ORIGINAL ARTICLE

EDUCATIONAL INNOVATION THROUGH AUDIOVISUAL MEDIA: ENHANCING STUDENT MOTIVATION AND MATHEMATICAL LITERACY

Rivaldo Paul Telussa[1], Jasmari[2], Santji Afi Rangkoly[3], Tut Hidayatillah[4], Anisah Septiani Bakri[5]

[12345] Universitas Satya Wiyata Mandala, Indonesia
*Corresponding Author: rivaldopaultelussa@gmail.com

ABSTRACT

The rapid advancement of science and technology has demanded innovation in education, particularly in learning approaches that foster student motivation and engagement. This study aims to investigate the influence of mathematical literacy skills and the use of audiovisual media on student learning motivation at Al-Madina Nabire Middle School. Employing a quantitative method with multiple linear regression analysis, data were collected from 28 eighth-grade students through questionnaires measured on a Likert scale. Classical assumption tests confirmed that the data met requirements for normality, multicollinearity, autocorrelation, and homoscedasticity. The results revealed that mathematical literacy skills did not significantly affect learning motivation, whereas the use of audiovisual media had a significant and positive impact. Simultaneously, both variables accounted for 92% of the variance in learning motivation, with audiovisual media being the dominant factor. These findings suggest that integrating audiovisual media in mathematics education can effectively boost student motivation, offering a more engaging alternative to conventional literacy-focused instruction. This research contributes empirical evidence for educators and policymakers on the benefits of innovative media in learning design, particularly in diverse and challenging school contexts. Future studies are recommended to expand sample size, explore additional variables such as teacher competence or school environment, and apply qualitative methods for deeper insights into the learning process.

Keywords: audiovisual media, education, learning motivation, mathematical literacy, regression analysis

INTRODUCTION

Progress knowledge knowledge and technology has push change significant in the world of education, especially in approach learning at school (Santika, 2021). Literacy mathematics, as part from competence global numeracy, becoming key in to form capable students think logical, critical, and applicable in face problem life (Miftahul Jannah & Miftahul Hayati, 2024); (Mashuri et al., 2023). However, the challenges that arise is How integrate ability literacy the to in the learning process that is not only effective but also interesting and motivating student For active learn. One of approach innovative growing is capable use of audiovisual media integrate visual and audio elements for increase attention, understanding, and motivation Study participant educate (Ahmad Catur Susilo & Triono Ali Mustofa, 2024); (Isna Nadifah Nur Fauziah et al., 2023). In general theoretical, literacy mathematics defined as ability for formulate, implement, and interpret mathematics in various context, including ability For use concepts and procedures mathematics in breakdown problem (Fajriyah, 2018); (Kurniawati & Kurniasari, 2019). On the other hand, audiovisual media includes visual and audio tools such as learning videos, animations, and infographics interactive that can increase efficiency communication material (Jusmiana et al., 2020; Puspita Sari, 2022). Integration of both in the learning process potential create atmosphere fun and facilitating learning understanding more material in depth, especially for students junior high school level.

Problems that occurred at Al-Madina Nabire Middle School show existence limitations in ability literacy mathematics students who have an impact on low motivation Study they. Observation results beginning show that part big student Not yet capable understand context question mathematics in a way applicable and tend to fast feel bored during the learning process in progress in a way conventional. This is become attention important, considering motivation Study is indicator important in success learning. Students who have motivation tall will show persistence, interest, and enthusiasm in follow learning, while on the contrary students who do not motivated will tend passive and easy give up moment face challenge in learning mathematics.

Audiovisual media in learning mathematics can increase understanding draft through visualizations and animations that depict situation real, so that make it easier student in reasoning and solving Problems (Munawwaroh et al., 2024; Nugraheni, 2017; Rayungsari, n.d.). Audiovisual media as means learning has proven effective For increase skills think level (Salsabila et al., 2020). According to (Purbarani et al., 2018) revealed that the use of audiovisual media can optimize function cognitive student with activate performance second hemisphere brain in a way balanced. While that, (Murni et al., 2024) demonstrated that learning audiovisual based can increase ability representation mathematical student.

Motivation Study is internal and external drives that drive student For study. According to (AnggitaSari et al., 2021) explain that motivation Study has five indicators main: perseverance in learning, tenacity face difficulty, interest to various problem, independence in learning, and confidence to ability self. In learning mathematics, (Nurhidayati et al., 2023) found that motivation Study can help student for understand material delivered by the teacher during the learning process ongoing. Motivation learning also plays a role crucial in reach competence literacy mathematics (Rahmanuri et al., 2023). Motivation high learning push student For more persistent and persistent in face challenge learning mathematics.

