Tersedia online di http://ejournal.iain-tulungagung.ac.id/index.php/jtm
Jurnal Tadris Matematika 4(2), November 2021, 175-186
ISSN (Print): 2621-3990 || ISSN (Online): 2621-4008

Diterima: 02-09-2021 *Direvisi: 05-12-2021* *Disetujui: 06-01-2022*

Students' Problem-solving Ability in Geometry during the Covid-19 Pandemic

Fini Rezy Enabela Novilanti[1], Weni Dwi Susanti[2], Suripah[3]
[1,2,3]Pendidikan Matematika, Universitas Islam Riau, Jl. Kaharudin Nst No. 113 Perhentian Mapoyan, Riau
e-mail: rezyfini0@gmail.com[1] , wenidwisusanti28@gmail.com[2], rifah@edu.uir.ac.id[3]

ABSTRACT

Currently, the learning process is still done online. This is a challenge for teachers to continue to apply problem-solving skills in the mathematics learning process. One of the appropriate mathematics materials to measure students' problem-solving abilities is geometry. Geometry material is often an obstacle for students because geometry material is abstract. Therefore, teachers must analyze students' problem-solving skills during the COVID-19 pandemic, especially geometry material. The purpose of this study was to describe students' problem-solving ability in answering geometry questions given by the teacher. This study uses descriptive qualitative research because of the Covid-19 pandemic. The subjects used were 20 students of grade VIII from one of the schools in Pekanbaru. The sampling technique used in this research is purposive sampling technique. The instruments used are test instruments, interviews, and documentation of student answers. Data analysis used was descriptive qualitative method referring to the Polya error indicator. The results of this study indicate that students' problem-solving abilities are still relatively low. This can be seen from some students experiencing difficulties solving the given geometry problems. So that teachers must be able to improve students' problem-solving abilities.

Keywords: problem-solving ability, geometry, pandemic Covid-19

ABSTRAK

Pada saat ini proses pembelajaran masih dilakukan secara daring. Hal ini menjadi tantangan bagi guru untuk tetap menerapkan kemampuan pemecahan masalah pada proses pembelajaran matematika. Salah satu materi matematika yang tepat untuk mengukur kemampuan pemecahan masalah siswa adalah materi geometri. Materi geometri sering menjadi kendala bagi siswa, karena materi geometri bersifat abstrak. Oleh karena itu, guru harus menganalisis bagaimana kemampuan pemecahan masalah siswa di masa pandemi Covid-19 khususnya pada materi geometri. Tujuan dari penelitian ini untuk mendeskripsikan kemampuan pemecahan masalah siswa dalam menjawab soal geometri yang diberikan oleh guru. Penelitian ini menggunakan penelitian kualitatif deskriptif. Karena adanya pandemi Covid-19, subjek yang digunakan berjumlah 20 orang siswa kelas VIII yang berasal dari salah satu sekolah yang ada di Pekanbaru. Teknik sampling yang digunakan pada penelitian ini adalah teknik *purposive sampling.* Instrumen yang digunakan adalah instrumen tes, wawancara, dan dokumentasi hasil jawaban siswa. Data dianalisis menggunakan metode deskriptif kualitatif yang mengacu pada indikator kesalahan Polya. Hasil penelitian ini menunjukan kemampuan pemecahan masalah siswa masih berada pada tingkat rendah, hal ini dapat terlihat dari beberapa siswa mengalami kesulitan dalam menyelesaikan soal geometri yang diberikan, sehingga guru harus mampu meningkatkan kemampuan pemecahan masalah siswa.

Kata Kunci: kemampuan pemecahan masalah, geometri, pandemi Covid-19

DOI: http://dx.doi.org/10.21274/jtm.2021.4.2.175-186

INTRODUCTION

On January 30, 2020, WHO declared a global health emergency for all countries. This was due to the emergence of a virus called Covid-19. The government in Indonesia instructs the entire community for social distancing so that all activities are carried out online or virtual (Novilanti & Suripah, 2021). According to the circular Minister of Education and Culture Number 4 of 2020 concerning Learning From Home (BDR), namely 1) face-to-face learning is transferred virtually or online; 2) students do online learning, and; 3) learning activities are carried out with the help of technology. The sudden change in conditions becomes a challenge for teachers to continue applying and using mathematics learning to solve students' daily (Susanti & Suripah, 2021).

