JOTTER: Journal of Teacher Training and Educational Research
e-ISSN 3025-4817
Vol. 4, No. 1, 2026, pp. 102 - 110

The Effect of Interactive Flat Panel-Based Mathematics Learning on Elementary Students' Numeracy Literacy

Firda Halawati[1]*, Sopandi[2], Teti Nurhayati[3]
[1]Universitas Islam Al-Ihya Kuningan, Kuningan, Indonesia
[2]Universitas Islam Al-Ihya Kuningan, Kuningan, Indonesia
[3]Universitas Islam Al-Ihya Kuningan, Kuningan, Indonesia
*Corresponding Author: fbayasut90@yahoo.com

ARTICLE INFORMATION
***Article History*:**
Received 2026-June-25
Revised 2026-July-15
Accepted 2026-August-30

Keywords:
Mathematics Learning, Interactive Flat Panel (IFP), Numeracy Literacy.

DOI:
10.71280/jotter.v4i1.606

A B S T R A C T

This study examines the low level of numeracy literacy among Indonesian students and investigates the effect of Interactive Flat Panel (IFP) technology-based mathematics learning on students' numeracy literacy skills at Abata Islamic School Elementary School. The study aimed to describe the implementation of IFP-based mathematics learning, identify students' numeracy literacy skills, and determine the influence of IFP-based learning on these skills. A quantitative method with a quasi-experimental approach was employed. The population consisted of students at Abata Islamic School Elementary School, with participants selected through purposive sampling. Data were collected using pretests and posttests. The research instruments were tested for validity, reliability, difficulty level, and discrimination power, while normality and homogeneity tests were conducted as prerequisite analyses. Data were analyzed using an independent sample t-test. The findings showed that IFP-based mathematics learning encouraged students to be more active and enthusiastic and made the learning process easier to understand and more enjoyable. Before treatment, the experimental class obtained an average pretest score of 56.67, compared with 43.93 in the control class. After treatment, the experimental class achieved an average posttest score of 83.75, while the control class obtained 63.21. The N-Gain scores were 0.64 for the experimental class and 0.31 for the control class. Furthermore, the t-test results showed a significance value of 0.00 < 0.05, indicating a significant difference between the two groups. Therefore, IFP technology-based mathematics learning significantly improves students' numeracy literacy skills compared with conventional learning methods.

INTRODUCTION

Education is one of the important factors in determining the success and well-being of a nation. Nowadays, education faces many challenges as a result of very rapid technological development, especially in the 21st century. Twenty-first century education faces the challenge of developing students' abilities so that they possess global competencies. Global competency, according to (Munahefi & Lestari, 2023). Education at the elementary school level is very important for improving students' basic literacy and numeracy skills. Schools are responsible for students' success in mastering these skills. Literacy is defined as a person's ability to write and read, and to engage in thinking activities through writing and reading (Rasam et al., 2024).

The implementation of numeracy literacy has not yet been maximized. This can be seen from students' low numeracy literacy. Indonesia's score on the 2018 Programme for International Student Assessment (PISA) was 379 points, placing Indonesia 72nd out of 78 countries, while the average

score of all participating countries was 489 points (Rahmayanti & Sutama, 2022). In fact, the numeracy literacy ranking has declined: based on the 2016 PISA results, Indonesia ranked 64th out of 72 countries. In the 2012 PISA, Indonesia ranked 64th out of 65 participating countries with a score of 375 points (Rahmayanti & Sutama, 2022). Students have difficulty interpreting, identifying, and understanding math problems, as well as difficulty applying mathematical concepts to real problems.

