International Journal of Multicultural and Multireligious Understanding

http://ijmmu.com
editor@ijmmu.com
ISSN 2364-5369
Volume 12, Issue 12
December, 2025
Pages: 300-310

Analysis of Numeracy Ability, Content, Context, and Cognitive Level in Terms of Mathematical Belief

Hanum Resta Jati; Ariyadi Wijaya

Department of Mathematics Education, Yogyakarta State University, Indonesia

http://dx.doi.org/10.18415/ijmmu.v12i12.7265

Abstract

The implementation of AKM is in line with Indonesia's goal of realizing quality education as stated in the 2030 SDGs by emphasizing numeracy. One factor that influences students' numeracy ability is mathematical belief. However, there has been no detailed mapping that discusses the level of numeracy ability and the achievement of numeracy components based on their mathematical belief. This study aims to describe the level of numeracy ability and the achievement of each component in numeracy and determine its relationship with mathematical belief. This study is a survey study. The research population is all students of class VIII of public junior high schools in Sleman Regency. The sample in this study was determined using a stratified proportional random sampling technique. The research sample of 224 students came from 10 schools, categorized into three strata, namely stratum A of 48 students from 2 schools, stratum B of 90 students from 4 schools, and stratum C of 86 students from 4 schools. The instrument used is a test instrument in the form of a numeracy ability test compiled based on the AKM numeracy components. The non-test instrument is a mathematical belief questionnaire. Data were analyzed descriptively and using statistical methods. The results show that the numeracy ability of eighth-grade students at public junior high schools in Sleman Regency is generally at the capable level. When viewed across each numeracy component, the highest achievement is in algebraic content, personal context, and the cognitive level of knowing. Meanwhile, the distribution of students' mathematical beliefs is almost evenly distributed across each category. Based on the correlation test, there is a significant positive relationship with a moderate correlation between students' numeracy abilities and their mathematical beliefs.

Keywords: *Numeracy Ability; Mathematical Belief; Content; Context; Cognitive Level*

Introduction

21st-century developments still make mathematics an important subject that deserves attention (Mehmet & Hulya, 2021). Mathematics is seen as an abstract science that discusses quantities, structures, space, changes, and others, which has developed into a field of study with various interests along with the development of technology. (Thanheiser, 2023). The development of science gave rise to the term numeracy, which brings understanding of abstract mathematical concepts to their application in the real

world. (Gula & Lovric, 2024). Human awareness of numeracy is an important thing, especially for those who have the authority to make policies and compile curricula. (Díez-palomar et al., 2023).

The Ministry of National Development Planning stated that Indonesia is committed to achieving the Sustainable Development Goals (SDGs). One of the SDGs, aimed at achieving development by 2030, is to achieve quality education, with a focus on mathematics. (Badan Perencanaan Pembangunan Nasional, 2017). The reference in the 2030 SDGs is the score results from an international scale survey and assessment, namely PISA (Programme for International Student Assessment) (Organisation for Economic Co-operation and Development, 2019).

Indonesia has a basic competency assessment that shows student learning outcomes, namely the Minimum Competency Assessment (AKM). AKM measures basic competencies, namely reading literacy and mathematical literacy. Mathematical literacy in AKM is also called numeracy. Regulation of the Minister of Education, Culture, Research, and Technology concerning National Assessment Chapter 9 Number 1. AKM is implemented with the hope that the results can provide educators and related parties with an overview of their students' abilities so they can consider effective learning strategies tailored to the students' conditions. (Pusat Asesmen Pendidikan, 2021). Efforts to improve students' numeracy skills can be done by reviewing other related variables. (Fanggidae et al., 2024).

The learning strategies used by teachers in the classroom must pay attention to students' beliefs about mathematics (mathematical beliefs) to strengthen their numeracy ability. (Español, 2025). This is reinforced by the statement that students' beliefs about mathematics are very important and have an impact on how students learn mathematics. (De Corte, 2015) And how the students process in solving mathematical problems (Asare et al., 2025). *Mathematical belief is composed of aspects of belief related to mathematics education, beliefs about the student's self, and finally, those related to the context in the class or class context.* (Eynde et al., 2003).