In the process of learning mathematics, the National Council of Teachers of Mathematics recommends that students must have five standards for the learning process of mathematics (Dewi et al., 2015), namely 1) problem-solving ability (problem-solving); 2) convey ideas or ideas that students have (communication); 3) reasoning and proof (reasoning and proof); 4) describe and analyze data (representation); 5) able to relate mathematical ideas and evaluate mathematical structures (connections). It can be seen that one aspect that teachers must apply is problem-solving ability. The teacher must design a mathematics learning process that involves problem-solving skills (Suripah et al., 2021).

Problem-solving ability is one of the important skills applied in learning mathematics, applying problem-solving skills to math problems will be able to develop students' knowledge in solving the problems given (Mairing, 2017). This is in accordance with the opinion of Hendriana and Soemarmo (2014) that problem-solving ability is at the heart of learning mathematics because it allows students to improve thinking skills and positive attitudes. However, the facts found by students in Indonesia are still low in problem-solving abilities.

Based on the results of the 2018 Program for International Student Assessment (PISA) survey published in March 2019, which was attended by 79 countries in the world consisting of 600,000 students. Indonesia has ranked 73rd with a score of Indonesian students' mathematical ability only 379 points. This score is still below the average, which is 489 points. One of the questions used for the PISA test is a matter of problem-solving ability (OECD, 2019). In this case, it can be seen that Indonesian students are still low in problem-solving abilities, this is in line with research conducted by (Fasni et al., 2017) that the problem-solving ability of students in Indonesia is still relatively low, this is because students tend to be difficult to be given non-routine questions so that students have difficulty due to lack of knowledge to solve the problems given. To measure the problem-solving ability of students, teachers need to pay attention to the right mathematics material.

One of the suitable mathematics learning materials used to measure students' problem-solving abilities is geometry according to Samo (2017) problem-solving problems that can be used are in the form of contextual problems that can develop students' knowledge in solving given

problems, such as in geometry material. Topics in geometry material are very appropriate to be used to measure problem-solving abilities because in geometry material students are required to observe, understand and determine strategies in solving given problems (Marwazi et al., 2018). From research conducted by Putra et al. (2018) that the geometry questions given by the teacher to students have a positive response. Although the questions given are quite difficult to solve by students, it seems that students are trying to solve the problems given.

In research conducted by Pebruariska and Fachrudin (2018) the problem-solving ability of students has an average of 50%, this is because some students can understand the problem, make plans, and implement the given solution plan. However, students did not re-examine the problem-solving, so students did not get the maximum score. Meanwhile, the results of research conducted by Annizar et al. (2020) with 53 students who completed geometry problems stated that they made many mistakes at the stage of understanding and problem-solving strategies so that they could not complete the completion to the end. Because there are still not many who have investigated the problem-solving abilities of students during the Covid-19 pandemic, researchers are interested in conducting research related to analyzing the problem-solving abilities of junior high school students on geometry material during the Covid-19.

RESEARCH METHODS

This research uses descriptive qualitative research. Qualitative research is research that aims to understand the phenomena of what is experienced by research subjects such as behavior, motivation, and actions that will be described in the form of words or language in a special context that is natural and by using various natural methods (Astuti & Sari, 2018). This study aims to describe students' problem-solving abilities in working on spatial problems given by the teacher through google forms and interviews via WhatsApp. This study uses a qualitative approach with a descriptive form. According to Sugiyono (2015) in descriptive qualitative research, researchers will search for and organize data systematically from interviews, field notes, and other materials so that they are easier to understand.