Tabel 1 Indonesia's PISA Numeracy Literacy Ranking

Year	Literacy Assessed	Indonesia Average Score	PISA Average Score	Indonesia's Ranking	Number of Participating Countries
2015	Mathematics	383	490	63	69
	Reading	397	493	61	
2016	Mathematics	379	489	73	79
	Reading	371	487	74	
2022	Mathematics	366	472	69	80
	Reading	359	476	60	

Based on the table above, Indonesia's numeracy literacy has declined from year to year. In Indonesia, through a government program, the Ministry of Education and Culture proposed the National Literacy Movement (Gerakan Literasi Nasional/GLN) in 2016. The National Literacy Movement is the implementation of Minister of Education and Culture Regulation No. 23 of 2015 concerning the Cultivation of Character. The National Literacy Movement (GLN) declared by the government is implemented in schools through what is called the School Literacy Movement (Gerakan Literasi Sekolah/GLS). The School Literacy Movement is an effort to create a literate student body and cultivate character among school members through various activities, including reading non-academic books for 15 minutes (Manurung et al., 2023).

Among interactive media, one that is increasingly being adopted is the large interactive touch-screen display, known as the Interactive Flat Panel (IFP). The IFP is designed to replace conventional whiteboards and projectors, and allows direct interaction in which students and teachers can touch, write, draw, mark up, display images/videos, and run multimedia content through an interactive interface. This medium allows for high flexibility in presenting material — from text, images, video, and animation to interactive simulations or quizzes. Therefore, the IFP is ideal for supporting active, collaborative learning processes that adapt to students' needs (Sulistyawan, 2025). This research therefore has the potential to make a significant contribution to mathematics learning that is more effective and relevant to the needs of today's students, by clarifying how the use of Interactive Flat Panel media can influence students' numeracy literacy. This was stated by (OECD, 2019): numeracy literacy is a primary requirement and an initial step in implementing mathematics learning in the era of the 4.0 revolution and the 21st century (Surel, 2024). Therefore, the current trend is to prioritize students' literacy and numeracy in order to improve the quality of learning and of schools in general (Fanggidae et al., 2024).

An Interactive Flat Panel Display (IFPD) is a modern technological innovation consisting of a large digital screen—typically around 86 inches—equipped with interactive touch capabilities. Through this device, users can not only display instructional materials but also perform various tasks such as accessing, editing, and sharing diverse file types—including images, videos, and presentations—in a direct and convenient manner (Indriansyah, 2025). With high resolution and multi-touch capabilities, IFPDs allow multiple users to interact simultaneously on the same screen, making them highly efficient tools for classroom collaboration (Septiyaningtiyas et al., 2025). The IFPD is a cutting-edge technology serving as an instructional medium; it is a large electronic screen

(86 inches) featuring touch-based interactivity. This device enables users to access, edit, and share various file types, such as photos, videos, and presentations. In practice, the IFPD replaces conventional whiteboards and projectors during classroom learning activities (Septiyaningtiyas et al., 2025). An IFPD is a technological device designed to enhance interaction during learning processes or presentations. It is a flat-panel screen with touch capabilities that allow users to interact directly with the display—much like a tablet or smartphone, but on a much larger scale. Thanks to high resolution and multi-touch functionality, IFPDs enable simultaneous interaction by multiple users on the same screen, making them highly efficient tools for classroom collaboration. A key advantage of the IFPD is its ability to integrate various forms of media into a single platform. Teachers can display text, images, videos, graphs, and interactive applications, all of which are accessible directly via the touchscreen (Riyadi & Ningsih, 2024). This is what engages students in mathematics lessons using IFP, as the technology allows them to visualize concepts in three dimensions. Consequently, numeracy literacy—defined as the knowledge and skills related to understanding numbers, symbols, and the analysis of quantitative information (such as graphs, tables, and charts)—becomes a crucial competency for today's generation. Possessing strong numeracy literacy enables students to effectively apply their mathematical knowledge to real-life situations with the aid of IFP.

