



The Effect of Multi-Type Learning Media on Students' Learning Outcomes in Islamic Religious Education at Junior High School

Humairoh Firdaus¹, Siti Nursyamsiyah², Badrut Tamami³

^{1,2,3}Islamic Education Study Program, Muhammadiyah University of Jember

Email: virdahum@gmail.com

Abstract

Islamic Religious Education (IRE) learning at Muhammadiyah 4 Junior High School in Purwoharjo continues to rely largely on conventional teaching methods, which may reduce student engagement and limit learning outcomes. This study aimed to examine the effect of learning media utilization on students' learning outcomes in Islamic Religious Education. A quantitative research design was employed using a total sampling technique involving all 95 students of the school. Data were collected through structured questionnaires and observations and analyzed using simple linear regression. The results revealed that learning media utilization had a positive and statistically significant effect on students' learning outcomes, as indicated by the regression equation $Y = 3.537 + 0.631X$ and an R-square value of 0.823. These findings demonstrate that learning media account for 82.3% of the variance in students' learning outcomes, indicating a substantial contribution to academic achievement. The study suggests that the integration of diverse learning media can enhance student engagement, improve understanding of learning materials, and support better learning outcomes in Islamic Religious Education at the junior high school level.

Keywords: Learning Outcomes, Educational Media, Islamic Religious Education, Junior High School, Simple Linear Regression

INTRODUCTION

In order to improve civilization and promote national development, education is essential. Because of this, educational procedures need to be meticulously planned and methodically focused on reaching the best possible learning goals (Nurhasanah et al., 2025; Yuliana et al., 2025). The learning process, which entails direct interaction between teachers and students in order to convey knowledge, establish values, and develop critical abilities, is the focal point of all educational activities in formal school settings (Boakye-Yiadom et al., 2025; Rodliyah, 2021). The cognitive, emotive, and psychomotor aspects of these relationships all support kids' overall growth. As a result, a crucial factor in determining academic

achievement is the efficiency of the learning process.

Teachers must create engaging, dynamic, and relevant learning activities for their students in order to create a successful learning environment (Arciniegas-Romero et al., 2025; Zhou, 2025). In actuality, however, traditional approaches continue to dominate teaching practices with little incorporation of a variety of educational media. These restrictions may cause students to get disengaged, participate less, and eventually perform worse academically. According to Dey & Munshi (2025) and Hasan et al. (2021), learning media are any tools or resources that teachers employ to provide instructional messages to students that can pique their interest, attention, emotions, and critical thinking.

Therefore, incorporating relevant learning materials is crucial to making learning more engaging and productive.

Rapid scientific and technological developments in the digital age have had a big impact on teaching methods, especially in the classroom (Kusnadi et al., 2025; Singh et al., 2025). The advancement of information technology gives teachers the chance to use more creative and diverse teaching methods. In order to meet the needs of contemporary learners who are becoming more accustomed to digital surroundings, modifications must be made to both instructional strategies and media (Chen, 2025; Rahman et al., 2025). As a result, using technology into instructional strategies is a calculated move to increase the efficiency of the learning process (Cosentino et al., 2025; Kusum et al., 2023). Technology-enhanced classrooms can also encourage increased participation and engagement from students.

However, the variety of student traits creates difficulties for the teaching process. Because every student has different learning preferences, interests, and skills, teaching strategies must be flexible and adaptable. Teachers can deliver material in a variety of ways by using a variety of learning media, which helps pupils grasp difficult topics (Engzell et al., 2025; Sudarno et al., 2025). In this setting, learning media serve as instruments for education as well as a way to establish inclusive, student-centered learning environments.

Due to its dual purpose in character formation and knowledge transfer, learning media play an even more crucial part in Islamic Religious Education. The goal of this course is to help students acquire religious knowledge and moral principles that they

can use in their daily lives (Latipah et al., 2025; Nursobah et al., 2025). However, Islamic Religious Education instructors frequently encounter difficulties like inadequate exposure to cutting-edge teaching methods, a lack of opportunities for skill development, and a lack of professional training. These limitations may lead to boring education that doesn't successfully engage pupils (Ihsan et al., 2024). Thus, increasing the use of educational media is essential to raising the standard of instruction in this area.

Islamic Religious Education, according to Rosidin et al., (2024), is a process that aims to improve people's moral and spiritual development while leading them to live meaningful lives in accordance with their natural tendency. Media that can translate abstract religious ideas into more tangible and relevant experiences should be used to enhance educational activities in order to accomplish this goal. This method helps students integrate and implement religious ideals in their everyday lives in addition to helping them comprehend the content cognitively.