The subjects of this study were 20 students of grade VIII from one of the Junior High Schools in Pekanbaru who were selected using a purposive sampling technique, namely grouping students based on their abilities, namely high, medium, and low, namely by testing students' initial mathematical abilities in working on the questions that have given by the teacher before. In addition, the initial ability of students is also very decisive in the thinking process of students in understanding the given problem (Razak, 2017). This research was only conducted on a few grade VIII students due to limitations in exploring in the midst of the Covid-19 pandemic, so the research had to be done online.

The instrument used in this research is in the form of problem-solving test questions related to geometry material, which will be explained in the research results and discussion section. Before

being given to students, the problem-solving test questions, interview guidelines, and documentation guidelines of student answers in the form of photos when answering questions given by the teacher, have been validated by experts.

The stages of data analysis will be carried out according to the stages of qualitative descriptive research according to Umardiyah and Nasrulloh (2020). Starting from the stage of analyzing the problem in this case in the form of students' problem-solving abilities in working on geometry problems. After that, the data obtained from the analysis phase will be collected in the form of student scores when answering questions related to geometry that have been given and the results of interviews with students. In the next stage, the data that has been collected will be further processed and interpreted with related theories from previous research by experts.

The initial stage in this research starts from the teacher giving test instruments to students via google forms related to geometry material. After that, students' answer the questions given by the teacher and collect the assignments given through the google form, before the deadline given by the teacher. Then the researcher will analyze all students' answers according to the stages of the students' problem-solving ability indicators, referring to Polya's theory of errors, which are listed in the following Table 1:

Table 1. Troubleshooting Indicators

Troubleshooting Indicators	Description
Understanding the problem	Students can determine the problems presented. Students can interpret important and unused information.
Determine problem-solving strategies	Students can determine a step-by-step problem-solving plan that is easy to understand so that they can solve the given problem.
Troubleshooting	Students solve the problems given properly and correctly.
Verifying troubleshooting results	Students can identify and correct if there are errors from the results of problem-solving

Source: (Maharani et al., 2019)

RESEARCH RESULTS AND DISCUSSION

The research process carried out online due to the current situations of Covid-19 pandemic. This research was only conducted on a few grade VIII students due to limitations in exploring in the midst of the Covid-19 pandemic. The researcher provides a video link for learning about building materials in the WhatsApp group. Furthermore, the researchers gave questions to students through the google form according to the deadline that had been given. The following are problem-solving questions given to students:

"To frame a block, a wire with a length of 256 cm is needed. If length: width: height = 7: 5: 4. Determine the length, width, and height of each of the blocks!"

Students' answers were analyzed according to 4 problem-solving indicators, namely understanding the problem, determining problem-solving strategies, solving problems, and verifying problem-solving results. The following is a representative of students who experience errors at each stage when solving the given questions, namely:

1. Analysis of Student Answers Errors at the Understanding Stage

At the understanding stage, three students answered the questions inaccurately, so the questions they did were wrong from the start. Then the score obtained by this student is one because it can write down things that are known and asked based on the questions given. Here are representatives of three students who made mistakes in answering the questions given at the understanding stage:

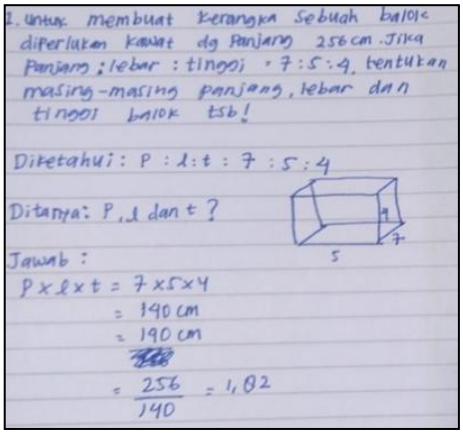

Figure 1. Students' Answers who made mistakes in answering the questions given at the understanding stage

In Figure 1, it can be seen that students have written down the data/information that is known or listed in the question. To be able to write down the information that is known on the problem, students must understand how to make graphs/pictures that are in accordance with the questions given. However, here students experience errors in placing numbers in the image, namely students do not measure the length, width, and height correctly. So that students do not get the correct answer in working on the questions given. However, students already know what is being asked in the question. Because students do not understand what is meant by the problem, students use the formula of the volume of a block, where students multiply the known length, width, and height.