Study previously more Lots done with focus on one variable at a time separately, for example research conducted by (Isnaniah et al., 2021; Lestari & Effendi, 2022) which highlights influence literacy mathematics to performance learning. While research conducted by (Harefa et al., 2023; Pamungkas & Franita, 2019) which emphasizes the effectiveness of audiovisual media on understanding concept. However, not yet Lots research that examines in a way simultaneous connection between ability literacy mathematics and audiovisual media in increase motivation study, especially in context school intermediate first in the area like Nabire. New study This lies in integration three variable important in learning mathematics literacy mathematics, audiovisual media, and motivation study. Research This will to study How use of audiovisual media with consider aspect motivation Study can increase literacy mathematics students. Approach comprehensive This expected can give contribution significant to development of learning models effective mathematics, especially in The context of Al-Madina Nabire Middle School which has characteristics distinctive geographic and sociocultural characteristics.

METHOD

This study uses a quantitative approach with a multiple linear regression analysis method, which aims to determine the effect of two or more independent variables on one dependent variable simultaneously. The quantitative approach was chosen because it is able to test hypotheses objectively through the analysis of numerical data obtained from valid and reliable research instruments. Multiple linear regression is used when researchers want to analyze the functional relationship between several independent variables (X_1, X_2,) with one dependent variable (Y). In this study, the multiple linear regression model is formulated as follows:

$$Y = a + b1X1 + b2X2 + e$$

Where:
Y = Student Learning Motivation
X1 = Mathematical Literacy Ability
X2 = Use of Audiovisual Media
a = Constant
b1 = Regression coefficient of the Mathematical Literacy Ability variable
b2 = Regression coefficient of the Audiovisual Media Use variable
e = Error

The subjects in this study were 28 students of grade VIII at SMP Al-Madina Nabire in the 2024/2025 even semester. The sample was selected using the purposive sampling technique. The instrument used in this study was a questionnaire containing questions describing the variables of mathematical literacy skills, use of audiovisual media and learning motivation. The questionnaire was measured using a Likert scale of 1-5. The data collection procedure was carried out in several stages, namely by preparing a questionnaire containing questions and then distributing them to students to fill out the questionnaire. Data analysis in this study used multiple linear regression analysis which began with testing the analysis requirements with

the following stages: 1) Normality Test, 2) Multicollinearity Test, 3) Autocorrelation Test, 4) Heteroscedasticity Test. After that, a regression analysis was conducted to determine the extent to which the independent variables influence the dependent variables, both partially (t-test) and simultaneously (F-test), and to look at the coefficient of determination (R²) to determine how much the independent variables contribute to explaining the dependent variables.

RESULTS AND DISCUSSION
Classical Assumptions

Analysis multiple linear regression started with testing condition analysis , which aims to For ensure that the regression model fulfil assumption the basis needed for the results valid and reliable analysis trusted. The normality test in this study was conducted using both graphical and statistical analyses to ensure that the residual data were normally distributed. In the graphical analysis, the normality of the data was assessed by observing the pattern of data points along the diagonal axis of the Normal P-P Plot and by examining the histogram of the residuals. The decision criteria for the normality test are as follows: if the data points are distributed around the diagonal line and follow the diagonal pattern, or if the residual histogram demonstrates a normal distribution pattern (bell-shaped curve), then the regression model is considered to meet the assumption of normality. Conversely, if the data points are scattered far from the diagonal line and do not follow the diagonal pattern, or if the histogram does not exhibit a normal distribution, then the regression model does not fulfill the normality assumption. This normality test is essential to ensure that the data in the study can be analyzed using multiple linear regression without violating classical assumptions, thereby guaranteeing that the resulting analysis is valid and reliable for making decisions regarding the influence of mathematical literacy skills and the use of audiovisual media on students' learning motivation at Al-Madina Nabire Middle School. Based on the analysis, the normal probability plot shows that the data points are distributed along the diagonal line and follow its direction, indicating that the regression model satisfies the normality assumption.
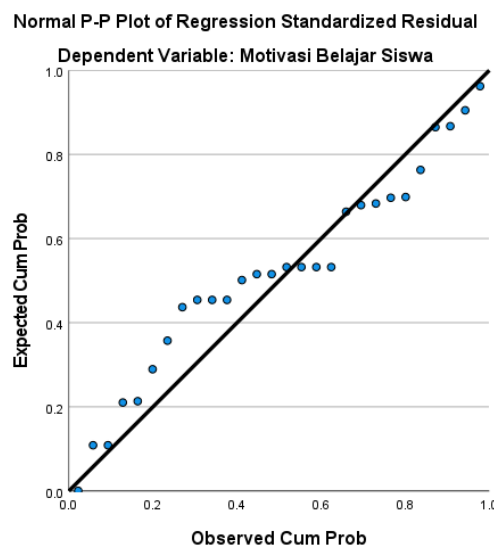
Figure 1. Normality Test
Source: Results Exercise Data SPSS 27, 2025