In learning, the use of technology is not just about how it is used, but about how digital technology can help students produce new, useful work (Ronny Gunawan et al., 2024). This study aims to examine mathematics instruction based on Interactive Flat Panel (IFP) technology, assess students' numeracy literacy skills, and determine the impact of IFP-based mathematics instruction on those skills. The hypotheses to be tested in this study regarding the effect of implementing Interactive Flat Panel (IFP)-based mathematics problems on students' numeracy literacy are as follows. Ho: There is no effect of implementing Interactive Flat Panel (IFP)-based mathematics problems on students' numeracy literacy in the subject of Mathematics. Ha: There is an effect of implementing Interactive Flat Panel (IFP)-based mathematics problems on students' numeracy literacy in the subject of Mathematics.

METHODS

This research is quantitative research using a Quasi-Experimental approach. The method used in this study is a Quasi-Experimental Design employing a Non-equivalent Control Group Design. Research subjects were not randomly assigned to the experimental and control groups in this design. One group of subjects received the treatment while the other served as the control group. Both groups were given a pretest and a posttest. The population of this study consisted of all students at Abata Islamic School Elementary School, selected using purposive sampling. According to Sugiyono (2016), a population is a generalized region consisting of objects/subjects with certain qualities and characteristics determined by the researcher to be studied, from which conclusions are then drawn. This study examines the influence of Interactive Flat Panel (IFP)-based mathematics learning on the numeracy literacy of students at SD Abata Islamic School, involving two variables: an independent variable and a dependent variable.

RESULTS AND DISCUSSION

Based on the results of the research, implementation began with an initial test (pretest) given to the research subjects to determine students' baseline scores before treatment. In the next stage, the researcher administered treatment using mathematics learning on the topic of cubes and rectangular prisms. After the treatment, students were given a final test (posttest) to determine their scores after treatment. Once the research was complete, the data were analyzed. The results of the pretest and posttest analysis are shown in the table below.

Class	*Pretest*	*Posttest*	Ngain	Criteria
Experimental	56,67	83,75	0,64	Moderate
Control	43,92	63,21	0,31	Moderate

Based on the table above, it can be seen that at the initial test, the highest score for the experimental class was 56.67 and for the control class was 43.92. After treatment using Interactive Flat Panel (IFP) media, students were given a final test in which the highest result in the experimental class was 83.75 and in the control class was 63.21; from this it is concluded that the pretest score is higher than the posttest score.

The normality test is used to determine whether the data are normally distributed: if sig (2-tailed) > 0.05, the data are normally distributed, whereas if sig (2-tailed) < 0.05, the data are not normally distributed. The results of the normality test are shown in the table below.

Pretest Normality Test

Tests of Normality

	Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Numeracy Literacy Skills	Experimental Pretest	.153	12	.200*	.901	12	.166
	Control Pretest	.116	14	.200*	.983	14	.989

a. Lilliefors Significance Correction

***. This is a lower bound of the true significance.**

Based on the output of the Shapiro-Wilk test using IBM SPSS 16.0, the significance values obtained were 0.166 for the experimental class pretest and 0.989 for the control class pretest. Since all pretest significance values are greater than 0.05, it can be concluded that the data are normally distributed.

Posttest Normality Test

Tests of Normality

	Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Numeracy Literacy Skills	Experimental Posttest	.146	12	.200*	.971	12	.920
	Control Posttest	.222	14	.060	.920	14	.217

a. Lilliefors Significance Correction

***. This is a lower bound of the true significance.**

Based on the output of the Shapiro-Wilk test using IBM SPSS 16.0, the significance values obtained were 0.920 for the experimental class posttest and 0.217 for the control class posttest. Since all posttest significance values are greater than 0.05, it can be concluded that the data are normally distributed.

The homogeneity test aims to determine whether the data have homogeneous variance. Data are said to be homogeneous if sig (2-tailed) > 0.05, whereas if sig (2-tailed) < 0.05, the data are not homogeneous. This can be seen in the homogeneity test table below.