Based on interviews conducted with students, students do not understand what is meant by the question. Students feel confused why the length, width, and height are searched again even though the length, width, and height are already known. Therefore, students think that what must be done in this problem is the volume of the block.

At the comprehension stage, some students were able to understand well the intent of the question. However, some of the other students were still confused, even though they had read the questions many times. This is in accordance with the research conducted by Listanti et al. (2020), the results of his research indicate that students' mathematical abilities are still lacking, especially at the stage of understanding. Sholihah and Afriansyah (2017) further explained, if this was caused by a lack of students' understanding of geometric concepts, it caused errors at the beginning of the work.

2. Analysis of Student Answers Errors at the Stage of Determining problem-solving Strategies

At this stage, quite a lot of students made mistakes in answering the questions given, namely, there were 7 students. Thus, the score obtained by students is 4. Here are representatives of 7 students who made mistakes in answering the questions given at the stage of determining problem-solving strategies:

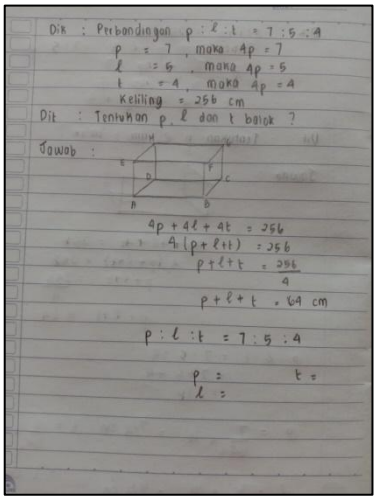

Figure 2. Students' Answers who made mistakes in answering the questions given at the stage of determining problem-solving strategies

In Figure 2, it can be seen that students already understand enough about the questions given. What is known and asked is correct. Seen in the completion of the student's answer is correct enough to start operating the answer given. Students have correctly used the formula in answering the questions. However, students feel confused to determine the next stage in solving the given problem, so students cannot complete the answer until the end.

Based on interviews conducted with students, students have understood what was meant by the question. Students understand that what is meant by the problem is to make a beam frame using wires that must be looked for are the length, width, and height of the beam. However, students are confused to determine the stage of completion until the end. Therefore, students cannot continue their answers to the end. According to students, the problem of building space is quite difficult to solve.

At the stage of determining problem-solving strategies, some students can plan appropriate problem-solving strategies. However, some students intentionally did not complete the final answer. This is in accordance with Kirisci et al., (2020) research, from the results of his research it is known that students with low problem-solving abilities and are having difficulty in determining appropriate problem-solving strategies. From the results of Nuha et al. (2014) research, it is explained that the cause is the lack of students' thinking skills and the lack of ability to develop mathematical ideas that can be combined using predetermined formulas.

3. Analysis of Student Answers Errors at the stage of Solving the Problem

At the stage of solving the problem, 4 students make mistakes in answering the questions given. The score obtained by these 4 students is 6. Here are representatives of 4 students who made mistakes in answering the questions given at the stage of solving the problem

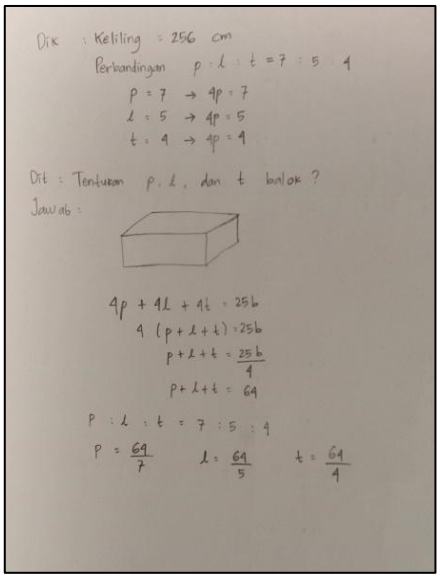

Figure 3. Students' Answers who made mistakes in answering the questions given at the stage of Solving the Problem