The multicollinearity test in this study was conducted to ensure that there is no excessively strong correlation between the independent variables, so that each independent variable in the regression model retains its unique contribution and is not unduly influenced by the others. A good regression model should be free from multicollinearity, which is assessed using the Variance Inflation Factor (VIF) and Tolerance values. In this study, the assumption of no multicollinearity is considered fulfilled if the Tolerance value for all independent variables is close to 1 and greater than 0.2, indicating no strong relationship among the independent variables. Additionally, VIF values for all independent variables should be around 1 and not

exceed 10, further confirming that there is no excessive correlation among the predictors. Based on the results presented in the Collinearity Statistics table, the Tolerance value for both Mathematical Literacy Skills and the Use of Audiovisual Media is 0.906, while the VIF value is 1.104. Since the Tolerance values exceed the minimum requirement (0.906 > 0.2) and the VIF values are well below the maximum limit (1.104 < 10), it can be concluded that the multiple linear regression model in this study does not experience multicollinearity issues. Therefore, the regression model is considered appropriate for analyzing the influence of mathematical literacy skills and the use of audiovisual media on students' learning motivation at Al-Madina Nabire Middle School.

Table 1. Coefficients Motivation Study of Student

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	14,004	3.612		3,877	.001		
Mathematical Literacy Skills	-.061	.046	-.075	-1,330	.195	.906	1.104
Use of Audiovisual Media	.846	.048	.984	17,490	.000	.906	1.104

Source: Results Exercise Data SPSS 27, 2025

The autocorrelation test in this study was conducted to determine whether there is a correlation between the residuals in the regression model, which is an important assumption for multiple linear regression analysis. The Durbin-Watson statistic was used as the basis for this test. In the model summary, the Durbin-Watson value obtained was 1.848. This value is higher than the upper limit (dU) of 1.650 and lower than 4 minus the upper limit (4 - dU = 2.350). According to standard decision criteria, if the Durbin-Watson value falls between dU and 4 - dU, it indicates the absence of autocorrelation among the residuals. Based on this result, it can be concluded that the regression model in this study does not suffer from autocorrelation problems. Therefore, the multiple linear regression analysis can be appropriately continued to test the influence of mathematical literacy skills and the use of audiovisual media on students' learning motivation at Al-Madina Nabire Middle School.

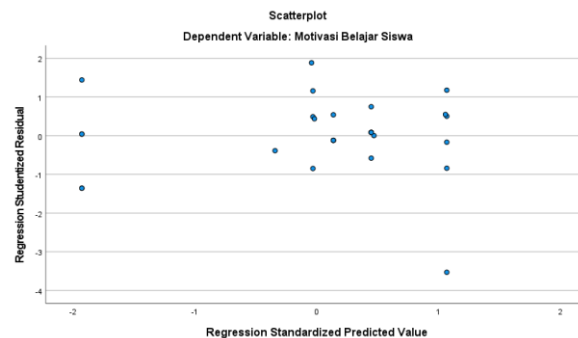**Table 2. Model Summary Motivation Study of Student**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.964[a]	.928	.923	1,573	1,848

Source : Results Exercise Data SPSS 27, 2025

a. Predictors: (Constant), Use of Audiovisual Media, Ability Literacy Mathematics

The heteroscedasticity test in this study was performed using a scatter plot to examine the distribution of residuals. The results showed that the data points were randomly scattered above and below the origin point, without forming any discernible pattern. This random distribution indicates that the regression model does not experience heteroscedasticity problems. Consequently, it can be concluded that the multiple linear regression model in this study fulfills the assumption of homoscedasticity (constant variance of residuals), as well as the overall linearity assumption. Alongside the previously conducted tests—normality, autocorrelation, and multicollinearity—the fulfillment of the heteroscedasticity assumption confirms that all classical assumptions required for multiple linear regression have been met. Therefore, the regression

model is appropriate for further analysis of the influence of mathematical literacy skills and the use of audiovisual media on students' learning motivation at Al-Madina Nabire Middle School.

Figure 2. Heteroscedasticity Test
Source : Results Exercise Data SPSS 27, 2025

Table 3. Model Summary Motivation Study Student

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.964 [a]	.928	.923	1,573

Source : Results Exercise Data SPSS 27, 2025
a. Predictors: (Constant), Use of Audiovisual Media, Ability Literacy Mathematics
b. Dependent Variable: Motivation Study Student

Based on results analysis in the Model Summary table, obtained The Adjusted R Square value is 0.928, which indicates that 92.0% of the variables Ability Literacy Mathematics (X_1) and variables Use of Audiovisual Media (X_2) in simultaneous relate with variable Motivation Study Students (Y) at SMP Al-Madina Nabire. In other words, 92.0 % of the variability Motivation Study Student can explained by variables Ability Literacy Mathematics and the Use of Audiovisual Media, while the rest influenced by other factors that are not including in the regression model This. This result give description that Ability Literacy Mathematics and the Use of Audiovisual Media own role in to form Motivation Study Students, however, Still there is factor other external contributors to Ability Literacy Mathematics in maintain Motivation Study Student at Al-Madina Nabire Middle School.

