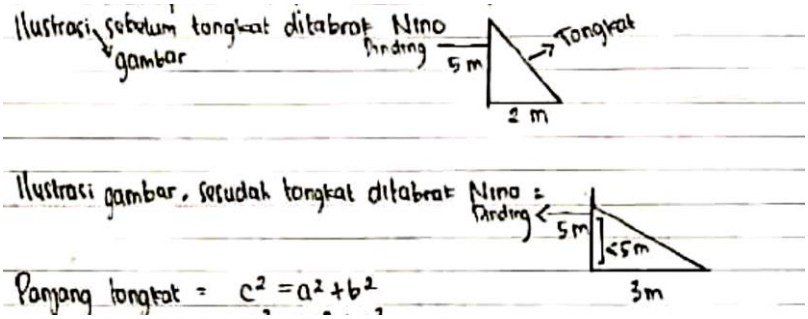

Figure 3. Subjects 1 represent problems in the form of images

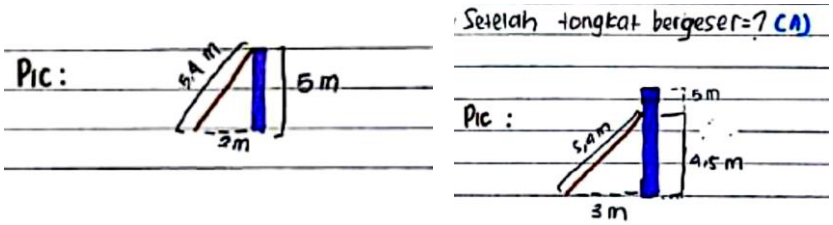

Figure 4. Subjects 2 represent problems in the form of images

Subject 1 is able to choose a strategy to solve the problem. The subject chooses the Pythagorean formula to solve the problem. The results of the interview with subject 1 show that the reason for choosing the Pythagorean formula is based on the sketch of the problem that has been made showing the relationship between the sides of a right triangle. The following is an excerpt from an interview with Subject 1.

P_11 : "Why did you choose the Pythagorean formula to solve this problem?"

IS_11: "From the illustration that I have made, I can see that the shape of the problem resembles a right triangle. Because it is a right triangle, I finally solved the problem using the Pythagorean theorem. I use the Pythagorean theorem formula to find the length of the stick and the distance of the shift."

P_12 : "How do you solve this problem?"

IS_12: "First I find the length of a stick using the Pythagorean formula. Then I looked for the height of the stick and then I looked for the number of slides of the stick before and after being hit by Nino. The last step is that I draw conclusions based on the results I have obtained."

The results of the interview showed that Subject 1 was able to explain the reasons for using the

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Pythagorean formula as a strategy to solve problems. Subject 1 is able to explain strategies or solving steps that are appropriate to the problem. Subjects are able to define problems and solve problems using the right strategy. Based on the results of the work in Figure 3., Subject 2 is also able to apply the Pythagorean formula well. Subjects 1 and 2 apply the Pythagorean formula well as shown in Figure 5 and 6.

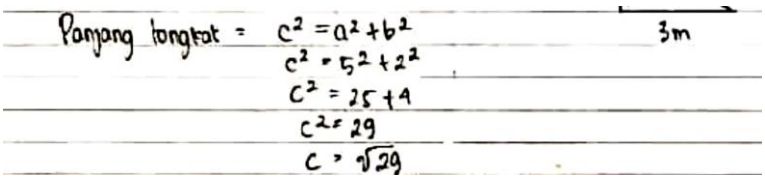


Figure 5. Subject 1 can choose the right solution strategy

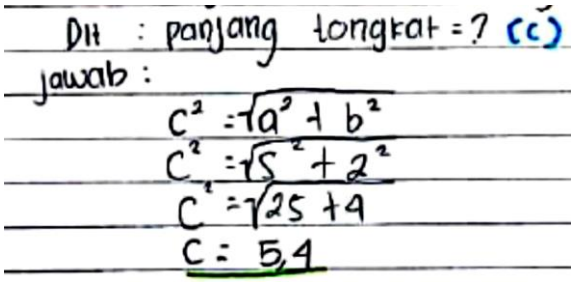
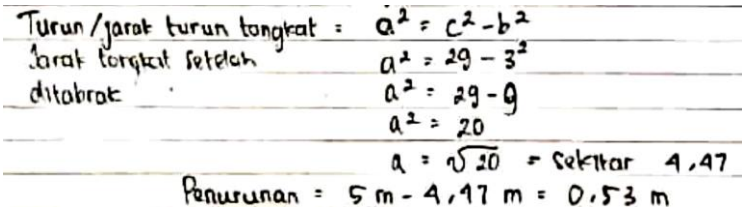
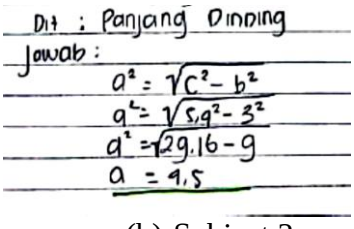


