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NUMERACY-ABILITY, CHARACTERISTICS OF PUPILS IN SOLVING THE MINIMUM COMPETENCY ASSESSMENT

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Abstrak

Matematika adalah mata pelajaran yang berkaitan erat dengan masalah di kehidupan sehari-hari, rendahnya skor PISA dari semua bidang membuat pemerintah melakukan terobosan untuk meningkatkan kemampuan literasi dan numerasi melalui AKM. Tujuan penelitian ini untuk menganalisis karakteristik kemampuan numerasi dalam menyelesaikan masalah AKM. Jenis penelitian yang digunakan adalah kualitatif dengan desain fenomologi. Subjek penelitian ini menggunakan satu guru matematika dan tiga siswa kelas VIII SMP Muhammadiyah Al Kautsar PK Kartasura Sukoharjo tahun ajaran 2021/2022. Menggunakan Teknik purposive sampling dalam pengambilan subjek, penelitian ini menggunakan 3 siswa kelas VIII sebagai subjek utama penelitian. Selain peneliti sebagai instrumen kunci, peneliti juga menggunakan soal AKM, teks wawancara, dan teks observasi untuk perolehan data. Keabsahan yang digunakan adalah triangulasi sumber dan teknik. Teknik induktif merupakan proses analisis data yang digunakan dalam penelitian ini. Hasil penelitian menyatakan kemampuan numerasi siswa belum sempurna, indikator 3 pada pemberian kesimpulan tidak diberikan untuk semua subjek yang digunakan. Pembiasaan dalam menyelesaikan masalah AKM dalam pembelajaran di kelas diperlukan untuk melatih kemampuan numerasi siswa.

Kata kunci: AKM; numerasi; pemecahan masalah

Abstract

Mathematics is a subject closely related to everyday problems; the low PISA scores from all fields have made the government make breakthroughs to improve literacy and numeracy skills through the AKM. The purpose of this study was to analyze the characteristics of numeracy skills in solving AKM problems. The type of research used is qualitative with a phenomenological design. The subjects of this study used one mathematics teacher and three eighth-grade students of SMP Muhammadiyah Al Kautsar PK Kartasura Sukoharjo for the 2021/2022 academic year. Using a purposive sampling technique in taking the subject, this study used three students of class VIII as the main subject of the study. In addition to the researcher as the key instrument, the researcher also used AKM questions, interview texts, and observation texts for data acquisition. The validity used is the triangulation of sources and techniques. The inductive technique is the process of data analysis used in this research. The results of the study stated that students' numeracy skills were not perfect, indicator three on giving conclusions was not given for all subjects used. Habituation in solving AKM problems in classroom learning is needed to train students' numeracy skills.

***Keywords**: AKM; numeracy ability; problem-solving*

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INTRODUCTION

Education provides a means for every human being to acquire knowledge. The fact is that in Indonesia, there are still many disparities in education. The problems that arise include the limited number of educators, the low quality of educators, facilities and infrastructure that are less supportive, limited materials and learning resources, and policies in education that change and are misdirected for the benefit of the position (Kusumah & Nurhasanah, 2017; Nasution, 2014). Julaeha (2019) argues that the relationship between political affairs and the formulation of the education curriculum in Indonesia and character education is still low. Then based on a survey conducted by the organization for economic co-operation and development (OECD) through the program for international student assessment (PISA) in 2018, Indonesia ranked 71st out of 77 countries, with a reading ability score of 371, a math ability score of 379, and a science ability score of 396 (OECD, 2019).

One of the reasons for the existence of education at the global level is the PISA score data (Zieger et al., 2022). So the questions issued in the PISA test are in the form of literacy or everyday problems. From this explanation, we can say that the literacy ability of students in Indonesia is still low. Several other researchers also revealed the same thing for the current condition, Adnan et al. (2021) in their research stated that the literacy ability of junior high school students in Indonesia in the southern part of Sulawesi was still low. Then Nurhanurawati et al. (2022) in his research show that literacy skills in mathematics for junior high school students in Aceh are also still low.

The provision of support from the government is clearly seen by imposing a minimum competency assessment (AKM) as a substitute for the National Examination (UN) since 2020 (Andiani et al., 2020). AKM is an assessment program to determine students' basic abilities and improve the quality of Indonesian education, so language literacy and mathematics literacy competencies are needed abilities to measure basic (Handayani et al., 2021). Herman et al. (2022), on the other hand, the AKM problem is equivalent to the PISA problem because the AKM problem is adapted from the PISA problem. According to Sutama et al. (2020), students need literacy skills to solve various problems that exist in everyday problems. So the AKM is prepared with the aim of the AKM being to find out and assess students' competence regarding language literacy and numeracy (Cahyanovianty, 2021).