Table 4. ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	801.021	2	400,511	161,925	.000 [b]
	Residual	61,836	25	2.473		
	Total	862,857	27			

Source : Results Exercise Data SPSS 27, 2025
a. Dependent Variable: Motivation Study Student
b. Predictors: (Constant), Use of Audiovisual Media, Ability Literacy Mathematics

Table 5. Coefficients Motivation Study Student

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	14,004	3.612		3,877	.001
	Mathematical Literacy Skills	-.061	.046	-.075	-1,330	.195
	Use of Audiovisual Media	.846	.048	.984	17,490	.000

Source : Results Exercise Data SPSS 27, 2025

a. Dependent Variable:

Based on The SPSS output results in the table above, obtained equality regression as following:

$$Y=14.004-0.061X1+0.846X2$$

The results of the multiple linear regression model can be interpreted as follows. The constant value (a) is 14.004, which means that if both Mathematical Literacy Skills (X_1) and the Use of Audiovisual Media (X_2) are considered to be zero, the students' learning motivation (Y) would still have a positive value of 14.004. The regression coefficient for Mathematical Literacy Skills (X_1) is -0.061, indicating a negative effect on student learning motivation; however, with a significance value of 0.195, this influence is not statistically significant. In contrast, the regression coefficient for the Use of Audiovisual Media (X_2) is 0.846, indicating a positive effect on learning motivation. This effect is statistically significant, as indicated by a significance value of 0.000. Based on these results, it can be concluded that the use of audiovisual media has a significant and positive influence on students' learning motivation, while mathematical literacy skills do not have a significant effect on learning motivation among students at Al-Madina Nabire Middle School.

Hypothesis Testing

Prior Model Eligibility done testing hypothesis, steps First is do testing model feasibility. Feasibility of deep models show influence Ability Literacy Mathematics (X_1) and the Use of Audiovisual Media (X_2) towards Motivation Study Students (Y) at Al-Madina Nabire Middle School indicated by the value coefficient determination double (R Square) of 0.928, with mark F significance of 0.000. Hypothesis statistics submitted is as following:

H$_0$: $\rho = 0$ → Model does not good / not worthy
H$_a$: $\rho \neq 0$ → Good / feasible model

The R Square value of 0.928, accompanied by an Fcount significance probability of 0.000, demonstrates that the multiple linear regression model is statistically feasible and appropriate for analyzing the influence of mathematical literacy skills and the use of audiovisual media on student learning motivation. Because the significance value (Sig F) is less than the alpha threshold (0.000 < 0.05), the null hypothesis (H$_0$) is rejected, and the alternative hypothesis (H$_a$) is accepted, indicating that the regression equation is valid for further analysis. The first hypothesis tested whether mathematical literacy skills (X_1) significantly influence student learning motivation (Y). The regression coefficient for mathematical literacy skills was -0.061, with a significance value of 0.195. Since this value is greater than the threshold (0.195 > 0.05), H$_0$ is accepted and H$_a$ is rejected, meaning that mathematical literacy skills do not significantly affect learning motivation among students at SMP Al-Madina Nabire. The second hypothesis assessed the influence of the use of audiovisual media (X_2) on learning motivation. The regression coefficient for audiovisual media was 0.846, with a significance value of 0.000. Since this value is well below 0.05, H$_0$ is rejected and H$_a$ is accepted, confirming that the use of audiovisual media has a significant and positive effect on student learning motivation. Finally, the third hypothesis examined the simultaneous effect of both independent variables—mathematical literacy skills and the use of audiovisual media—on learning motivation. The F test in the ANOVA table produced an Fcount value of 161.925 with a significance level of 0.000, again meeting the criteria for significance (0.000 < 0.05). Therefore, both variables together significantly influence student learning motivation at Al-Madina Nabire Middle School.

Based on results data analysis using method multiple linear regression, a model that tests influence Ability Literacy Mathematics (X_1) and the Use of Audiovisual Media (X_2) towards Motivation Study Students (Y) at Al-Madina Nabire Middle School has fulfil all over assumption classic. Testing normality, multicollinearity, autocorrelation, and heteroscedasticity show that the data used is valid so that results analysis can trusted.