Figure 6. Subject 2 can choose the right solution strategy

Based on Figure 5 and 6, Subjects 1 and 2 are able to work with the model, namely by applying the Pythagorean formula. Subject 1 wrote mathematical symbols but did not write down the relationship between these symbols and pictures. Subject 2 did not write the model in the form of symbols, but wrote the form of the Pythagorean equation in numbers based on the pictures he made. Subject 1 transformed the Pythagorean formula to get the solution to the problem. Subject 1 constructs a new formula which is equivalent to the Pythagorean formula. Subject 1 uses subtraction algebraic operations to get a solution. Slightly different from Subject 1, Subject 2 still uses the Pythagorean formula without transforming it first. Subject 2 uses variables to determine the solution to the problem (shift experienced). Furthermore, Subject 2 determines the value of the variable by using algebraic operations on the equation from the Pythagorean formula to get a solution. Figure 7 shows that the two subjects were able to understand the relationship between different representations.



(a) Subject 1



(b) Subject 2

Figure 7. The subject determines the solution to the problem

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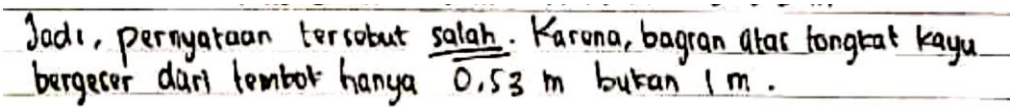
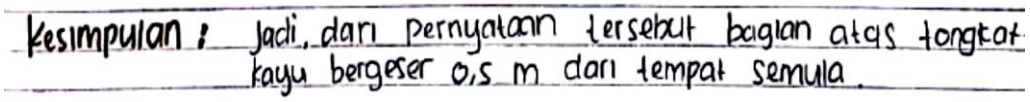
Based on Figure 8, Subjects 1 and 2 can determine the correct solution of the problem. Although both do not apply the same way, nevertheless both can apply a clear and precise settlement procedure. Furthermore, the two subjects concluded that the statement stated in the question was false. This conclusion was obtained by the two subjects by connecting the calculation results into the context of the problem. Based on Figure 8, the conclusion made by the two subjects showed that both subjects had problem solving abilities.



(a) Subject 1



(b) Subject 2

Figure 8. Subjects make conclusions related to the context of the problem

For the next, Figure 9 and 10 shows that subjects 1 and 2 completed question number 2 by identifying information that was known and asked in the question. Both subjects rewrite the problem by making important points from what is known. In addition, the subject also writes down the question asked the same as the sentence in the question.