Literacy and numeracy are the main things that must be mastered by students at school (Muhaimin, Mukhibin, et al., 2022; Rahmayanti & Sutama, 2022). This statement is in line with Mainali (2021) opinion, which states that understanding mathematical concepts requires various representation models such as verbal, graphic, algebraic, and numeric. Therefore, it is necessary to have a unique mastery of students' numeracy skills in learning mathematics (Daylight & O'Carroll, 2020). According to Han et al. (2017), indicators of numeracy skills include: (1) Analyzing mathematical problem-solving information in the form of pictures, graphs, tables, charts, and diagrams; (2) Analyzing problem-solving using numbers and mathematical symbols; and (3) Interpreting the results to solve mathematical problem-solving.

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Research initiated by Mahmud & Pratiwi (2019) regarding numeracy skills in solving unstructured problems, students experience some difficulties in solving unstructured problems due to a lack of analyzing information about questions and providing conclusions. In line with this research, Umar & Widodo (2021) revealed in their study that students' numeracy skills were low, and students had difficulty understanding and determining formulas. Widya-ningrum (2016) also said that the factors that influence errors in solving story problems, one of which is an error in interpreting the questions to the formu-las used to create mathematical models. In line with this opinion, according to the results of research from Jung et al. (2019) that minimal numeracy skills make students face difficulties in conceptualizing numbers and other symbols as components in questions.

The various studies described above have not used the AKM instrument in their research, so the research we are conducting expands the scope of using the AKM instrument to measure numeracy skills. This study is expected to provide solutions to these problems and information on the level of numeracy skills of junior high school students for further evaluation by schools and the government. Through the AKM problem, it is expected to be able to measure students' numeracy skills, and this is because the AKM problem meets all indicators of numeracy abilities. So the purpose of this study is to analyze the characteristics of numeracy skills in solving AKM problems.

METHODS

The type of research used is qualitative research with a phenomeno-logical design. The qualitative-phenomenological study emphasizes that researchers take information on phenomena in individuals, groups, or communities to be developed by researchers from the researcher's point of view to produce a theory (Creswell, 2015). The research in this article was conducted at SMP Muhammadiyah Al Kautsar PK Kartasura Sukoharjo by examining class VIII SMP students in the even semester of the 2021/2022 academic year. Research activities will be carried out from March to May 2022.

The subjects of this study were mathematics education one teacher and three students of SMP Muhammadiyah Al Kautsar PK Kartasura Sukoharjo class VIII in the even semester of the 2021/2022 academic year. The number of student subjects was taken by purposive sampling technique; the subject selection was based on three cognitive students based on the views of the mathematics teacher in everyday life in the classroom, so that there were three students to become research subjects and the data obtained were saturated. The subject of the mathematics teacher is used to obtain documentation of the AKM questions and student answers.

In addition to the researcher as a critical instrument, other instruments are needed, including AKM questions, interview texts, and observation texts. The AKM questions used are 1 question which is presented in Figure 1. This question is an AKM question that a math teacher has updated that the teacher uses when learning in class to measure students' numeracy skills before the AKM test is carried out. This is used to see the students' initial abilities. This type of problem uses story problems with a geometry domain. Then for the interview texts and observations made by researchers based

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on numerical indicators, the instrument has been validated by experts in the fields of language and mathematics and has also gone through the revision stage.

Gambar di atas adalah gambar desain rumah Pak Andi. Rumah Pak Andi sudah hampir 75% selesai. Pak Andi ingin menyelesaikan tahap akhir pembangunan atap rumah tersebut. Atap rumah menyerupai bentuk dua persegi panjang yang sama. Pak Andi perlu mengetahui luas seluruh bagian atas rumah untuk menentukan jumlah material yang akan digunakan. Berdasarkan ukuran yang telah ditentukan, berapakah luas atap rumah Pak Andi?

Figure 1. Question Instrument Number 1

Translation of the question : "*The picture above is a picture of Mr. Andi's house design. Mr. Andi's house is almost 75% completed. Mr. Andi wants to complete the final stage of construction on the house's roof. The roof of the house resembles the shape of two equal rectangles. Mr. Andi needs to know the area of the entire top of the house to determine the amount of material to be used. Based on the predetermined size, what is the roof area of Mr. Andi's house?*".