The influence of mathematical beliefs that exist in each student on their numeracy abilities is shown by research, Imran (2019) which states that students' mathematical beliefs have a positive influence on their mathematical literacy, and research by Zuliyati (2020) Students with low mathematical beliefs have low numeracy ability, and those with high mathematical beliefs also improve their numeracy ability. This trend demonstrates a relationship between the two. However, in reality, teachers do not fully address students' mathematical beliefs in the learning process (Bonne, 2012).

Studies on the relationship between numeracy ability and mathematical belief have not been facilitated with detailed information in Sleman Regency, Yogyakarta Special Region. Therefore, this study describes students' numeracy ability in depth, including their achievement in each component of content, context, and cognitive level based on the students' mathematical belief categories.

Method

This research is a survey study with a quantitative approach conducted in Sleman Regency, Yogyakarta Special Region, Indonesia. The population in this study was eighth-grade students of public junior high schools in Sleman Regency in the 2023/2024 academic year, with a population of 24,046 students from 54 schools. The large population did not allow for this research, so a sampling process was carried out. The sampling technique used in this study was a proportional random sampling technique with strata (stratified proportional random sampling), which was categorized into three strata: stratum A, stratum B, and stratum C based on the results of the Regional Education Standards Assessment for junior high school level. The research sample was 224 students spread across 10 schools. Strata A consists of schools that are included in the high stratum, stratum B consists of schools that are included in the middle stratum, while stratum C consists of schools with the low stratum.

The data in this study were collected through tests to obtain data on the level of numeracy ability and the achievement of each component of students' numeracy. A questionnaire was used to obtain data on students' mathematical belief levels. In this study, the numeracy ability test instrument used consisted of nine questions, each referring to the content component, context component, and cognitive level component, in accordance with the Minimum Competency Assessment (AKM) framework established by the Ministry of Education and Culture. The details, including the format of the questions, are presented in Table 1.

Table 1.Test components based on the AKM numeracy framework

No.	Contents	Contexts	Cognitive Level
1	Number	Personal	Knowing
2	Number	Personal	Applying
3	Geometry and Measurement	Scientific	Applying
4	Algebra	Scientific	Applying
5	Number	Socio-cultural	Reasoning
6	Geometry and Measurement	Scientific	Reasoning
7	Geometry and Measurement	Socio-cultural	Knowing
8	Algebra	Scientific	Knowing
9	Algebra	Personal	Reasoning

Referring to the AKM framework, the personal context relates to the activities of a person, family or group, the socio-cultural context relates to problems that are related to the social context such as activities in a community, activities carried out by the community together or social problems/norms in the social order that are often found in the individual's environment, while the scientific context includes problems related to the role of science or mathematical theory in the universe which is the focus of the scientific context. The cognitive level of knowing relates to the understanding of mathematical concepts and mathematical procedures, the cognitive level of applying relates to the individual's ability to apply facts, concepts, procedures, or related mathematical representations, while the cognitive level of reasoning is related to the individual's activities when compiling arguments about something, both in the process and in conclusions. (Pusat Asesmen Pendidikan, 2021).

The mathematical belief questionnaire instrument in this study consists of 34 statements using a Likert scale. The questionnaire instrument is compiled based on aspects and indicators developed by Eynde et al. (2003).

Table 2.Indikator mathematical belief

Aspects of mathematical belief	Indicators
Beliefs about mathematics and mathematics learning	1. Students have beliefs about mathematics as a subject 2. Students have beliefs about learning mathematics
Beliefs about self	1. Students have confidence in their abilities in mathematics 2. Students have confidence in their goals in mathematics
Beliefs about social context	1. Students have beliefs about social norms in the classroom 2. Students have beliefs about the role of teachers in the classroom

The numeracy ability test instrument and the mathematical belief questionnaire were validated by two experts who are both lecturers at the Master of Mathematics Education Program at Yogyakarta State University. The instrument was revised based on the comments and suggestions provided. To obtain a better instrument, construct validity was tested using factor analysis on the mathematical belief questionnaire using the trial results. Based on the factor analysis, two items were removed. Furthermore, the numeracy ability test instrument and the mathematical belief questionnaire underwent the necessary reliability tests to determine whether the instruments were trustworthy for use. Once all instruments were valid and reliable, they could be used to obtain data related to students' numeracy ability and mathematical beliefs.

After the data was collected, the next step was to analyze the data using descriptive and quantitative methods. The results of the numeracy ability test and the mathematical belief questionnaire were analyzed in several stages, including: a) categorizing the numeracy ability test data into four levels and the mathematical belief questionnaire data into three categories, using the references presented in Tables 3 and 4.