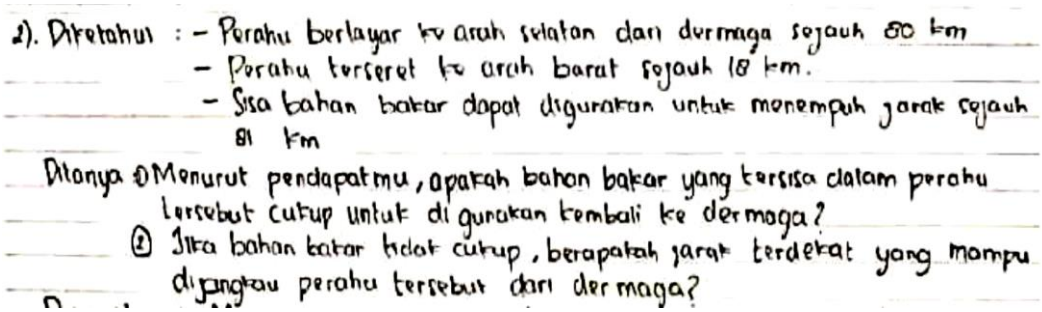


Figure 9. Subject 1 identifies question number 2

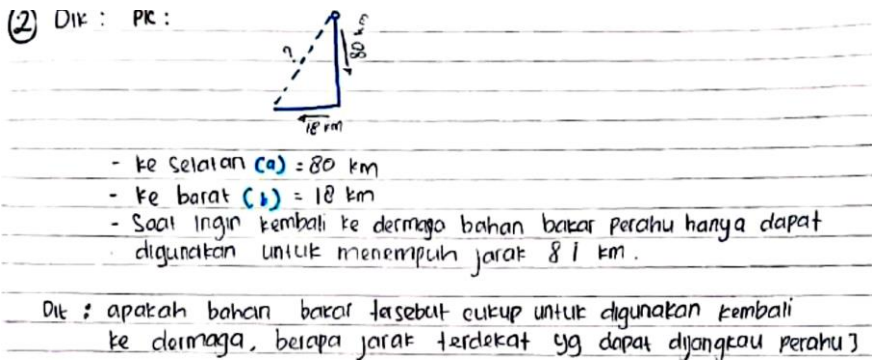


Figure 10. Subject 2 identifies question number 2

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The next part is about propose the possible solutions. Figure 11 shows that subject 1 raises the possibilities related to solving problems using pictures. Subject 1 describes the solution of each possibility. Subject 1 also applies the appropriate formula for each of the given possibilities. The subject uses the concept of addition for the first possibility because it is related to the perimeter of the rectangle. Subject 1 uses the Pythagorean formula for the second possibility because it is related to a right triangle.

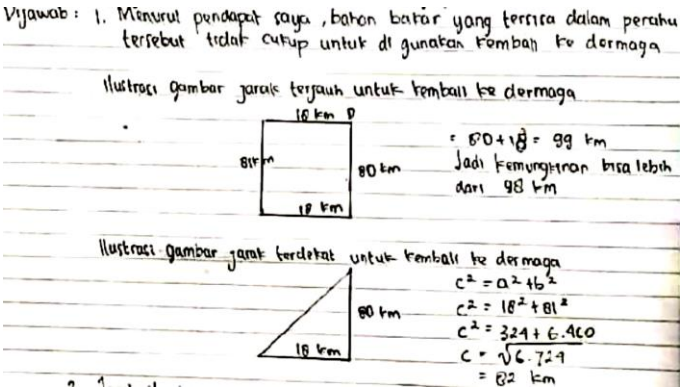
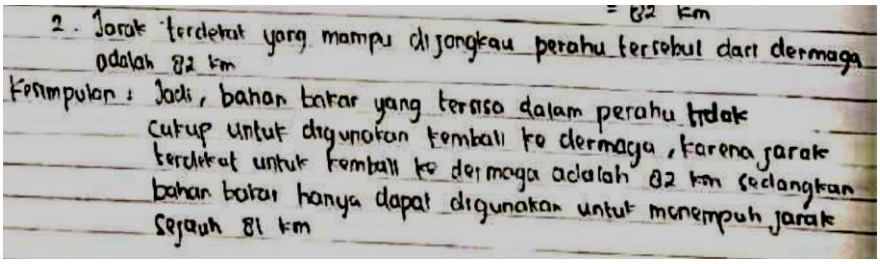
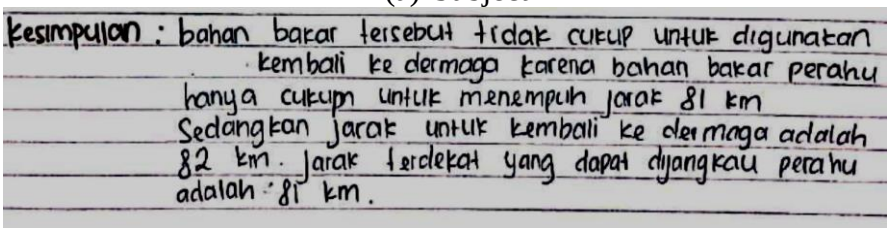


Figure 11. Subject 1 propose possible solutions

After that, the tws subjects draw logical solution. It can be seen in Figure 12. Based on Figure 12, the subject evaluates these possibilities, thus concluding that the closest distance is the second possibility, namely the solution obtained from the second possibility. This shows that Subject 1 is able to choose the right solution strategy by using logical reasoning. Furthermore, the two subjects conclude the results of the settlement and relate it to the context of the problem. Figure 12 shows that both subjects were able to draw conclusions based on the results of mathematical calculations. This means that both subjects have used logical reasoning in drawing conclusions.