Influence Ability Literacy Mathematics to Motivation Study Student indicated by the value coefficient regression of -0.061 with mark significance (p = 0.195). This result indicates that variable Ability Literacy Mathematics No own significant influence to Motivation Study Students. This is indicates that improvement ability literacy mathematics in a way conventional Not yet Of course increase motivation Study in a way directly. Other factors such as method delivery material, interaction learning, and innovative approaches play a role important in facilitate motivation study (Pangesti & Mujiburrohman, 2023; Sinta et al., 2024). On the other hand, the use of audiovisual media has been proven own influence positive and significant to Motivation Study Students, with mark coefficient of 0.846 (p < 0.001). Research This show that integration of audiovisual media in learning can increase motivation Study student in a way real. Audiovisual media helps convey draft abstract become more concrete and interesting so that increase involvement students (Sabrina et al., 2023; Sujana et al., 2021)

Analysis simultaneous second variable show that the regression model is built own The Adjusted R Square value is 0.923, which means 92.3% of the variation Motivation Study Student can explained by Ability Literacy Mathematics and the Use of Audiovisual Media. Even though contribution Ability Literacy Mathematics No significant, role dominant Use of Audiovisual Media in increase motivation Study to signify importance utilization technology in learning. This condition is also reinforced by the findings (Ardana Yasa et al., 2021; Mulia, 2016) who emphasized the effectiveness of digital media in stimulate motivation Study student. In general overall, results study give understanding that innovative learning strategies through use of audiovisual media more superior in increase motivation Study compared to only depend on improvement ability literacy mathematics in a way traditional. Utilization technology proper learning can create a learning process more interesting and helpful understanding student in a way more deep. Therefore that, the educators at Al-Madina Nabire Middle School recommended integrate material learning audiovisual based and combine them with method other learning to create environment dynamic and supportive learning improvement motivation Study student.

CONCLUSION

This study aimed to analyze the influence of mathematical literacy skills and the use of audiovisual media on students' learning motivation at Al-Madina Nabire Middle School, utilizing a quantitative approach with multiple linear regression analysis. The key findings revealed that while mathematical literacy skills did not have a statistically significant impact on learning motivation, the use of audiovisual media had a significant and positive effect, and the combination of both variables explained approximately 92% of the variation in student motivation. These results highlight the pivotal role of innovative educational media—specifically audiovisual tools—in fostering student motivation more effectively than traditional improvements in mathematical literacy alone. The contribution of this research lies in its empirical evidence supporting the integration of audiovisual media as a strategic component in mathematics education, offering valuable insights for educators and policymakers in developing engaging and motivational learning environments, particularly in schools with unique geographic and sociocultural contexts.

REFERENCES
Ahmad Catur Susilo, & Triono Ali Mustofa. (2024). Efektivitas Penerapan Media Audio Visual dalam Meningkatkan Pembelajaran Fiqih di SMP Muhammadiyah. Didaktika: Jurnal Kependidikan, 13(2), 1797–1808. https://doi.org/10.58230/27454312.608
AnggitaSari, E., Rukayah, R., & Kamsiyati, S. (2021). Analisis motivasi belajar siswa dalam menemukan gagasan pokok pada paragraf teks bacaan kelas IV D di sekolah dasar. Didaktika Dwija Indria, 9(4), 2–7. https://doi.org/10.20961/ddi.v9i4.49341
Ardana Yasa, I. K. D. C., Agung, A. A. G., & Simamora, A. H. (2021). Pengembangan Multimedia Interaktif pada Mata Pelajaran IPA Kelas VI Sekolah Dasar. Jurnal Edutech Undiksha, 9(1), 104–112. https://doi.org/10.23887/jeu.v9i1.32523

Fajriyah, E. (2018). Peran etnomatematika terkait konsep matematika dalam mendukung literasi. PRISMA, Prosiding Seminar Nasional Matematika, 1, 114–119. https://journal.unnes.ac.id/sju/index.php/prisma/article/view/19589

Harefa, A. D., Lase, S., & Zega, Y. (2023). Hubungan Kecemasan Matematika Dan Kemampuan Literasi Matematika Terhadap Hasil Belajar Peserta Didik. Educativo: Jurnal Pendidikan, 2(1), 144–151. https://doi.org/10.56248/educativo.v2i1.96

Isna Nadifah Nur Fauziah, Selly Ade Saputri, & Tin Rustini. (2023). Penggunaan Media Audio Visual Dalam Meningkatkan Hasil Belajar Pada Pelajaran Ilmu Pengetahuan Sosial Siswa Sekolah Dasar. Dirasah : Jurnal Studi Ilmu Dan Manajemen Pendidikan Islam, 6(1), 125–135. https://doi.org/10.58401/dirasah.v6i1.789

Isnaniah, I., Imamuddin, M., Charles, C., Syahrul, S., & Zulmuqim, Z. (2021). Kemampuan Literasi Matematika Siswa Berdasarkan Gender. Lattice Journal : Journal of Mathematics Education and Applied, 1(2), 131. https://doi.org/10.30983/lattice.v1i2.5088

Jusmiana, A., Herianto, H., & Awalia, R. (2020). Pengaruh Penggunaan Media Audio Visual Terhadap Hasil Belajar Matematika Siswa Smp Di Era Pandemi Covid-19. Pedagogy: Jurnal Pendidikan Matematika, 5(2), 1–11. https://doi.org/10.30605/pedagogy.v5i2.400

Kurniawati, I., & Kurniasari, I. (2019). Literasi Matematika Siswa Dalam Menyelesaikan Soal Pisa Konten Space and Shape Ditinjau Dari Kecerdasan Majemuk. MATHEdunesa, 8(2), 441–448.