Table 3.Criteria for the level of numeracy ability

Interval	Numeracy Ability Level
$75 < X \leq 100$	Proficient
$50 < X \leq 75$	Capable
$25 < X \leq 50$	Basic
$0 \leq X \leq 100$	Needs Intervention

Note. X: numeracy ability score

Table 4.Mathematical belief categories

Interval	Interval Value	Categories
$X \geq \hat{X} + 0{,}5s$	$X \geq 76{,}32$	High
$\hat{X} - 0{,}5s \leq X < \hat{X} + 0{,}5s$	$67{,}79 \leq X < 76{,}32$	Medium
$X < \hat{X} - 0{,}5s$	$X < 67{,}79$	Low

Note. X: skor mathematical belief, $\hat{X}$: ideal average mathematical belief score, s: standard deviation

Calculate the total score for each component of numeracy ability, namely content, context, and cognitive level; c) calculate the percentage of students at each level of proficient, capable, basic, and needs intervention using the following equation

$$P = \frac{f}{N} \times 100\% \qquad ...(1)$$

Note. P: percentage of number of students/number of scores, f: frequency, n: number of students/number of scores

Calculate the percentage of the total score for each component of content, context, and cognitive level using equation (1); e) analyze in more detail the level of numeracy ability and achievement of numeracy components based on each category of students' mathematical beliefs.

Next, a statistical analysis using a correlation test was used to examine the relationship between numeracy ability and students' mathematical beliefs. The correlation test used the Pearson product-moment test with the following formula.

$$r = \frac{n\sum_{i=1}^{n} X_i Y_i - \left(\sum_{i=1}^{n} Xi\right)\left(\sum_{i=1}^{n} Yi\right)}{\sqrt{\left[n\sum_{i=1}^{n} Xi^2 - \left(\sum_{i=1}^{n} Xi\right)^2\right]\left[n\sum_{i=1}^{n} Yi^2 - \left(\sum_{i=1}^{n} Yi\right)^2\right]}} \quad \ldots(2)$$

Note. X_i: students' numeracy ability, Y_i: the mathematical belief of the student, $\mathbf{n}$: sample size

The correlation coefficient is classified based on Table 5

Table 5.Correlation Level

Correlation Coefficient Interval	Correlation Level
0,91 – 1,00	Very Strong
0,71 – 0,90	Strong
0,41 – 0,70	Moderate
0,21 – 0,40	Weak
0,00 – 0,20	Very Weak or None

Result and Discussion

Description of Students' Numeracy Ability Levels in General

In general, numeracy ability levels are grouped into four levels: proficient, capable, basic, and needs intervention. Data on students' numeracy ability levels can be seen in Table 6.

Table 6. Percentage of numeracy ability level

Numeracy ability level	Number of Students	Percentage
Proficient	55	24,55%
Capable	96	42,86%
Basic	60	26,79%
Needs Intervention	13	5,80%
Total	224	100%

Table 6 shows that 224 students from the research sample completed the numeracy ability test, resulting in no students achieving 50% of the score at all levels. The highest percentage was for students with a capable level of 42.86%, while the lowest percentage was for students with a needs intervention level of 5.80%. Setianingsih (2022) dan Wijaya et al. (2023) Conducted similar research, and the results showed that students in Indonesia have not yet reached the proficient level in numeracy ability.

The dominance of students at this capable level is not in accordance with the research by Sukaryo (2024) which states that Indonesian students' numeracy ability are still low. However, these results are relevant to data from the Regional Education Report for the 2022 AKM for the Special Region of Yogyakarta, which shows that students' numeracy ability is at a moderate level. This indicates that student numeracy ability in the Special Region of Yogyakarta, particularly in Sleman Regency, does not fully represent the overall numeracy ability of Indonesian students.

Table 7.Percentage of numeracy ability levels based on school strata

Numeracy ability level	Strata		
	A	B	C
Proficient	50,00%	22,22%	12,79%
Capable	29,17%	53,33%	39,53%
Basic	14,58%	22,22%	38,37%
Needs Intervention	6,25%	2,22%	9,30%

Table 7 provides information that there are differences in the dominance of numeracy ability levels at each stratum, where schools at stratum A are dominated by proficient students, while strata B and C are dominated by students at the capable level. The level that needs intervention has the fewest number of students compared to other levels across all school strata.