In this study, triangulation was used to check the validity of the data. The triangulation used by the researcher is source triangulation and technique triangulation. Source triangulation was done by interviewing students, teachers, and schools. The triangulation technique used in this study was the researcher conducted observations, tests, and interviews to determine the suitability of the data obtained from the three courses.

In analyzing the data in this article, the researchers analyzed the data using inductive techniques. The technique of inductive data analysis is by collecting research data, reducing the data obtained, displaying the data, and providing conclusions as feedback (Creswell, 2015). First, collect data by observation, documentation, and interviews with students and mathematics teacher. The data obtained were cross-checked through triangulation of sources and techniques. Source triangulation for cross-checking uses the same data collection techniques with different origins. On the contrary, technique triangulation uses the same source with additional data collection techniques. From the data obtained and it is said to be valid, then it is presented, and conclusions are drawn. Overall, the research data collection and analysis activities are summarized in Figure 2.

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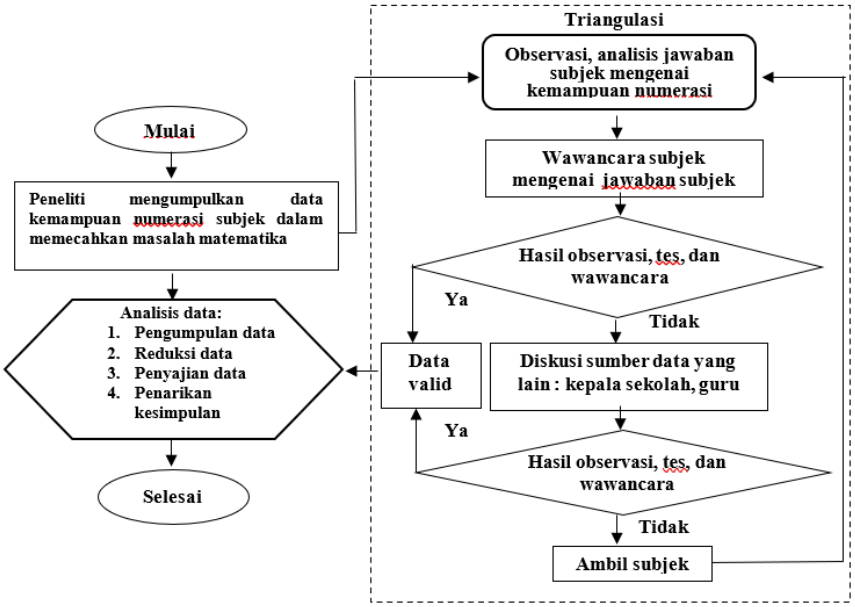

Figure 2. Data analysis techniques

RESULTS AND DISCUSSION

Result:

Based on the answers written by Subject 1 (S1) in Figure 3, they appear to have carried out systematic completion steps, from understanding data to bringing up solutions. When understanding the problem, S1 seemed to give scribble on the question sheet. Besides that, on the answer sheet, S1 seemed to write down the data asked on the question correctly. This indicates the response of S1 in the process of understanding the problem. Researchers conducted in-depth interviews to validate, and the subject said that in understanding the problem, he read the questions and scribbled on them to simplify the problem and create an image of the complete steps to be used and wrote it down on the answer sheet. From the answers given by S1, it can be concluded that the process of understanding S1 can be done well.

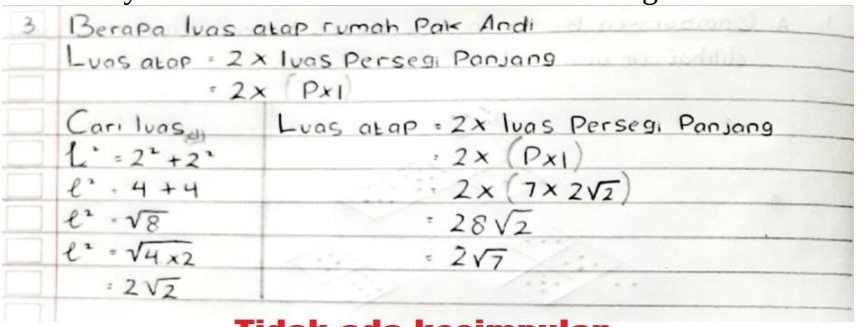

Figure 3. Answers to Subject 1

After S1 wrote down the data that was considered necessary on the answer sheet, it was seen that the subject began to write down the formula that would be used to solve the problem in the answer sheet. It can be seen in Figure 3 that the subject wrote the formula for the roof area, the Pythagorean concept, to find the width of the roof. The calculations and answers obtained are also correct by