Homogeneity Test Results – Pretest, Experimental and Control

Test of Homogeneity of Variances

Literasi Numerasi

Levene Statistic	df1	df2	Sig.
.160	1	24	.692

Based on the output above, the significance value (sig) based on mean is 0.692 > 0.05. It can therefore be concluded that the variance of the experimental class pretest group and the control class pretest group is the same, or homogeneous. Thus, one of the (non-absolute) requirements for the independent sample t-test has been met.

Homogeneity Test Results – Posttest, Experimental and Control

Test of Homogeneity of Variances

Literasi Numerasi

Levene Statistic	df1	df2	Sig.
.674	1	24	.420

Based on the output above, the significance value (sig) based on mean is 0.420 > 0.05. It can therefore be concluded that the variance of the experimental class posttest group and the control class posttest group is the same, or homogeneous. Thus, one of the (non-absolute) requirements for the independent sample t-test has been met.

Based on the output values above, the sig. value for Levene's Test for Equality of Variances is 0.420 > 0.05, which means the data variance between the experimental and control groups is homogeneous, or the same (V. Wiratna Sujarweni, 2014:99). Therefore, interpretation of the Independent Samples Test output table above is based on the values in the "Equal variances assumed" row.

Independent Sample t-Test – Pretest, Experimental and Control Classes

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Numeracy Literacy	Equal variances assumed	.160	.692	1.906	24	.069	12.738	6.683	-1.054	26.531
	Equal variances not assumed			1.885	22.013	.073	12.738	6.759	-1.279	26.755

The calculated t-value is 1.906. The t-table value, based on the formula α/2;df = 0.05/2;24 = 0.025;24, is 2.064. Based on the table above, the calculated t-values for the pretest were 1.906 and 1.885, both smaller than the table value (1.906 < 2.064 and 1.885 < 2.064), and the significance value is greater than 0.05 (0.069 > 0.05). It can therefore be concluded that there is no difference in pretest scores between the experimental class and the control class — in other words, the two classes' abilities are equivalent.

Hypothesis Test Results – Posttest, Experimental and Control

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Numeracy Literacy	Equal variances assumed	.674	.420	4.760	24	.000	20.536	4.314	11.631	29.440
	Equal variances not assumed			4.805	23.957	.000	20.536	4.274	11.714	29.358

The calculated t-values obtained for the posttest were 4.760 and 4.805, both greater than the t-table value (4.760 > 2.604 and 4.805 > 2.604), with a significance value smaller than 0.05 (0.00 < 0.05). It can therefore be concluded that there is a positive influence of Interactive Flat Panel (IFP) technology-based mathematics learning on the numeracy literacy ability of students at SD Abata Islamic School, Babakanmulya, Jalaksana District, Kuningan Regency.

Based on the output table above, in the "Equal variances assumed" row of the Independent Sample Test, the sig. (2-tailed) value is 0.000 < 0.05. Therefore, based on the decision-making criteria of the independent sample t-test, it can be concluded that there is a significant (real) difference between the average numeracy literacy ability of the control class and the experimental class.

Furthermore, from the output table above, the "Mean Difference" value is 20.536. This value represents the difference between the average mathematics learning outcomes of students in the experimental class and the control class, i.e., 83.75 – 62.21 = 20.54, with the difference ranging from 11.631 to 29.440 (95% Confidence Interval of the Difference, Lower–Upper).

The calculated t-value is 4.760. Using the formula (α/2);(df) = 0.05/2;(24) = 0.025:24, the t-table value obtained is 2.064.

Since the calculated t-value of 4.760 is greater than the t-table value of 2.064, based on the decision-making criteria comparing the calculated t-value with the t-table value, it can be concluded that H0 is rejected and Ha is accepted, meaning there is a difference in the average mathematics learning outcomes between the experimental class and the control class. In other words, applying the conventional method versus the Interactive Flat Panel technology-based method produces different learning outcomes.