(a) Subject 1



(b) Subject 2

Figure 12.Subjects 1 and 2 draw logical conclusions

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In questions number 1 and 2, the subject can use the model that has been made to solve the problems presented. The subject is able to explain the completion steps that have been used based on the model. Subjects are also able to relate several different formulas to solve problems with the given HOTS type. This shows that both subjects are able to work with the model that has been made effectively.

The findings of this study are students' mathematical literacy skills in solving HOTS type questions on Pythagorean material including students' abilities in mathematical communication, mathematical thinking and reasoning, modeling, proposing and solving problems, representation, symbols, and the use of tools and technology.

The ability to think and reason mathematically is shown by the ability of students to distinguish various statements in context, to bring up possible answers to get the right solution, to transform the Pythagorean formula because they are aware of the limitations of this formula for solving problems, and the ability of students to draw conclusions from logical problem solving. based on the results of mathematical calculations.

Mathematical communication skills include students' ability to represent questions in written and visual forms. Modeling abilities include the ability to translate problems (reality) into images (visual) equipped with numbers and mathematical symbols, the ability of students to work with models so that a solution is obtained. The ability to ask and solve problems includes the ability of students to identify what is being asked, formulate and define problems. The ability of mathematical representation and symbols includes students' ability to present contextual problems in the form of visual sketches/images equipped with symbols and numbers. The ability to use language and operational symbols formally and technically includes the ability of students to perform calculations in the problem solving process and the ability to perform various algebraic operations.

Mathematical literacy ability in the communication aspect is indicated by the students' ability to identify problems related to real world contexts. Students identify problems by writing down known things written in the form of important points. The subject also writes down the questions that are asked based on the problem. In addition to representing the problem in written form, the two subjects also represented the problem in a different form, namely visually by making sketches/drawings. This is in line with research (Rizki & Priatna, 2019) Mathematical communication indicators include expressing personal selves in various ways such as oral, written and other visual forms. Mathematical communication skills are indicated by the subject's ability to represent questions in written and visual forms. This is also supported by research results (Santoso & Setyaningsih, 2020) that communication skills are literacy skills that many students have.

In the aspect of thinking and reasoning mathematically, the two subjects were able to represent the problem into 2 image models. This shows that the subject is able to distinguish various statements in context. The subject is also able to bring up the possibilities of solving problems. This means that the subject has the ability to make assumptions related to the solution and in the end it is used to

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determine the most appropriate solution. The subject transforms the Pythagorean formula to solve further problems. This transformation of the Pythagorean formula shows that the subject is able to recognize that the previous formula cannot be used or is not in accordance with the need to get to completion. The subject is aware of the limitations of the Pythagorean concept or formula. This ability shows the subject is able to think and reason mathematically (Gustiadi, Agustyaningrum, & Hanggara, 2021; Vebrian, Putra, Saraswati, & Wijaya, 2021).

In the aspect of modeling, the abilities shown by the subject include the ability to translate questions (reality) into images (visuals) equipped with numbers and mathematical symbols. The subject is able to work with the model. The subject wrote the equation in the form of the Pythagorean formula and solved the problem based on the model with the right steps. This shows that the subject is able to translate reality into mathematical form (Rizki & Priatna, 2019). This means that students have mathematical literacy skills at level 4 in solving HOTS type questions (Dinni, 2018) because students are able to work effectively with models and can integrate different representations and relate them to the real world.

Subjects are able to pose and solve contextual problems well. The subject is able to identify the thing being asked, formulate and define the problem well. The subject is able to choose the appropriate solution strategy to solve the problem. The subject also offers several possible solutions and chooses the most appropriate solution from the several possibilities. Subjects are able to reach conclusions by connecting the results of calculations into the context of the problem. This shows the ability that leads to the components of submission and problem solving (Rizki & Priatna, 2019). This result is in line with (Hidayati et al., 2020; Salsabilla & Hidayati, 2021) that students are able to demonstrate mathematical literacy performance, namely being able to fulfill three aspects, namely formulating problems mathematically; use mathematical concepts and procedures well; and interpret mathematical answers in the context of the problem well. This result is also in line with (Kurniawati & Mahmudi, 2019) that the average student skill in applying mathematical concepts, facts, and procedures has the highest average among other mathematical literacy indicators. According to (Dinni, 2018) the ability of students to solve problems related to the model properly and correctly shows that students are at level 5 of students' mathematical literacy skills in solving HOTS questions.