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calculating the width of the top and calculating two roof areas. Furthermore, in an interview with S1, he said that he had no difficulty working on the problem. However, he forgot a bit about determining the Pythagorean formula to determine the roof. Based on the analysis of answer sheets and interviews, Masters performs problem-solving analysis using numbers and mathematical symbols well.

Then when you look back at the S1 answer sheet, there are no conclusions written as a form of interpretation of the answers obtained. Although the answers received are correct, they do not indicate the subject to interpret the results to solve the problem. Interviews were conducted to confirm this condition. S1 said that he did not write conclusions. Only the answers were obtained. This was due to the haste of the subject in answering so that the results of the answers did not have units, only numbers. So it is not perfect if it is said to meet all numeric indicators.

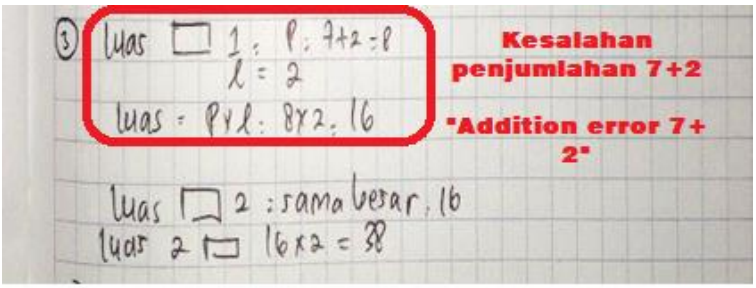

Figure 4. Subject 2 Answers

Documentation of the answers of Subject 2 (S2) was obtained through the mathematics teacher through the given task, and the document can be shown in Figure 4. On the answer sheet, S2 did not write down the known and asked data. So there needs to be confirmed through interviews. S2 said that he had trouble understanding the problem. S2 thought the width of the roof was 2 cm. The difficulty of S2 in understanding the questions will result in the answers obtained being less precise later. Through these conditions and supported by interviews, Masters cannot correctly analyze mathematical problem-solving information in pictures, graphs, and tables.

The formula or formula written by S2 on the answer sheet is incomplete. It only writes two times the area of the rectangle as the area of the roof you are looking for. There is no formula to find the roof width first with the Pythagorean concept. Of course, this condition will make the answer obtained wrong. S2, in the interview, said that he did not know the Pythagorean formula, let alone apply it to problems. From the answer sheets and interviews, it was indicated that S2 could not perform problem-solving analysis using numbers and mathematical symbols properly.

Student errors in understanding and performing calculations will be rooted in the answers obtained, so the solutions obtained are also wrong. It can be seen in Figure 4 that the answers obtained are not correct. It was getting the wrong answer resulted in interpreting the wrong answer. The

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answer sheet document in the Master's Degree does not appear to write the conclusion of the answer; it only writes down the results of the answer. The interview was conducted to confirm this situation when the master's interview said that he did not conclude a form of interpreting the results of the answers because he was not used to writing the conclusions of the answers, so in solving this problem, he did not write conclusions. So it can be said that S2 cannot interpret the results.

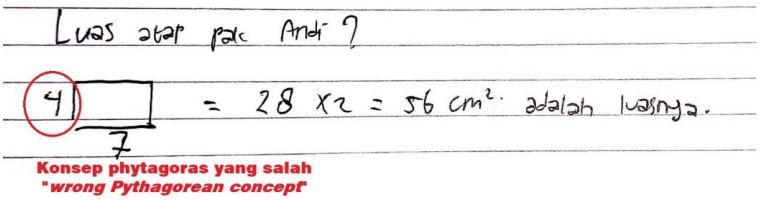

Figure 5. Subject's Answer 3

The answer sheet for Subject 3 (S3) is shown in Figure 5. In the answer sheet, it can be seen that S3 does not write down the completion of answers systematically. S3 only writes direct answers without writing the data and formulas used, so further interviews are needed regarding this situation. During the interview, S3 explained that he was confused about solving this problem. He was not familiar with the story and pictures of the building. The problematic students do not understand knowing the formula to be used and not knowing how to count, so it can be concluded that S3 cannot solve the AKM problem correctly.