It was demonstrated during the study that in the experimental class using Interactive Flat Panel (IFP) technology, students were more active and enthusiastic in participating in learning. Students showed strong curiosity about using the Interactive Flat Panel (IFP), since IFP-based learning is not yet commonly used and students were not accustomed to this medium. This differed from the control class, which used 3D net models of cubes and rectangular prisms. There, the learning process was conventional, using the medium merely as a learning aid. Although this medium can help students understand the net shapes of three-dimensional figures, the presentation of material remained limited and less interactive compared with the Interactive Flat Panel (IFP), resulting in less optimal development. It was confirmed during the study that in the experimental class using the Interactive Flat Panel (IFP), students were more enthusiastic and more active in the learning process. This aligns

with research by Himasati (2025), which shows a significant influence of smart-TV multimedia use on students' learning motivation and achievement. This is further supported by research by Syarifah (2023), whose findings show that the use of smart-TV learning media influences students' learning activeness. There is thus an influence of Smart TV use, showing a significant influence of smart-TV multimedia use on students' learning motivation and achievement.

Meanwhile, students' numeracy literacy scores improved: the experimental class obtained an average score of 56.67 before treatment (pretest), while the control class pretest average was 43.93. After treatment, the experimental class obtained an average score of 83.75, while the control class average was 63.21. This is supported by research by Jannah Miftahul (2025), which found that the numeracy literacy ability of students taught using the Realistic Mathematics Education (RME) approach is better than that of students taught with conventional learning. The influence on numeracy literacy is consistent with research by Putri Cinndy (2023), which used test-based data collection and found an influence of mathematical and numeracy literacy of 95.2%, using a quantitative approach with a descriptive research design.

Based on the independent sample t-test conducted, the results reveal that Interactive Flat Panel technology-based mathematics learning has a significant positive influence on numeracy literacy ability, with a value of 0.00 < 0.05. Based on the pretest and posttest scores, the experimental class obtained an N-Gain of 0.64 and the control class obtained an N-Gain of 0.31; after interpretation, both the experimental and control class N-Gain values are classified as moderate. The calculated posttest t-values were 4.760 for the experimental class and 4.805 for the control class. Thus, H0 is rejected and Ha is accepted, so it can be concluded that there is a significant difference in numeracy literacy ability between the experimental class using Interactive Flat Panel (IFP) media and the control class using the 3D net pull-board media for cubes and rectangular prisms at SD Abata Islamic School. This is supported by research (Melani et al., 2023), which found a moderate-category result of 0.57, indicating that numeracy-literacy-based e-worksheets (e-LKPD) are effective in improving students' critical-thinking skills. The calculated t-values for the posttest were again 4.760 and 4.805, both greater than the t-table value (4.760 > 2.604 and 4.805 > 2.604), with a significance value smaller than 0.05 (0.00 < 0.05). Since the calculated t-value of 4.760 is greater than the t-table value of 2.064, it can again be concluded that H0 is rejected and Ha is accepted, meaning there is a difference in the average mathematics learning outcomes between the experimental class and the control class — in other words, the conventional method and the Interactive Flat Panel technology-based method produce different learning outcomes.

DISCUSSION

The implementation of Interactive Flat Panel (IFP) technology-based mathematics learning influences students' numeracy literacy at SD Abata Islamic School, as shown by an improvement in students' ability to understand mathematical concepts and to interpret information presented as images or symbols. The use of the Interactive Flat Panel (IFP) creates more interactive, engaging, and student-centered learning, thereby increasing active participation and learning motivation. Interactive Flat Panel (IFP) technology-based learning media can thus be an effective alternative for improving students' numeracy literacy ability. This is supported by research by Himawati (2025), which states that the use of Smart TV multimedia as a learning medium influences students' learning motivation and achievement, with the contribution of Smart TV use shown to be 3.96%. This aligns with research conducted by Nafi'a Ilman (2024), whose results show that: (1) there is a positive influence of numeracy literacy ability on student learning outcomes, using Grade VII data at MTsN 8 Blitar, with a contribution of 83.9%; (2) there is a positive influence of motivation on student learning outcomes, using the same data, with a contribution of 4.2%; and (3) there is a positive influence of numeracy literacy ability and motivation together on student learning outcomes, with a contribution of 84.2%.