In Figure 3, it can be seen that students are correct in determining what is known, asked, and determining the formula used in solving the problem. Students are quite correct in operating the answer, but there are still shortcomings in answering the question. Before going to the final stage, students skip the steps that must be used, namely students do not add up the length: width: height first, so the answer is still not right.

Based on interviews that have been conducted with students, students are less thorough in answering questions. Students assume that what they have done is correct and appropriate, it turns out that students realize that they have missed a step that must be done. According to the students, the problem of building a space that they did was quite a trap question, it required accuracy in answering this question.

At the problem-solving stage, some students still have difficulty finding the final answer. At this stage, some students make mistakes in the calculation process. This is in accordance with Anhar et al. (2019) research which states that at the problem-solving stage students often make mistakes because they are not careful, remember the formula incorrectly so that the calculation results obtained are less precise. Furthermore, Wulan and Rosidah (2020) explained that another cause of calculation errors was the lack of students' metacognitive abilities so that they did not get the right final solution.

4. Analysis of Student Answers Errors at the stage of Verifying the Results of Problem-Solving

At the stage of verifying the results of problem-solving, 4 students made mistakes. Then the score obtained is not maximal, which is 9. Here are representatives of 4 students who made mistakes in answering the questions given at the stage of verifying the results of problem-solving:

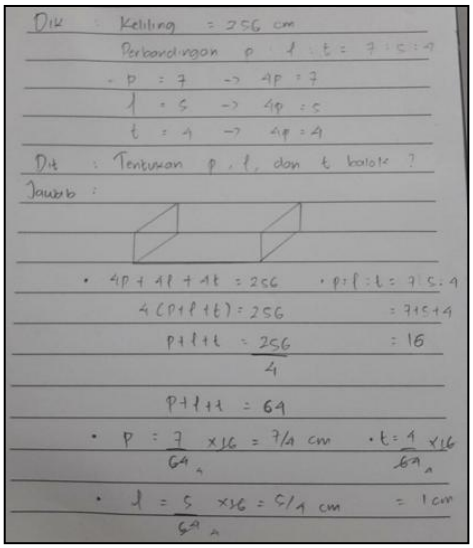

Figure 4. Students' Answers who made mistakes in answering the questions given at the stage of Verifying Problem-Solving

In Figure 4, it can be seen that the students were correct in answering the questions given. The steps used in solving the problem are also correct. It can be seen that students do it in stages in the right order to get the correct final result. However, the student did not write down the conclusion of the answer he had worked on. So that students do not get the maximum score.

From the results of interviews conducted with students, it is known if students have understood the questions properly and correctly. The new student knows that summarizing the answers he has worked on needs to be done. This becomes a new insight for students that conclusions need to be made in solving problems. According to students, the questions given are quite interesting to work on.

At the stage of verifying the results of problem-solving, some students still made mistakes at the final calculation stage. One of the reasons is that students are less careful in counting and do not re-check their answers. This is in accordance with Utami and Wutsqa (2017), research which states that students often skip the final exam stage so that the results obtained are less precise. From Wijayanti et al. (2020) research, it is also stated that at the verification stage, students' answers are often inaccurate in interpreting the results obtained because they are not careful in applying the formula.

Based on the results of the test data, it is known that there are still some students who make mistakes in the first stage of problem-solving, namely understanding the problem. This is by following under research Dinnullah et al. (2019), which states that some students still make mistakes at the understanding stage because they fail to interpret the context of the problem given

in the question. Sukmana and Arhasy (2019) stated, the misunderstanding was because students thought the material contained in the question was abstract, then they were still confused by the commands in the questions and the lack of practice questions of varying types. The results showed that as many as 3 students still made mistakes in the understanding stage.