The subject's ability to present contextual problems in the form of visual sketches/images equipped with symbols and numbers indicates the presence components of mathematical representations and symbols. The subject of transforming the Pythagorean formula shows the subject's ability to understand the relationship between different representations. The ability to use language and operational symbols formally and technically is shown by the subject when performing calculations in the problem solving process. Subjects are able to perform various algebraic operations, which include multiplication, addition and subtraction operations.

The students' mathematical literacy abilities in this study were at a high level, reaching level 5 (Dinni, 2018). The high level of achievement of

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students' mathematical literacy skills can be caused by the content of the questions used by students who are well known. Students who recognize the mathematical content in contextual tasks and apply mathematical knowledge and procedures are more successful in solving contextual tasks (Kolar & Hodnik, 2021). Students who recognize mathematical content in contextual problems and apply mathematical knowledge and procedures are more successful in solving contextual problems.

This result contradicts the results of PISA, that the average Indonesian student is only able to reach level 1 in the mathematical literacy component in the 2018 PISA event (Kemendikbud, 2019). Of course, the leveling of mathematical literacy skills according to (Dinni, 2018) is different from the PISA level. In addition, the questions used in this study are HOTS type questions and not PISA standard questions. In this study, mathematical literacy was confronted by students in a problem related to the context of students' daily lives according to suggestions (Bolstad, 2021). Although the questions used are not PISA questions, basically Indonesian students have the ability to solve problems that require them to think at a higher level (HOTS). These students' abilities have the potential to be continuously developed by practicing contextual questions with different and more complex contexts with reference to PISA content. This can be the spearhead of students' success in international events such as PISA.

CONCLUSION AND SUGGESTION

Students' mathematical literacy ability in solving HOTS type questions includes students' ability to think and reason mathematically, mathematical communication, modeling, problem solving and submission, representation, symbols, use of tools and technology. This research is useful as a reflection material for educators in an effort to improve and develop mathematical literacy skills to support students' HOTS abilities, especially on Pythagorean material. Students' mathematical literacy skills in solving HOTS type questions can be a potential for students' success in international competitions such as PISA. This study has limitations, namely it has not been able to reveal students' mathematical literacy skills in the components of argumentation and proof. It is recommended for further research to conduct research that is able to reveal all components of mathematical literacy.

REFERENCES

Azhar, L., & Sumardi, S. (2020). *Analisis Kemampuan Literasi Matematika Terhadap Materi Sistem Persamaan Linear Dua Variabel Berbasis HOTS Pada Siswa Kelas VIII SMP Muhammadiyah 1 Sukoharjo Tahun 2019/2020. Universitas Muhammadiyah Surakarta*. Universitas Muhammadiyah Surakarta. Retrieved from http://eprints.ums.ac.id/85969/

Bolstad, O. H. (2021). Lower secondary students' encounters with mathematical literacy. *Mathematics Education Research Journal*, (1). https://doi.org/10.1007/s13394-021-00386-7

Dinni, H. N. (2018). HOTS (High Order Thinking Skills) dan Kaitannya dengan Kemampuan Literasi Matematika. *Prisma*, *1*, 170–176.

Ekawati, R., Susanti, S., & Chen, J.-C.

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i3.5278

(2020). Primary Students' Mathematical Literacy: a Case Study. *Infinity Journal*, *9*(1), 49. https://doi.org/10.22460/infinity.v9i1.p49-58

Gustiadi, A., Agustyaningrum, N., & Hanggara, Y. (2021). Analisis Kemampuan Penalaran Matematis Siswa dalam Menyelesaikan Soal Materi Dimensi Tiga. *Jurnal Absis: Jurnal Pendidikan Matematika Dan Matematika*, *4*(1), 337–348. https://doi.org/10.30606/absis.v4i1.894

Habibi, H., & Suparman, S. (2020). Literasi Matematika dalam Menyambut PISA 2021 Berdasarkan Kecakapan Abad 21. *JKPM (Jurnal Kajian Pendidikan Matematika)*, *6*(1), 57. https://doi.org/10.30998/jkpm.v6i1.8177