Description of the Achievement of Content Components, Context, and Cognitive Levels of Numeracy

There are three components of numeracy ability measured in this study: content, context, and cognitive level. Of the nine questions used, each question fulfills one content component, one context component, and one cognitive level component, each of which is further divided into three elements, as presented in Table 8.

Table 8. Percentage of Achievement of Numeracy Components

No	Numeracy Components		Total Score	Percentage
1	Content	Number	782	69,82
		Geometry and Measurement	648	57,86
		Algebra	591	52,77
2	Context	Personal	797	71,16
		Socio-cultural	543	48,48
		Scientific	681	60,80
3	Cognitive Level	Knowing	482	71,73
		Applying	717	53,35
		Reasoning	822	61,16

Overall, based on the results of the numeracy ability test, when analyzed based on each component, for the number content component, the total score was 782 (69.82), geometry and measurement 648 (57.86), and algebra 591 (52.77). In the content component, the highest percentage was in the number content, which showed that students generally had a better mastery of the number content compared to the geometry and measurement, and algebra content. Furthermore, in the personal context component, the score was 797 (71.16%), the socio-cultural context 543 (48.48%), and the scientific context 681 (60.80%). These results indicate that in achieving the context component, students had a better mastery of problems or questions related to the personal context compared to the socio-cultural and scientific context. Finally, in the cognitive level component, the total score was 482 (71.73%), the applying level 717 (53.35%), and the reasoning level 822 (61.16%). The largest percentage is the knowing level, which means that students' knowing level is more dominant compared to other cognitive levels.

Description of Students' Mathematical Beliefs in General

The results of the students' mathematical belief questionnaire were analyzed as a whole/ Data on the number of students in each mathematical belief category was obtained, and the percentage was then

calculated. From a total of 224 students, the distribution of mathematical belief categories was obtained as shown in Table 9.

Table 9.Percentage of mathematical belief categories by strata

Mathematical Belief Category	Number of Students	Percentage
High	78	34,82%
Medium	71	31,70%
Low	75	33,48%
Total	**224**	**100%**

The results showed a nearly even distribution of students across each mathematical belief category. A total of 34.82% of students achieved high mathematical belief, but with a difference of only about 1%, while another 33.48% were in the low mathematical belief category.

Table 10.Percentage of mathematical belief categories by strata

Mathematical Belief Category	Strata		
	A	B	C
High	50,00%	33,33%	27,91%
Medium	37,50%	26,67%	33,72%
Low	12,50%	40,00%	38,27%

The table above shows that 50% of students in grade A schools are in the high mathematical belief category. Meanwhile, the highest percentages in grade B and C schools are students with low mathematical beliefs, at 40% and 38.27%, respectively. This indicates that grade A, B, and C schools have several students with high, medium, and low mathematical beliefs, each with percentages above 12%.

Description of the Level of Numeracy Ability and Achievement in Content, Context, and Cognitive Level Based on Mathematical Belief

Students' numeracy ability, which in this study included numeracy ability levels and component achievement, was reviewed based on each student's mathematical belief level: high, medium, and low. Figure 1 shows the percentage of numeracy ability at the proficient, capable, basic, and needs intervention levels in each mathematical belief category.

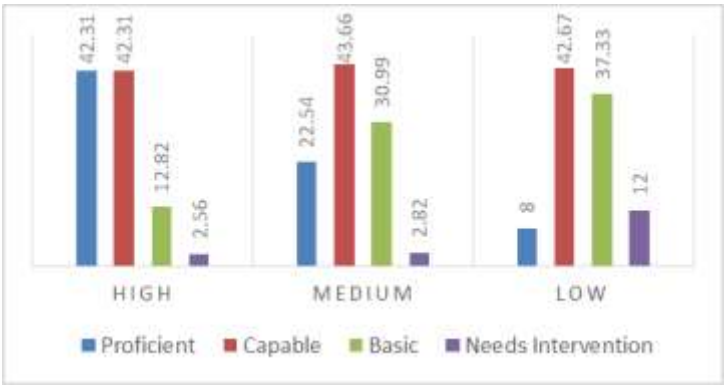

Figure 1. Percentage of students' numeracy ability level based on the mathematical belief category

Based on Figure 1, four levels of numeracy ability are presented according to three categories of mathematical belief. Each category of mathematical belief is dominated by capable students with percentages that do not differ significantly. In the high mathematical belief category, the percentage of students with proficient and capable levels was the same, at 42.31%. Only 2.56% of students with high mathematical beliefs required special intervention. Conversely, in the low mathematical belief category, only 8% of students were proficient. This data shows the largest difference, at 34.31%, between the number of students with proficient levels with high mathematical beliefs and the number of students with proficient levels with low mathematical beliefs.