In the second stage of problem-solving, namely determining problem-solving strategies, there are still 7 students who make mistakes. Even though they can understand the context of the problem material, some of them still have difficulty determining the right problem-solving strategy. This is by following per under research Hartiningrum et al. (2020) which states that at the stage of determining problem-solving strategies, students can operate formulas to solve the problems given. Annisa and Kartini (2021) states that errors at the problem-solving stage occur because students are not able to identify the right mathematical operations for solving the problem.

In the third stage of problem-solving, namely problem-solving, 4 students made mistakes. At this stage, students already understand and can determine the arithmetic operations that will be used to solve the problem. However, in the procedure for working on the problem, there are still a few errors. Phonapichat et al. (2014) state that at this stage students can determine the right mathematical operations, but students make mistakes in presenting the working procedure. At this stage, students make mistakes in the calculation process and students are not able to carry out the mathematical calculation process correctly.

Then in the last stage of problem-solving, namely verifying the results of problem-solving. At this stage, students can understand procedures and plan well calculation operations for problem-solving. However, some students make mistakes in the final calculation results. This is by following per under research Rahmawati and Permata (2018) which states that at this stage students are not able to find the final results of the questions correctly, and students cannot make conclusions after working on the questions. This error is caused by the lack of accuracy of students in the final arithmetic operation, so it is very unfortunate because the student has been able to go through several previous stages correctly but failed to find a final solution (Santoso et al., 2017).

CONCLUSION

Based on the research analysis of students' problem-solving abilities in solving geometry problems, the conclusions of this study are as follows: (1) At the stage of understanding the problem, 3 students make mistakes. This is because the student failed to understand the context of the question from the beginning so that it had an impact on the final result. (2) At the stage of determining the problem-solving strategy, there are 7 students doing errors. At this stage, the student can understand the context of the problem material and operate the formula well, but the student has not been able to identify the right mathematical operation to solve the problem. (3) At the stage of solving the problem, 4 students make mistakes. At this stage, the student already understands the arithmetic operation that will be used to solve the problem, but there is still a slight

error in the calculation process so that students are unable to find the final solution. (4) At the stage of verifying problem-solving, 4 students made mistakes, at this stage students have planned well the calculation operations to solve the problem, but the students could not find the final solution because there were some errors in the calculations and could not make a conclusion from working on the problem.

REFERENCES

Anhar, L. N., Triyanto, & Henny, E. C. (2019). Analisis kemampuan pemecahan masalah matematika pada materi geometri berdasarkan langkah Polya ditinjau dari kemampuan representasi matematis siswa kelas VIII SMPN 2 Plupuh tahun 2018/2019. *Jurnal Pendidikan Matematika dan Matematika*, *III*(1), 515–524. https://doi.org/10.20961/jpmm%20solusi.v3i5.38027

Annisa, R., & Kartini, K. (2021). Analisis kesalahan siswa dalam menyelesaikan soal barisan dan deret aritmatika menggunakan tahapan kesalahan Newman. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *5*(1), 522–532. https://doi.org/10.31004/cendekia.v5i1.506

Annizar, A. M., Maulyda, M. A., Khairunnisa, G. F., & Hijriani, L. (2020). Kemampuan pemecahan masalah matematis siswa dalam menyelesaikan soal PISA pada topik geometri. *Jurnal Elemen*, *6*(1), 39–55. https://doi.org/10.29408/jel.v6i1.1688

Astuti, A., & Sari, N. (2018). Analisis kesulitan belajar struktur aljabar di STKIP Pahlawan Tuanku Tambusai. *Jurnal Pendidikan Matematika*, *12*(2), 73–80. https://doi.org/10.22342/jpm.12.2.4142.73-80

Dewi, S. H., Susanto, & Lestari, N. D. S. (2015). Pengembangan perangkat pembelajaran berstandar NCTM (National Council of Teachers of Mathematics) di Sekolah Menengah Pertama (SMP) kelas VII pada pokok bahasan statistika. *Jurnal Edukasi*, *2*(3), 25–30. https://doi.org/10.19184/jukasi.v2i3.4365