Lestari, R. D., & Effendi, K. N. S. (2022). Analisis Kemampuan Literasi Matematis Siswa SMP Pada Materi Bangun Datar. Biormatika : Jurnal Ilmiah Fakultas Keguruan Dan Ilmu Pendidikan, 8(1), 63–73. https://doi.org/10.35569/biormatika.v8i1.1221

Mashuri, S., Kurniawan, R., & Jahring, J. (2023). Kemampuan Literasi Matematis Siswa Dalam Menyelesaikan Soal Berorientasi Pisa Konten Quantity. EDU-MAT: Jurnal Pendidikan Matematika, 11(1), 179. https://doi.org/10.20527/edumat.v11i1.15417

Miftahul Jannah, & Miftahul Hayati. (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

Mulia, Y. (2016). 済無 No Title No Title No Title. 4(4), 1–23.

Munawwaroh, M., Amirullah, M. K., Alfani, M. A. U., Nisa', K., & Sa'idah, N. (2024). Efektivitas Penerapan Media Audio Visual terhadap Pengaruh Motivasi Belajar Pendidikan Agama Islam pada Anak Usia Sekolah Dasar. Jurnal Basicedu, 8(1), 286–290. https://doi.org/10.31004/basicedu.v8i1.6969

Murni, A., Nurcahyono, N. A., & Lukman, H. S. (2024). Pengembangan Video Pembelajaran Berbasis Animasi Terhadap Kemampuan Representasi Matematis Siswa. Jurnal Educatio, 10(1), 258–265. https://ejournal.unma.ac.id/index.php/educatio/article/view/7202%0Ahttps://ejournal.unma.ac.id/index.php/educatio/article/download/7202/4583

Nugraheni, N. (2017). Penerapan Media Komik Pada Pembelajaran Matematika Di Sekolah Dasar. Refleksi Edukatika : Jurnal Ilmiah Kependidikan, 7(2), 111–117. https://doi.org/10.24176/re.v7i2.1587

Nurhidayati, V. N., Fitra Ramadani, Fika Melisa, & Desi Armi Eka Putri. (2023). Penerapan Media Pembelajaran Terhadap Motivasi Siswa. Jurnal Binagogik, 10(2), 99–106. https://doi.org/10.61290/pgsd.v10i2.428

Pamungkas, M. D., & Franita, Y. (2019). Keefektifan problem based learning untuk meningkatkan kemampuan literasi matematis siswa. Jurnal Penelitian Penelitian Dan Pengajaran Matematika, 5(2), 75–80.

Pangesti, J. S., & Mujiburrohman. (2023). Peran Guru Fiqh dalam Meningkatkan Motivasi Belajar Siswa Pada Mata Pelajaran Fiqh di SMP Islam Amanah Ummah Mojolaban Sukoharjo. Didaktika: Jurnal Kependidikan, 12(4), 505–516. https://www.jurnaldidaktika.org/contents/article/view/267

Purbarani, D. A., Dantes, N., & Adnyana, P. B. (2018). Pengaruh Problem Based Learning Berbantuan Media Audio Visual Terhadap Kemampuan Berpikir Kritis Dan Hasil Belajar Ipa Di Sekolah Dasar. PENDASI: Jurnal Pendidikan Dasar Indonesia, 2(1), 24–34. https://doi.org/10.23887/jpdi.v2i1.2689

Puspita Sari, A. (2022). Implementasi Media Pembelajaran Audio-Visual Pada Mata Pelajaran Matematika Kelas Iv Materi Pembulatan Di Sdn Malangnengah Ii. SIBATIK JOURNAL: Jurnal Ilmiah Bidang Sosial, Ekonomi, Budaya, Teknologi, Dan Pendidikan, 1(3), 75–82. https://doi.org/10.54443/sibatik.v1i3.14

Rahmanuri, A., Winarni, R., & Surya, A. (2023). Faktor-faktor yang memengaruhi literasi matematika: systematic literature review. Didaktika Dwija Indria, 11(6), 1. https://doi.org/10.20961/ddi.v11i6.78579

Rayungsari, M. (n.d.). ANALISIS KEBUTUHAN PENERAPAN MEDIA AUDIOVISUAL.