Heyd-Metzuyanim, E., Sharon, A. J., & Baram-Tsabari, A. (2021). Mathematical media literacy in the COVID-19 pandemic and its relation to school mathematics education. *Educational Studies in Mathematics*, *108*(1–2), 201–225. https://doi.org/10.1007/s10649-021-10075-8

Hidayati, V. R., Wulandari, N. P., Maulyda, M. A., Erfan, M., & Rosyidah, A. N. K. (2020). Literasi Matematika Calon Guru Sekolah Dasar dalam Menyelesaikan Masalah PISA Konten Shape & Space. *JPMI: Jurnal Pembelajaran Matematika Inovatif*, *3*(3), 1–10. https://doi.org/10.22460/jpmi.v1i3.

Istiandaru, A., Prasetyo, P. W., & Istihapsari, V. (2021). Mathematics literacy skills in pre-service teachers: What could they do? *Bulletin of Applied Mathematics and Mathematics Education*, *1*(1), 31. https://doi.org/10.12928/bamme.v1i1.3830

Kemendikbud, B. (2019). *Pendidikan di Indonesia belajar dari hasil PISA 2018*. *Pusat Penilaian Pendidikan Balitbang KEMENDIKBUD*. Retrieved from http://repositori.kemdikbud.go.id/id/eprint/16742

Kolar, V. M., & Hodnik, T. (2021). Mathematical literacy from the perspective of solving contextual problems. *European Journal of Educational Research*, *10*(1), 467–483. https://doi.org/10.12973/EU-JER.10.1.467

Kurniawati, N. D. L., & Mahmudi, A. (2019). Analysis of mathematical literacy skills and mathematics self-efficacy of junior high school students. *Journal of Physics: Conference Series*, *1320*(1). https://doi.org/10.1088/1742-6596/1320/1/012053

Munfarikhatin, A., & Natsir, I. (2020). Analisis Kemampuan Literasi Matematika Siswa Pada Konten Space and Shape. *Histogram: Jurnal Pendidikan Matematika*, *4*(1), 128–138. Retrieved from https://journal.stkip-andi-matappa.ac.id/index.php/histogram/article/view/569/pdf

Nilasari, N. T., & Anggreini, D. (2019). Kemampuan Literasi Matematika Siswa dalam Menyelesaikan Soal PISA Ditinjau dari Adversity Quotient. *Jurnal Elemen*, *5*(2), 206. https://doi.org/10.29408/jel.v5i2.1342

Prabawati, M. N. (2018). Analisis Kemampuan Literasi Matematik

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i3.5278

Mahasiswa Calon Guru Matematika. *Mosharafa: Jurnal Pendidikan Matematika*, *7*(1), 113–120. https://doi.org/10.31980/mosharafa.v7i1.347

Rizki, L. M., & Priatna, N. (2019). Mathematical literacy as the 21st century skill. *Journal of Physics: Conference Series*, *1157*(4). https://doi.org/10.1088/1742-6596/1157/4/042088

Salsabilla, I., & Hidayati, Y. M. (2021). Kemampuan Literasi Matematika Siswa Kelas V Dalam Menyelesaikan Soal Matematika Tipe Higher Order Thinking Skills (HOTS). *JKPD (Jurnal Kajian Pendidikan Dasar)*, *6*(1), 92–107.

Santoso, R. M., & Setyaningsih, N. (2020). Literasi Matematika Siswa dalam Menyelesaikan Soal HOTS Bentuk Aljabar Berdasarkan Kemampuan Matematika. *Konferensi Nasional Penelitian Matematika Dan Pembelajarannya (KNPMP) V*, 62–71.

Sugiyono, S. (2016). *Memahami Penelitian Kualitatif*. Bandung: Alfabeta.

Suryapuspitarini, B. K., Wardono, & Kartono. (2018). Analisis Soal-Soal Matematika Tipe Higher Order Thinking Skill (HOTS) pada Kurikulum 2013 untuk Mendukung Kemampuan Literasi Siswa. *Prisma, Prosiding Seminar Nasional Matematika*, *1*, 876–884.

Vebrian, R., Putra, Y. Y., Saraswati, S., & Wijaya, T. T. (2021). Kemampuan Penalaran Matematis Siswa Dalam Menyelesaikan Soal Literasi Matematika Kontekstual. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *10*(4), 2602. https://doi.org/10.24127/ajpm.v10i4.4369