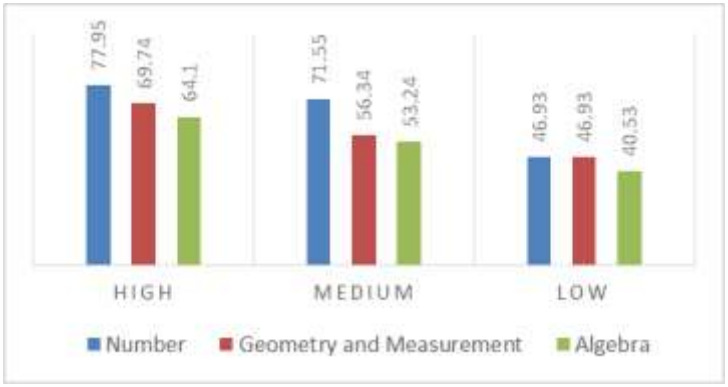

Figure 2. Percentage of numeracy content components based on the mathematical belief category

Based on the results, students' abilities in algebra content were the lowest compared to other content in each category of mathematical belief. This condition is as researched by Yuliany et. al. (2024) which shows significant difficulty when students complete mathematical literacy or numeracy problems related to algebraic content.

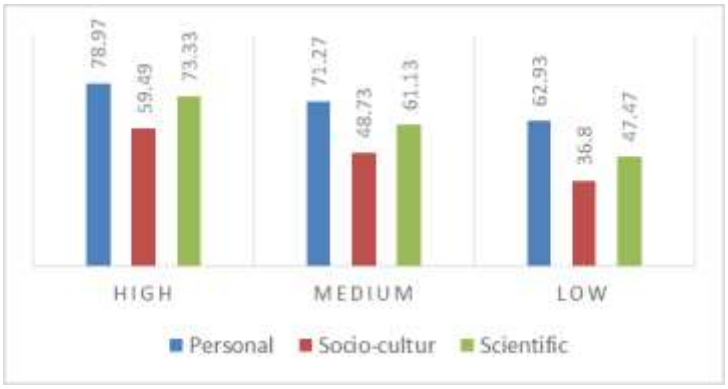

Figure 3. Percentage of numeracy context components based on mathematical belief category

Based on these results, both high, medium, and low levels of mathematical belief show that achievement in the socio-cultural context is the lowest compared to the personal and scientific contexts. Students' beliefs in the numeracy context are related to their belief that mathematics is not just a collection of formulas that must be memorized, but also their perceived application in the context of everyday life, as is the general understanding of numeracy. Lestari (2024) stated that some students admitted to not understanding the use of mathematics in real life. The low achievement of students' socio-cultural context in all categories of mathematical belief, based on the data in Figure 3, is also explained by Rezky et al. (2022) The difficulties that students experience in solving numeracy problems in a socio-cultural context with geometric content are how to interpret the problems in the questions and the difficulty in determining the strategy to use.

Figure 4. Percentage of cognitive level components of numeracy based on the mathematical belief category

Data shows that students' numeracy ability at the applying level is still low, whether viewed from high, medium, or low mathematical belief levels. Research by Viyana et al. (2025) shows that students still make mistakes in using strategies to solve numeracy problems. Conversely, the highest percentage is at the knowing level. This means that students' ability to understand mathematical concepts is better than their ability to apply and reason, which is strengthened by Defi et al. (2021) with research results showing a significant relationship between mathematical belief and students' mastery of mathematical concepts.

The Relationship between Students' Numeracy Abilities and Mathematical Beliefs

The correlation test was used in this study to examine the relationship between students' numeracy ability and their mathematical beliefs. The SPSS test showed a sig.= 0.000 < 0.05, indicating a significant relationship between numeracy ability and mathematical beliefs. Furthermore, the correlation coefficient of 0.441 indicates a positive but moderate relationship. Quantitatively, this finding is supported by the results of research by Imran (2019) dan Zuliyati (2020) which explains that students' numeracy abilities are directly proportional to their mathematical beliefs.