Sabrina, N. A., Maharaja, L. R., Naingglan, M. M., & Gaol, M. L. (2023). Pengaruh Pengembangan Media Ajar Visual Terhadap Siswa Sekolah Dasar dalam Memahami Konsep Matematika Secara Visual. Jurnal Pendidikan Matematika, 1(1), 11. https://doi.org/10.47134/ppm.v1i1.113

Salsabila, U. H., Sofia, M. N., Seviarica, H. P., & Hikmah, M. N. (2020). Urgensi Penggunaan Media Audiovisual Dalam Meningkatkan Motivasi Pembelajaran Daring Di Sekolah Dasar. INSANIA : Jurnal Pemikiran Alternatif Kependidikan, 25(2), 284–304. https://doi.org/10.24090/insania.v25i2.4221

Santika, I. G. N. (2021). Grand Desain Kebijakan Strategis Pemerintah Dalam Bidang Pendidikan Untuk Menghadapi Revolusi Industri 4.0. Jurnal Education and Development, 9(2), 369–377.

Sinta, M. R., Gusrianti, N., & Artikel, I. (2024). Edukasi Tematik: Jurnal Pendidikan Sekolah Dasar. 4(20), 1–10.

Sujana, D. A., Japa, I. G. N., Pt, L., & Yasa, Y. (2021). Meningkatnya Hasil Belajar IPA Siswa Melalui Model Problem Based Learning Berbantuan Media Audio Visual. 5, 320–331.

* 赵佳佳 1 魏 娟 2 刘 天军 3. (2025). 10, 61–80.

Ahmad Catur Susilo, & Triono Ali Mustofa. (2024). Efektivitas Penerapan Media Audio Visual dalam Meningkatkan Pembelajaran Fiqih di SMP Muhammadiyah. Didaktika: Jurnal Kependidikan, 13(2), 1797–1808. https://doi.org/10.58230/27454312.608

AnggitaSari, E., Rukayah, R., & Kamsiyati, S. (2021). Analisis motivasi belajar siswa dalam menemukan gagasan pokok pada paragraf teks bacaan kelas IV D di sekolah dasar. Didaktika Dwija Indria, 9(4), 2–7. https://doi.org/10.20961/ddi.v9i4.49341

Ardana Yasa, I. K. D. C., Agung, A. A. G., & Simamora, A. H. (2021). Pengembangan Multimedia Interaktif pada Mata Pelajaran IPA Kelas VI Sekolah Dasar. Jurnal Edutech Undiksha, 9(1), 104–112. https://doi.org/10.23887/jeu.v9i1.32523

Fajriyah, E. (2018). Peran etnomatematika terkait konsep matematika dalam mendukung literasi. PRISMA, Prosiding Seminar Nasional Matematika, 1, 114–119. https://journal.unnes.ac.id/sju/index.php/prisma/article/view/19589

Harefa, A. D., Lase, S., & Zega, Y. (2023). Hubungan Kecemasan Matematika Dan Kemampuan Literasi Matematika Terhadap Hasil Belajar Peserta Didik. Educativo: Jurnal Pendidikan, 2(1), 144–151. https://doi.org/10.56248/educativo.v2i1.96

Isna Nadifah Nur Fauziah, Selly Ade Saputri, & Tin Rustini. (2023). Penggunaan Media Audio Visual Dalam Meningkatkan Hasil Belajar Pada Pelajaran Ilmu Pengetahuan Sosial Siswa Sekolah Dasar. Dirasah : Jurnal Studi Ilmu Dan Manajemen Pendidikan Islam, 6(1), 125–135. https://doi.org/10.58401/dirasah.v6i1.789

Isnaniah, I., Imamuddin, M., Charles, C., Syahrul, S., & Zulmuqim, Z. (2021). Kemampuan Literasi Matematika Siswa Berdasarkan Gender. Lattice Journal : Journal of Mathematics Education and Applied, 1(2), 131. https://doi.org/10.30983/lattice.v1i2.5088

Jusmiana, A., Herianto, H., & Awalia, R. (2020). Pengaruh Penggunaan Media Audio Visual Terhadap Hasil Belajar Matematika Siswa Smp Di Era Pandemi Covid-19. Pedagogy: Jurnal Pendidikan Matematika, 5(2), 1–11. https://doi.org/10.30605/pedagogy.v5i2.400

Kurniawati, I., & Kurniasari, I. (2019). Literasi Matematika Siswa Dalam Menyelesaikan Soal Pisa Konten Space and Shape Ditinjau Dari Kecerdasan Majemuk. MATHEdunesa, 8(2), 441–448.

Lestari, R. D., & Effendi, K. N. S. (2022). Analisis Kemampuan Literasi Matematis Siswa SMP Pada Materi Bangun Datar. Biormatika : Jurnal Ilmiah Fakultas Keguruan Dan Ilmu Pendidikan, 8(1), 63–73. https://doi.org/10.35569/biormatika.v8i1.1221

Mashuri, S., Kurniawan, R., & Jahring, J. (2023). Kemampuan Literasi Matematis Siswa Dalam Menyelesaikan Soal Berorientasi Pisa Konten Quantity. EDU-MAT: Jurnal Pendidikan Matematika, 11(1), 179. https://doi.org/10.20527/edumat.v11i1.15417

Miftahul Jannah, & Miftahul Hayati. (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

Mulia, Y. (2016). 済無 No Title No Title No Title. 4(4), 1–23.