Discussion :

Based on the results of the research obtained, the response given by the subject to the indicator of analyzing the picture or table information shows that providing scribbles on the question sheet simplifies the problem so that it looks concise and easy to work with, besides that it can create a shadow of the complete steps that will be used. These results align with research conducted by Sari & Bernard (2020), which showed that in understanding mathematical problems, students tend to doodle first, both on question sheets and blank sheets. Another finding found that the subject had difficulty understanding AKM problems. Lack of practice in solving AKM-type questions when learning is the reason. This is in line with the statement of Nurhanurawati et al. (2022) lack of courses in solving practical problems will make it difficult for students to solve mathematical problems. Purwaningsih et al. (2021) added that the factor of students' ability in mathematics influences solving the AKM problem. The solution to this problem is to familiarize students with solving AKM problems in classroom learning so that students' mathematical abilities increase (Yamtinah et al., 2022). Making it a habit to read and process information or reading sourced from ICT or print media (Muhaimin & Dasari, 2022), is one of the solutions to increase literacy.(Muhaimin, Siregar, et al., 2022).

Analyzing problem-solving using numbers and mathematical symbols are done to get formulas or formulas in solving mathematical problems. The response that appears shows the subject writing the formula directly into the

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answer sheet. The calculation process carried out is also directly written on the answer sheet. This shows that there is confidence in solving problems. This condition is based on a mature understanding, and the data obtained is correct (Diana et al., 2020). Another finding shows that the inability of the subject to represent the image makes the subject unable to determine the formula correctly. Fauziyah et al. (2022), in their research show that students who have difficulty in understanding and representing images will have trouble determining the formula. So, in solving the AKM problem, good experience is needed in meaning the problem to complete the calculation correctly.

Interpreting the results to solve mathematical problem-solving is done to provide conclusions from what has been obtained in the calculation as a form of perfecting problem-solving. Often students do not do this (Ningsih et al., 2021). There are several reasons the subject made the response. The subject could not understand the question, so he could not draw a conclusion, and the issue forgot to remove the findings because he was not used to conclusions. This condition is in line with the results of Wibowo (2015) research, which states that students are not accustomed to concluding when solving problems, resulting in the absence of a conclusion-drawing process carried out by the subject. This research is limited by areas and research objects that only discuss numeracy skills. The results of this study can provide an overview of students' current numeracy abilities, and provide an alternative that the AKM problem can be used to measure numeracy skills other than the PISA problem.

CONCLUSIONS AND RECOMMENDATIONS

The numerical ability to analyze mathematical problem-solving information in pictures, graphs, tables, charts, and diagrams can be done well for students. The visible characteristic is by giving scribbles on the question sheet to simplify the problem so that it looks concise and easy to work on and can create step shadows solution to be used. Furthermore, analyzing problem-solving using numbers and mathematical symbols is also done well by obtaining the correct formulas and answers, with the characteristics of doing calculations directly on the answer sheet. Finally, on the ability to interpret the results to solve mathematical problem solving, all subjects did not conclude from the results of the calculations obtained.

Other findings show that students' difficulties in understanding problems and interpreting results are due to students' lack of familiarity with solving AKM problems in learning. Then the difficulty in representing the problem impacts the inaccuracy of determining the formula until the calculations. This research is limited areas and research objects that only discuss numeracy abilities, further research can develop or look at numeracy abilities from several factors or other reviews.

REFERENCES

Adnan, Mulbar, U., Sugiarti, & Bahri, A. (2021). Biology Science Literacy of Junior High School Students in South Sulawesi, Indonesia. *Journal of Physics: Conference Series*, *1752*(1), 1–9. https://doi.org/10.1088/1742-6596/1752/1/012084

Andiani, D., Hajizah, M. N., & Dahlan, J. A. (2020). Analisis Rancangan

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

DOI: https://doi.org/10.24127/ajpm.v12i1.6396

Assesmen Kompetensi Minimum (AKM) Numerasi Program Merdeka Belajar. *Majamath: Jurnal Matematika Dan Pendidikan Matematika*, *4*(1), 80–90. http://ejurnal.unim.ac.id/index.php/majamath/article/view/1010/544

Cahyanovianty, A. D. (2021). Analisis Kemampan Numerasi Peserta Didik Kelas VIII dalam Menyelesaikan Soal Asesmen Kompetensi Minimum. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *05*(02), 1439–1448. https://doi.org/https://doi.org/10.31004/cendekia.v5i2.651

Creswell, J. W. (2015). Educational Research - Planning, COnducting, And Evaluating Quantitative and Qualitative Research - Fifth Edition. In *AORN Journal* (Vol. 62, Issue 1).