Conclusions

Overall, the results show that the majority of eighth-grade students in Sleman Regency's numeracy ability are at the capable level, with a percentage of 42.86%. Based on school strata, schools with stratum A are dominated by proficient students at 50%, while schools with strata B and C are dominated by capable students. Furthermore, the total score is used to calculate the percentage of achievement for each numeracy component. The highest achievement is in number content at 69.82%, personal context at 71.16%, and the cognitive level of knowing at 71.73%. On the other hand, the results of the study indicate that there is an almost even distribution of the number of students in each category of mathematical belief. Based on school strata, schools with stratum A are dominated by students with high mathematical beliefs, while strata B and C are dominated by students with low mathematical beliefs. The results of the study, by looking at the distribution of numeracy ability levels when viewed based on mathematical belief, show that proficient students do not necessarily have high mathematical belief and vice versa, students who require special intervention do not necessarily have low mathematical belief. However, the correlation test can be concluded that there is a significant relationship with a sufficient level of correlation between numeracy ability and mathematical belief.

The research findings provide field data related to students' numeracy abilities based on their mathematical beliefs, which is important to note. Some things that can be done are that teachers need to have a learning strategy or special approach to maintain their belief in mathematics with the aim of

improving their numeracy abilities. Further research should examine other factors that influence numeracy abilities, compiled with complete numeracy content, including data content and uncertainty, which were not used in this study.

References

Asare, B., Dissou Arthur, Y., & Adu Obeng, B. (2025). Mathematics self-belief and mathematical creativity of university students: the role of problem-solving skills. *Cogent Education*, *12*(1). https://doi.org/10.1080/2331186X.2025.2456438.

Badan Perencanaan Pembangunan Nasional. (2017). *Peta Jalan Sustainable Development Goals (SDGs) di Indonesia* (p. 35). Kementerian Perencanaan Pembangunan Nasional.

Bonne, L. (2012). *The Effects of Primary Students` Mathematics Self-efficacy and Beliefs about Intelligence on Their Mathematics Achievement: A Mixed-methods Intervention Study* [Victoria University of Wellington]. https://doi.org/10.26686/wgtn.17000635.

De Corte, E. (2015). Mathematics-Related Beliefs of Ecuadorian Students of Grades 8-10. *International Journal of Educational Research*, *72*, 1–13. https://doi.org/10.1016/j.ijer.2015.03.006.

Defi, S. L., Parta, I. N., & Permadi, H. (2021). Penguasaan Konsep Matematika Siswa SMP Ditinjau dari Keyakinan Epistemologis Tentang Matematika dan Kecerdasan Emosional. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *10*(3), 1963–1972. https://doi.org/10.24127/ajpm.v10i3.3690.

Díez-palomar, J., Ramis-salas, M., Močnik, I., Simonic, M., & Hoogland, K. (2023). Challenges for Numeracy Awareness in the 21st Century : Making Visible the Invisible. *Frontiers in Education*, *8*, 1–14. https://doi.org/10.3389/feduc.2023.1295781.

Español, S. C. P. (2025). Learners' Beliefs in Learning Mathematics and Their Numeracy Skills: An Intervention Program. *Psychology and Education: A Multidisciplinary Journal*, *41*(6), 772–778. https://doi.org/10.70838/pemj.410609.

Eynde, P. O. 'T, Corte, E. De, & Verschaffel, L. (2003). Framing: Students' Mathematics Related Beliefs. In G. C. Leder, E. Pehkonen, & G. Torner (Eds.), *Beliefs: A Hidden Variable in Mathematics Education?* (pp. 13–37). Kluwer Academic Publishers.

Fanggidae, J. J. R., Sugiman, & Mahmudah, F. N. (2024). Literasi Matematika dan Numerasi dalam Tren Penelitian Pendidikan Matematika di Indonesia. *Aksioma*, *13*(2), 497–509. https://doi.org/10.24127/ajpm.v13i2.8625.

Gula, T., & Lovric, M. (2024). Numeracy Tasks: Inspiring Transfer Between Concrete and Abstract Thinking Spaces. *Numeracy*, *17*(1). https://doi.org/10.5038/1936-4660.17.1.1447.