Dinnullah, R. N. I., Noni, E., & Sumadji, S. (2019). Analisis kesalahan siswa pada penyelesaian soal cerita berdasarkan tahapan Newman. *Jurnal Tadris Matematika*, *2*(2), 175–184. https://doi.org/10.21274/jtm.2019.2.2.175-184

Fasni, N., Turmudi, T., & Kusnandi, K. (2017). Mathematical problem-solving ability of Junior High School students through Ang's framework for mathematical modelling instruction. *Journal of Physics: Conference Series*, *895*(01), 1–6. https://doi.org/10.1088/1742-6596/895/1/012082

Hartiningrum, E. S. N., Utomo, E. S., & Listyanti, N. M. (2020). Analisis faktor penyebab kesalahan siswa dengan kepribadian introvert dalam memecahkan masalah matematika berdasarkan tahapan Polya. *Jurnal Ilmiah Soulmath: Jurnal Edukasi Pendidikan Matematika*, *8*(2), 83. https://doi.org/10.25139/smj.v8i2.3079

Hendriana, H., & Soemarmo, U. (2014). *Penilaian pembelajaran matematika*. Bandung: Refika Aditama.

Kirisci, N., Sak, U., & Karabacak, F. (2020). The effectiveness of the selective problem-solving model on students' mathematical creativity: A Solomon four-group research. *Thingking Skills and Creativity*, *38*, 100719. https://doi.org/10.1016/j.tsc.2020.100719

Listanti, D. R., Mampouw, H. L., Kristen, U., & Wacana, S. (2020). Profil pemecahan masalah geometri oleh siswa SMP ditinjau dari perbedaan kemampuan matematika. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *04*(01), 365–379. https://doi.org/10.31004/cendekia.v4i1.224

Maharani, S., Kholid, M. N., Pradana, L. N., & Nusantara, T. (2019). Problem-solving in the context of computational thinking. *Infinity Journal*, *8*(2), 109–116.

https://doi.org/10.22460/infinity.v8i2.p109-116

Mairing, J. P. (2017). Students' abilities to solve mathematical problems according to accreditation levels. *International Journal of Education*, *10*(1), 1–11. https://doi.org/10.17509/ije.v10i1.6902

Marwazi, M., Made, N., & Putra, D. (2018). Analysis of problem-solving ability based on field dependent cognitive style in discovery learning models. *Journal of Primary Education*, *8*(2), 127–134. https://journal.unnes.ac.id/sju/index.php/jpe/article/view/25451

Novilanti, F. R. E., & Suripah, S. (2021). Alternatif pembelajaran geometri berbantuan software GeoGebra di masa pandemi covid-19. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *5*(1), 357–367. https://doi.org/10.31004/cendekia.v5i1.538

Nuha, M. A., Suhito, & Masrukan. (2014). Analisis kemampuan pemecahan masalah geometri dan karakter siswa SMP kelas VIII melalui pembelajaran model 4K. *Jurnal Kreno*, *5*(September), 188–194.

OECD. (2019). *PISA 2018 Result (volume I): What students know and can do*. Paris: OECD Publishing.

Pebruariska, A., & Fachrudin, A. D. (2018). Kemampuan pemecahan masalah siswa kelas VII pada materi segiempat ditinjau dari tingkat berpikir geometri Van Hiele. *AKSIOMA: Jurnal Matematika dan Pendidikan Matematika*, *9*(1), 21–28. https://doi.org/10.26877/aks.v9i1.2461

Phonapichat, P., Wongwanich, S., & Sujiva, S. (2014). An analysis of elementary school students' difficulties in mathematical problem-solving. *Procedia - Social and Behavioral Sciences*, *116*, 3169–3174. https://doi.org/10.1016/j.sbspro.2014.01.728

Putra, H. D., Thahiram, N. F., Ganiati, M., & Nuryana, D. (2018). Kemampuan pemecahan masalah matematis siswa SMP pada materi bangun ruang. *Jurnal Ilmiah Pendidikan Matematika*, *6*(2), 82–90. http://doi.org/10.25273/jipm.v6i2.2007

Rahmawati, D., & Permata, L. D. (2018). Analisis kesalahan siswa dalam menyelesaikan soal cerita program linear dengan prosedur Newman. *Jurnal Elektronik Pembelajaran Matematika*, *5*(2), 173–185.