Daylight, R., & O'Carroll, J. (2020). Teaching University Students to Read and Write. *Literacy and Numeracy Studies*, *27*(1), 1–19. https://doi.org/10.5130/lns.v27i1.6672

Diana, N., Suryadi, D., & Dahlan, J. A. (2020). Analysis of students' mathematical connection abilities in solving problem of circle material: Transposition study. *Journal for the Education of Gifted Young Scientists*, *8*(2), 829–842. https://doi.org/10.17478/JEGYS.689673

Fauziyah, N., Budayasa, I. K., & Juniati, D. (2022). Cognition Processes of ASD Students: Recommendations for Mathematics Teaching and Learning Process. *International Journal of Instruction*, *15*(3), 805–830. https://doi.org/10.29333/iji.2022.15344a

Han, W., Susanto, D., Dewayan, Sofie , S.T. Nur Pandora, Hanifah, P., Miftahussururi, Nento, M. N., & Akbari, Q. S. (2017). Materi Pendukung Literasi Numerasi. In *Kementerian Pendidikan dan Kebudayaan*. Kementrian Pendidikan dan Kebudayaan.

Handayani, M., Perdana, N. S., & Ukhlumudin, I. (2021). Readiness of Teachers and Students to Take Minimum Competency Assessments. *Proceedings of the International Conference on Educational Assessment and Policy (ICEAP 2020)*, *545*(Iceap 2020), 73–79. https://doi.org/10.2991/assehr.k.210423.067

Herman, Shara, A. M., Silalahi, T. F., Sherly, & Julyanthry. (2022). Teachers' Attitude towards Minimum Competency Assessment at Sultan Agung Senior High School in Pematangsiantar, Indonesia. *Journal of Curriculum and Teaching*, *11*(1), 1–14. https://doi.org/10.5430/jct.v11n2p1

Julaeha, S. (2019). Problematika Kurikulum dan Pembelajaran Pendidikan Karakter. *Jurnal Penelitian Pendidikan Islam*, *7*(2), 157. https://doi.org/10.36667/jppi.v7i2.367

Jung, E., Zhang, Y., & Chiang, J. (2019). Teachers' mathematics education and readiness beliefs, and kindergarteners' mathematics learning. *International Journal of Education in Mathematics, Science and Technology*, *7*(2), 137–154. https://doi.org/10.18404/ijemst.552416

Kusumah, Y. S., & Nurhasanah, F.

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

DOI: https://doi.org/10.24127/ajpm.v12i1.6396

(2017). *The Endless Long-Term Program of Mathematics Teacher Professional Development in Indonesia*. https://doi.org/10.1007/978-981-10-2598-3_3

Mahmud, M. R., & Pratiwi, I. M. (2019). Literasi Numerasi Siswa Dalam Pemecahan Masalah Tidak Terstruktur. *KALAMATIKA Jurnal Pendidikan Matematika*, *4*(1), 69–88. https://doi.org/10.22236/kalamatika.vol4no1.2019pp69-88

Mainali, B. (2021). Representation in Teaching and Learning Mathematics. *International Journal of Education in Mathematics, Science and Technology*, *9*(1), 0–21. https://doi.org/https://doi.org/10.46328/ijemst.1111

Muhaimin, L. H., & Dasari, D. (2022). Profil Kemampuan Literasi Digital Siswa Sekolah Dasar dalam Penggunaan Media Pembelajaran Jarak Jauh. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang*, *8*(2), 1093–1112. https://doi.org/https://doi.org/10.36989/didaktik.v8i2.387

Muhaimin, L. H., Mukhibin, A., & Dasari, D. (2022). MATHEMATICAL LEARNING EXPERIMENT USING NUMBERED HEADS TOGETHER AND THINK PAIR SHARE MODELS , EXAMINED FROM. *Journal of Mathematics and Mathematics Education*, *12*(02), 122–131. https://doi.org/10.20961/jmme.v12i2.67990