Learning outcomes serve as the primary metric of academic success, fundamentally reflecting the extent to which students achieve pre-established educational goals. These outcomes represent the cumulative accomplishments attained over a designated timeframe, such as a semester, illustrating the total progress made by students within that period (Buenadicha-Mateos et al., 2025; Diekuu et al., 2025). Ultimately, learning outcomes function as a definitive indicator to determine whether or not the specified instructional objectives have been successfully met throughout the teaching and learning process (Albay & Eisma, 2025; Zhao, 2025).

Both internal and external influences affect the learning results of students. Motivation, interest, and willingness to learn are examples of internal elements; the learning environment, instructional material, and teaching strategies are examples of external aspects (Hazzan-Bishara et al., 2025; Salbaş & Ekmekçi, 2025). Learning media are one of these that strategically contribute to improving the quality of instruction. Students' comprehension and retention of educational materials can be enhanced by the appropriate use of media (Özdemir et al., 2025; Wirda et al., 2020). Thus, choosing the right media is crucial to maximizing learning results.

Additionally, using educational media effectively helps boost students' interest in the learning process. By participating in a variety of interactive learning activities, students transform from passive information consumers to active participants. This active participation is essential since it has a direct impact on academic success. As a result, it is anticipated that using a variety of well-designed educational materials will improve student learning outcomes by fostering a more interesting and pleasurable learning environment.

Prior research has looked at the connection between student accomplishment in Islamic Religious Education and the use of learning media. Through a review of the literature, Aqmarina & Susilo (2025) discovered that interactive digital media, including movies, quizzes, and simulation tools, can improve student performance and motivation. Similarly, learning medium and learning outcomes were found to be significantly correlated by Abnisa & Zubairi (2023), with a correlation coefficient of 0.94 at a significance level

of 0.05. Additionally, Sindiani et al., (2023) showed that student achievement is strongly impacted by Moodle-based learning materials, as evidenced by a significance value of $0.000 < 0.05$.

Despite these findings, most previous studies have focused on a single type of learning media or specific digital platforms. As a result, limited attention has been given to the integration of multiple learning media in everyday classroom practice. In actual learning activities, teachers often combine various media, such as smartphones, LCD projectors, instructional videos, and teaching aids, to facilitate student learning. However, studies examining the overall effectiveness of such integrated media use in Islamic Religious Education remain limited. Therefore, this study investigates learning media as an integrated instructional approach rather than evaluating each medium separately. Specifically, it examines how the quality and intensity of learning media integration influence students' learning outcomes in Islamic Religious Education at Muhammadiyah 4 Junior High School, Purwoharjo.

RESEARCH METHODS

This study employed a quantitative research strategy to methodically examine the suggested research issue. According to Rohaeni (2022) dan Sugiyono (2022), the quantitative approach is firmly rooted in the positivist ideology, which emphasizes objective measurement, empirical observation, and statistical analysis to derive valid conclusions. This design was selected to ensure a structured and objective investigation into the relationship between the investigated variables.

The study was conducted at Muhammadiyah 4 Junior High School in Purwoharjo, Banyuwangi, with a total population of 95 pupils. To ensure complete and accurate representation, a comprehensive sampling technique (total sampling) was applied to the population. Consequently, all 95 students were included as active research participants, allowing for a thorough assessment of the entire student cohort within the specified setting.

Two primary variables were analyzed in this study: the use of educational media as the independent variable (**X**) and students' learning outcomes in Islamic Religious Education as the dependent variable (**Y**). The educational media variable (**X**) was operationally measured using a questionnaire based on specific indicators, including alignment with learning objectives, attractiveness and motivational value, student engagement, clarity of material presentation, interactivity, and overall effectiveness. Responses to all items were quantified using a five-point Likert scale and subsequently combined into a single composite score. This composite score reflects the overall quality and intensity of learning media integration in classroom instruction, rather than the isolated effectiveness of individual media devices such as smartphones, LCD projectors, instructional videos, or teaching aids.

Data collection was executed through a combination of direct observation and online surveys administered via Google Forms. To guarantee the correctness, accuracy, and internal consistency of the gathered data, the research instruments were subjected to rigorous psychometric testing prior to actual data collection. Specifically, the

validity of the questionnaire instruments was verified using the Product Moment correlation, while their reliability was confirmed using the Cronbach's Alpha coefficient.