Munawwaroh, M., Amirullah, M. K., Alfani, M. A. U., Nisa', K., & Sa'idah, N. (2024). Efektivitas Penerapan Media Audio Visual terhadap Pengaruh Motivasi Belajar Pendidikan Agama Islam pada Anak Usia Sekolah Dasar. Jurnal Basicedu, 8(1), 286–290. https://doi.org/10.31004/basicedu.v8i1.6969

Murni, A., Nurcahyono, N. A., & Lukman, H. S. (2024). Pengembangan Video Pembelajaran Berbasis Animasi Terhadap Kemampuan Representasi Matematis Siswa. Jurnal Educatio, 10(1), 258–265. https://ejournal.unma.ac.id/index.php/educatio/article/view/7202%0Ahttps://ejournal.unma.ac.id/index.php/educatio/article/download/7202/4583

Nugraheni, N. (2017). Penerapan Media Komik Pada Pembelajaran Matematika Di Sekolah Dasar. Refleksi Edukatika : Jurnal Ilmiah Kependidikan, 7(2), 111–117. https://doi.org/10.24176/re.v7i2.1587

Nurhidayati, V. N., Fitra Ramadani, Fika Melisa, & Desi Armi Eka Putri. (2023). Penerapan Media Pembelajaran Terhadap Motivasi Siswa. Jurnal Binagogik, 10(2), 99–106. https://doi.org/10.61290/pgsd.v10i2.428

Pamungkas, M. D., & Franita, Y. (2019). Keefektifan problem based learning untuk meningkatkan kemampuan literasi matematis siswa. Jurnal Penelitian Penelitian Dan Pengajaran Matematika, 5(2), 75–80.

Pangesti, J. S., & Mujiburrohman. (2023). Peran Guru Fiqh dalam Meningkatkan Motivasi Belajar Siswa Pada Mata Pelajaran Fiqh di SMP Islam Amanah Ummah Mojolaban Sukoharjo. Didaktika: Jurnal Kependidikan, 12(4), 505–516. https://www.jurnaldidaktika.org/contents/article/view/267

Purbarani, D. A., Dantes, N., & Adnyana, P. B. (2018). Pengaruh Problem Based Learning Berbantuan Media Audio Visual Terhadap Kemampuan Berpikir Kritis Dan Hasil Belajar Ipa Di Sekolah Dasar. PENDASI: Jurnal Pendidikan Dasar Indonesia, 2(1), 24–34. https://doi.org/10.23887/jpdi.v2i1.2689

Puspita Sari, A. (2022). Implementasi Media Pembelajaran Audio-Visual Pada Mata Pelajaran Matematika Kelas Iv Materi Pembulatan Di Sdn Malangnengah Ii. SIBATIK JOURNAL: Jurnal Ilmiah Bidang Sosial, Ekonomi, Budaya, Teknologi, Dan Pendidikan, 1(3), 75–82. https://doi.org/10.54443/sibatik.v1i3.14

Rahmanuri, A., Winarni, R., & Surya, A. (2023). Faktor-faktor yang memengaruhi literasi matematika: systematic literature review. Didaktika Dwija Indria, 11(6), 1. https://doi.org/10.20961/ddi.v11i6.78579

Rayungsari, M. (n.d.). ANALISIS KEBUTUHAN PENERAPAN MEDIA AUDIOVISUAL.

Sabrina, N. A., Maharaja, L. R., Naingglan, M. M., & Gaol, M. L. (2023). Pengaruh Pengembangan Media Ajar Visual Terhadap Siswa Sekolah Dasar dalam Memahami Konsep Matematika Secara Visual. Jurnal Pendidikan Matematika, 1(1), 11. https://doi.org/10.47134/ppm.v1i1.113

Salsabila, U. H., Sofia, M. N., Seviarica, H. P., & Hikmah, M. N. (2020). Urgensi Penggunaan Media Audiovisual Dalam Meningkatkan Motivasi Pembelajaran Daring Di Sekolah Dasar. INSANIA : Jurnal Pemikiran Alternatif Kependidikan, 25(2), 284–304. https://doi.org/10.24090/insania.v25i2.4221

Santika, I. G. N. (2021). Grand Desain Kebijakan Strategis Pemerintah Dalam Bidang Pendidikan Untuk Menghadapi Revolusi Industri 4.0. Jurnal Education and Development, 9(2), 369–377.

Sinta, M. R., Gusrianti, N., & Artikel, I. (2024). Edukasi Tematik: Jurnal Pendidikan Sekolah Dasar. 4(20), 1–10.

Sujana, D. A., Japa, I. G. N., Pt, L., & Yasa, Y. (2021). Meningkatnya Hasil Belajar IPA Siswa Melalui Model Problem Based Learning Berbantuan Media Audio Visual. 5, 320–331.