Muhaimin, L. H., Siregar, C. M. S., Romaito, K., & Dasari, D. (2022). Reading-Literacy: Characteristics Of Students In The "Teaching Campus" Program Batch 2. *Tunas: Jurnal Pendidikan Guru Sekolah Dasar*, *8*(1), 41–50. https://doi.org/https://doi.org/10.33084/tunas.v8i1.4269

Nasution, E. (2014). Problematika pendidikan di Indonesia. *MEDIASI*, *8*(1), 1–10. https://doi.org/10.31227/osf.io/u9wg2

Ningsih, W., Rohaeti, E. E., & Maya, R. (2021). Analisis Kesalahan Siswa Dalam Mengerjakan Soal Aritmatika Sosial Berdasarkan Tahapan Newman. *Jurnal Pembelajaran Matematika Inovatif*, *4*(1), 177–184. https://doi.org/10.22460/jpmi.v4i1.177-184

Nurhanurawati, N., Caswita, C., Bharata, H., & Widyastuti, W. (2022). The analysis of junior high school students' mathematical literacy: Field study in Bandar Lampung. *Al-Jabar : Jurnal Pendidikan Matematika*, *13*(1), 199–209. https://doi.org/10.24042/ajpm.v13i1.11659

OECD. (2019). *PISA 2018 Results*. *I*. https://www.oecd.org/pisa/Combined_Executive_Summaries_PISA_2018.pdf

Purwaningsih, S. M., Suprijono, A., & Liana, C. (2021). Analysis of AKM Instrument Development for Historical Literature Capabilities of History Teachers of East Java. *International Joined Conference on Social Science (ICSS 2021)*, *603*(Icss), 262–265. https://doi.org/https://doi.org/10.15294/ujme.v10i2.49540

Rahmayanti, D. Z., & Sutama. (2022). Pembudayaan Literasi Numerasi dalam Kegiatan Inti Pembelajaran Matematika di Sekolah Menengah

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

DOI: https://doi.org/10.24127/ajpm.v12i1.6396

Pertama. *Jurnal Riset Pembelajaran Matematika Sekolah*, *6*(2), 19–24. https://doi.org/10.21009/jrpms.062.03

Sari, D. R., & Bernard, M. (2020). Analisis Kesalahan Siswa SMP dalam Menyelesaikan Soal Materi Statistika di Bandung Barat. *Journal of Medives : Journal of Mathematics Education IKIP Veteran Semarang*, *4*(2), 223. https://doi.org/10.31331/medivesveteran.v4i2.1060

Sutama, Novitasari, M., & Narimo, S. (2020). Numerical Literacy Ability In Learning Mathematics Based on 21st Century Skills in Primary School. *Ilkogretim Online - Elementary Education Online*, *19*(4), 194–201. https://doi.org/10.17051/ilkonline.2020.04.121

Umar, & Widodo, A. (2021). How Is The Student ' s Numeracy Ability During Learning In The Pandemic Era. *Jurnal Scientia*, *10*(1), 77–82. https://doi.org/https://doi.org/10.35337/scientia

Wibowo, E. (2015). Analisis Kesalahan Siswa SMP Kelas VIII dalam Menyelesaikan Masalah Soal Cerita Matematika. *Nurul Farida*, *151*(2), 10–17. https://doi.org/http://dx.doi.org/10.24127/ajpm.v4i2.306

Widyaningrum, A. Z. (2016). Analisis Kesulitan Siswa Dalam Mengerjakansoal Cerita Matematika Materi Aritmatika Sosial Ditinjau Dari Gaya Belajar Siswa Kelas Vii Smp Negeri 5 Metro Tahun Pelajaran 2015/2016. *Jurnal Iqra' : Kajian Ilmu Pendidikan*, *1*(2), 390–392. https://journal.iaimnumetrolampung.ac.id/index.php/ji/article/view/72

Yamtinah, S., Utami, B., Masykuri, M., Mulyani, B., Ulfa, M., & Shidiq, A. S. (2022). Secondary School Science Teacher Response to Minimum Competency Assessment: Challenges and Opportunities. *Jurnal Penelitian Pendidikan IPA*, *8*(1), 124–131. https://doi.org/10.29303/jppipa.v8i1.1075

Zieger, L. R., Jerrim, J., Anders, J., & Shure, N. (2022). Conditioning: how background variables can influence PISA scores. *Assessment in Education: Principles, Policy & Practice*, *00*(00), 1–21. https://doi.org/10.1080/0969594x.2022.2118665