Razak, F. (2017). Hubungan kemampuan awal terhadap kemampuan berpikir kritis matematika pada siswa kelas VII SMP Pesantren Immim Putri Minasatene. *Mosharafa: Jurnal Pendidikan Matematika*, *6*(1), 117–128. https://doi.org/10.31980/mosharafa.v6i1.299

Samo, D. D. (2017). Kemampuan pemecahan masalah mahasiswa tahun pertama pada masalah geometri konteks budaya. *Jurnal Riset Pendidikan Matematika*, *4*(2), 141–152. https://doi.org/10.21831/jrpm.v4i2.13470

Santoso, D. A., Farid, A., & Ulum, B. (2017). Error analysis of students working about word problem of linear program with NEA procedure. *Journal of Physics: IOP Conference Series*, *855*(012043), 1–8.

Sholihah, S. Z., & Afriansyah, E. A. (2017). Analisis kesulitan siswa dalam proses pemecahan masalah geometri berdasarkan tahapan berpikir Van Hiele. *Mosharafa: Jurnal Pendidikan Matematika*, *6*(2), 287–298. https://doi.org/10.31980/mosharafa.v6i2.317

Sugiyono. (2015). *Metode penelitian pendidikan pendekatan kuantitatif, kualitatif, dan R & D*. Bandung: CV Alfabeta.

Sukmana, E. I., & Arhasy, H. E. A. R. (2019). Analisis kesalahan siswa dalam menyelesaikan soal bilangan berpangkat dan bentuk akar pada siswa kelas X SMK Negeri 1 Kawali tahun ajaran 2018/2019. *Prosiding Seminar Nasional & Call For Papers*, 176–186.

Suripah, S., Suyata, S., & Retnawati, H. (2021). Pedagogical Content Knowledge (PCK) mathematics pre-service teachers in developing content representations (CoRes). *International Journal on Emerging Mathematics Education*, *5*(1), 41–50.

http://dx.doi.org/10.12928/ijeme.v5i1.19954

Susanti, W. D., & Suripah, S. (2021). The effectiveness of website as a mathematics learning media during the online learning period. *Edumatica: Jurnal Pendidikan Matematika*, *11*(01), 73–83. https://doi.org/10.22437/edumatica.v11i01.12225

Umardiyah, F., & Nasrulloh, M. F. (2020). *Scaffolding dalam Pembelajaran Geometri Berdasar Taksonomi Solo*. Jombang: Universitas KH. A. Wahab Hasbullah.

Utami, R. W., & Wutsqa, D. U. (2017). Analisis kemampuan pemecahan masalah matematika dan self-efficacy siswa SMP negeri di Kabupaten Ciamis. *Jurnal Riset Pendidikan Matematika*, *4*(2), 166. https://doi.org/10.21831/jrpm.v4i2.14897

Wijayanti, P. S., Kintoko, & Setiawan, R. A. (2020). Level kemampuan pemecahan masalah matematika siswa pada materi geometri. *Jurnal Educatio FKIP UNMA*, *6*(2), 662–667. https://doi.org/10.31949/educatio.v6i2.711

Wulan, E. R., & Rosidah, N. I. (2020). Bagaimana problem-solving geometri ruang dari level berpikir Van Hiele siswa? *Lentera Sriwijaya: Jurnal Ilmiah Pendidikan Matematika*, *2*(1), 22–40. https://doi.org/10.36706/jls.v2i1.11442