Imran, A. P., Kadir, & Mustamin, A. (2019). Analisis Literasi Matematik dan Keyakinan Matematik Siswa SMA Negeri di Kota Kendari. *Jurnal Pendidikan Matematika*, *8*(2), 159–168. https://ojs.uho.ac.id/index.php/JPBM/article/view/7238/0.

Mehmet, C., & Hulya, S. (2021). Factors that Cause Students to Develop Math Anxiety and Strategies to Diminish. *Cypriot Journal of Educational Sciences*, *16*(4), 1356–1367. https://doi.org/10.18844/cjes.v16i4.5984.

OECD. (2019). *PISA 2018 Mathematics Framework*. 73–95. https://doi.org/10.1787/13c8a22c-en.

Pusat Asesmen Pendidikan. (2021). *Framework Asesmen Kompetensi Minimum (AKM)*. Pusat Asesmen Pendidikan, Badan Penelitian, Pengembangan, dan Perbukuan, Kementrian Pendidikan dan Kebudayaan. https://pusmendik.kemdikbud.go.id/an/Framework_AKM_31032022.pdf.

Reza Lestari, Habibi, & Syaiful Bastari. (2024). Persepsi Siswa Terhadap Mata Pelajaran Matematika (Studi Kasus Siswa Kelas VI SD Negeri 03 Gumay Ulu). *Jurnal Ilmu Pendidikan*, *3*(1), 21–28. https://doi.org/10.58222/jurip.v3i1.777.

Rezky, M., Hidayanto, E., & Parta, I. N. (2022). Kemampuan Literasi Numerasi Siswa dalam Menyelesaikan Soal Konteks Sosial Budaya pada Topik Geometri Jenjang SMP. *Aksioma*, *11*(2), 1548–1562. https://doi.org/10.24127/ajpm.v11i2.4879.

Setianingsih, W. L., Ekayanti, A., & Jumadi. (2022). Analisis Kemampuan Numerasi Siswa dalam Menyelesaikan Soal Tipe Asesmen Kompetensi Minimum (AKM). *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *11*(4), 3262–3273. https://doi.org/10.24127/ajpm.v11i4.5915.

Sukaryo, A. F., & Sari, R. M. M. (2024). Systematic Literature Review: Kemampuan Numerasi Siswa dalam Pembelajaran Matematika. *Journal THEOREMS (The Original Research of Mathematics)*, *8*(2), 461–472. https://doi.org/10.31949/th.v8i2.8212.

Thanheiser, E. (2023). What is the Mathematics in Mathematics Education? *Journal of Mathematical Behavior*, *70*(March 2022). https://doi.org/10.1016/j.jmathb.2023.101033.

Viyana, D., Mardiyana, Riyadi, & Usodo, B. (2025). Kesalaahan Siswa dalam Menyelesaikan Soal Trigonometri Ditinjau dari Literasi Numerasi pada Level Kognitif Knowing, Applying, dan Reasoning. *JIPMat (Jurnal Ilmiah Pendidikan Matematika)*, *10*(1), 31–42. https://doi.org/10.26877/jipmat.v10i1.1645.

Wijaya, A., Fanggidae, J. J. R., & Setyaningrum, W. (2023). Kemampuan Numerasi dan Growth Mindset siswa SMP dan Madrasah Tsanawiyah di Kabupaten Purworejo Kemampuan numerasi dan Growth Mindset siswa SMP dan Madrasah Tsanawiyah di Kabupaten Purworejo. *Jurnal Riset Pendidikan Matematika*, *10*(2), 153–164. https://doi.org/10.21831/jrpm.v10i2.66831.

Yuliany, N., Rayhana, A, P. M. A., Nuhdin, Inzani, R. N., & Haeruddin, M. I. (2024). Analisis Kesulitan Siswa Dalam Menyelesaikan Soal Literasi Matematika Aljabar Berdasarkan Langkah Polya. *Jurnal Derivat*, *11*(2), 280–288. https://doi.org/10.31316/jderivat.v10i2.6623.

Zuliyati, W. O., Sudia, M., & Kadir. (2020). Analisis Kemampuan Literasi Matematika Ditinjau Dari Keyakinan Matematika Siswa SMP Di Wilayah Pesisir Kabupaten Konawe. *Jurnal Pembelajaran Berpikir Matematika*, *5*(2), 96–108. https://doi.org/10.33772/jpbm.v5i2.15747.

Copyrights