CONCLUSION

The Sufi thought of 'Abdus Ṣamad al-Falimbānī, as meticulously articulated in his magnum opus *Sayr al-Sālikīn ilā 'Ibādat Rabb al-'Ālamīn*, offers a profound and highly systematized conceptual paradigm for contemporary moral education. This study demonstrates that al-Falimbānī's core

doctrine of *tazkiyat al-nafs*—the rigorous purification of the soul across its seven developmental levels—transcends the limitations of modern educational models that often reduce character building to mere cognitive instruction. By integrating the progressive stages of *takhallī* (emptying vices), *taḥallī* (adorning virtues), and *tajallī* (divine illumination), this classical framework provides *pesantren* educators with a sophisticated psychological diagnostic tool to address the root causes of moral degradation among adolescents.

Empirical observations at Pesantren Baiturrahman and Pesantren Darussalam confirm that the successful operationalization of this classical Sufi psychology relies not on rigid classroom lectures, but on total environmental immersion. The transmission of these values demands the sustained, authentic exemplary conduct (*uswah ḥasanah*) of the *murabbī*, relentless institutional habituation through structured worship, and the deeply internalized practice of continuous self-reckoning (*muḥāsabah*). Through these immersive methods, *santri* exhibit observable improvements in emotional self-regulation, interpersonal empathy, and profound respect (*adab*). The evaluation of such spiritual transformation correctly eschews quantitative metrics in favor of longitudinal, behavioral observation, accepting that true moral development is a gradual, non-linear journey.

Nevertheless, the implementation of this classical framework faces unprecedented contemporary challenges, most notably the profound tension between the excruciating patience required for genuine spiritual struggle (*mujāhadah*) and the pervasive instant-gratification culture fueled by the digital age. Furthermore, the perpetual difficulty of instilling and measuring pure sincerity (*ikhlāṣ*) remains an inherent limitation of human evaluation. Ultimately, this study concludes that integrating al-Falimbānī's traditional pedagogy into modern institutional settings offers a powerful, culturally rooted antidote to contemporary moral crises, suggesting a vital direction for future Islamic educational policy.

REFERENCES

Amidi, A. (2024). Literasi numerasi dalam pembelajaran matematika berbasis digital. *PRISMA, Prosiding Seminar Nasional Matematika*, 998–1004.

Fanggidae, J. J. R., Sugiman, S., & Mahmudah, F. N. (2024). Literasi matematika dan numerasi dalam tren penelitian pendidikan matematika di Indonesia. *Aksioma: Jurnal Program Studi Pendidikan Matematika, 13*(2), 497. https://doi.org/10.24127/ajpm.v13i2.8625

Gunawan, R., Billah, M. Z., Silalahi, R., & Tuka, H. (2024). Gaya belajar Gen Alpha di era digital. *Dewantara: Jurnal Pendidikan Sosial Humaniora, 3*(4), 277–297. https://doi.org/10.30640/dewantara.v3i4.3661

Haloho, B., & Napitu, U. (2023). Pelaksanaan kegiatan literasi dan numerasi bagi peserta didik kelas tinggi sekolah dasar. *Jurnal Serunai Administrasi Pendidikan, 12*(2).

Himawati, S. (2025). *Pengaruh penggunaan multimedia Smart TV terhadap motivasi dan prestasi belajar siswa di SMP Islam Hidayatul Mubtadiin Patokpicis Wajak* [Skripsi, Universitas Islam Negeri Maulana Malik Ibrahim Malang].

Jannah, M., & Hayati, M. (2024). Pentingnya kemampuan literasi matematika dalam pembelajaran matematika. *Griya Journal of Mathematics Education and Application, 4*(1), 40–54. https://doi.org/10.29303/griya.v4i1.416

Juliyana, R. (2024). *Pengaruh teknologi Smart TV dengan bantuan video pembelajaran terhadap motivasi belajar matematika.*

Kementerian Pendidikan dan Kebudayaan. (2017). *Literasi numerasi.* Gerakan Literasi Nasional.

Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2021). *Modul literasi numerasi di sekolah dasar*. Direktorat Sekolah Dasar, Direktorat Jenderal PAUD, Pendidikan Dasar, dan Pendidikan Menengah.

Kurnia, K., Hetilaniar, H., & Amiruddin, A. (2026). Pengaruh model pembelajaran *Realistic Mathematics Education* (RME) terhadap hasil belajar siswa kelas V pada mata pelajaran matematika di SD Negeri 19 Sembawa. *Jurnal Pendidikan Dasar Perkhasa: Jurnal Penelitian Pendidikan Dasar, 12*(1), 36–45.

Meliana, M., Suwindia, I. G., & Winangun, I. M. A. (2025). Efektivitas media pembelajaran digital terhadap kemampuan literasi numerasi siswa. *JIIP: Jurnal Ilmiah Ilmu Pendidikan, 8*(1), 862–867. https://doi.org/10.54371/jiip.v8i1.6578

Munahefi, D. N., & Lestari, F. D. (2023). Pengembangan kemampuan literasi numerasi melalui pembelajaran tematik terintegrasi berbasis proyek. *PRISMA, Prosiding Seminar Nasional Matematika, 6*, 663–669.

Rahmayanti, D. Z., & Sutama. (2022). Pembudayaan literasi numerasi dalam kegiatan inti pembelajaran matematika di sekolah menengah pertama. *Jurnal Riset Pembelajaran Matematika Sekolah, 6*(2), 19–24. https://doi.org/10.21009/jrpms.062.03

Rasam, F., Sari, A. I. C., Karlina, E., & Cahyo, A. (2024). Implementasi literasi dan numerasi dalam pembelajaran. *Jurnal Pengabdian kepada Masyarakat Bangun Cipta, Rasa, & Karsa, 3*(2), 44–48. https://doi.org/10.30998/pkmbatasa.v3i2.2620

Rodiyat, Y., Handayani, H., & Nurdiansyah, N. (2022). Pengaruh model *Realistic Mathematics Education* (RME) terhadap kemampuan pemahaman konsep matematika pada materi keliling dan luas persegi panjang. *Sebelas April Elementary Education, 1*(3), 57–65. https://ejournal.unsap.ac.id/index.php/saee/article/view/456

Septiani, A. R. (2025). *Kompetensi pedagogik guru dalam pengelolaan kecerdasan emosional peserta didik Gen Alpha di kelas I SDN Tegalkembang* [Disertasi doktoral, Universitas Sultan Ageng Tirtayasa].

Shylvia, P. C. (2023). *Pengaruh literasi matematis dan numerasi siswa SMP terhadap kemampuan pemecahan masalah dalam menyelesaikan soal HOTS berdasarkan perspektif teori Polya* [Skripsi, Universitas Pendidikan Indonesia]. UPI Repository. https://repository.upi.edu/89903/

Siti Habibatul. (2022). *Pengaruh model pembelajaran Realistic Mathematics Education terhadap pemahaman konsep matematika siswa kelas VII*.

Sugiyono. (2016). *Metode penelitian*. Alfabeta.

Sulistyawan, G. D. (2025). Pemanfaatan *interactive flat panel* (IFP) sebagai media pembelajaran interaktif pada mata pelajaran IPAS. *Jurnal Tumbuh Kembang Anak Usia Dini, 3*(2), 75–79.

Syarifah Aini. (2023). *Pengaruh penggunaan media pembelajaran multimedia Smart TV terhadap keaktifan belajar siswa pada bidang studi sosiologi di UPT SMA Negeri 3 Bulukumba* [Skripsi, Universitas Negeri Makassar].