The operational procedure of this research was systematically carried out through several distinct stages. First, the researcher identified the underlying learning problems and formulated the core research objectives. Second, the questionnaire instruments were developed and evaluated for validity and reliability. Third, data were gathered from the 95 student participants via observation and online questionnaires. Fourth, the collected data were analyzed using descriptive statistics, normality testing, and simple linear regression analysis. Finally, the statistical results were interpreted to determine the precise effect of learning media integration on students' learning outcomes in Islamic Religious Education.

RESULTS AND DISCUSSION

Result

This section presents the results of the data analysis conducted to examine the effect of learning media on students' learning outcomes in Islamic Religious Education. Data were collected through questionnaires administered to 95 students of Muhammadiyah 4 Junior High School, Purwoharjo. The collected data were subsequently analyzed using validity testing, reliability testing, normality testing, and simple linear regression analysis to evaluate the proposed hypothesis.

The validity test was conducted to determine whether each questionnaire item appropriately measured the intended research variables.

Table 1. Validity Test Results

Variable	Number of Items	R-Count Range	R-Table	Description
X	24	0,4335 – 0,7209	0,2017	Valid
Y	16	0,4685 – 0,7383	0,2017	Valid

The results indicate that all items for both variables exceeded the critical r-table value of 0.2017 at a significance level of 0.05. Therefore, all questionnaire items were considered valid and suitable for use in data collection.

A reliability analysis was carried out after the validity testing to assess the research instrument's stability and consistency in measuring the target variables. This test's objective is to make

sure the device produces reliable findings when used repeatedly in comparable circumstances. The Cronbach's Alpha coefficient, a measure of internal consistency, was used in this study to assess the degree of dependability. A summary of the instrument's dependability in bolstering the research findings is given in the table below, which methodically displays the reliability analysis results for each variable.

Table 2. Reliability Test Results

Variable	Cronbach Alpha	Description
Learning Media	0,9248	Reliable
Learning Outcomes	0,9163	Reliable

Based on the results of the reliability analysis shown in the table, the Cronbach's Alpha coefficient for the learning media variable (X) was recorded at 0.9248, while the learning outcomes variable (Y) obtained a value of 0.9163. Both coefficients exceed the commonly accepted minimum threshold of 0.70, indicating that the research instrument demonstrates a very high level of internal consistency. This finding suggests that each item within the instrument is capable of producing stable and consistent measurements across repeated applications under similar conditions. Consequently, all statement items included in the instrument can be

regarded as reliable and appropriate for use in the data collection process, as they effectively support the accuracy and credibility of the research findings.

Furthermore, a normality test was conducted to examine whether the data distribution in this study conforms to a normal distribution pattern, which is a fundamental assumption in parametric statistical analysis. This procedure is crucial to ensure that subsequent statistical tests can be applied appropriately and yield valid results. In this research, the normality of the data was assessed using the Kolmogorov-Smirnov test, which is widely employed to evaluate the distributional characteristics of quantitative data. The

implementation of this test provides a basis for determining the suitability of advanced statistical techniques in analyzing the collected data.

Table 3. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		Unstandardized Residual
N		95
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	2.75567565
Most Extreme Differences	Absolute	.066
	Positive	.066
	Negative	-.052
Test Statistic		.066
Asymp. Sig. (2-tailed)		.200 ^{c,d}

The Kolmogorov-Smirnov test findings for normalcy show a significance value of 0.200. It can be inferred that the data distribution in this study follows a normal pattern because this number is greater than the 0.05 cutoff. This finding confirms that the assumption of normality has been satisfied, thereby allowing the data to be appropriately analyzed parametric statistical methods. Ensuring normal distribution is essential, as it supports the validity of subsequent inferential analyses and strengthens the reliability of the conclusions drawn from the study.

Subsequently, the analytical method applied in this research was simple linear regression, which was utilized to examine the relationship as well as the contribution of the use of learning media (X) toward students' learning outcomes (Y). In addition, the coefficient of determination (R²) was employed to quantify the extent to which the independent variable explains the variance in the dependent variable. This measure provides insight into the effectiveness of learning media in influencing student achievement. The detailed outcomes of these statistical analyses are systematically presented in the table below for further interpretation.

Table 4. Simple Linear Regression Results

Model	B	Std Error	Beta	t	sig
1 (Constant)	3.537	2.873		1.231	.221
Instructional Media	.631	.030	.907	20.792	.000

The results generated the regression equation $Y = 3.537 + 0.631X$.

The regression coefficient of 0.631 suggests that each one-unit increase in learning media utilization is associated

with an increase of 0.631 units in students' learning outcomes.

The hypothesis testing results revealed a significance value of 0.000, which is lower than the significance level

of 0.05. Therefore, the alternative hypothesis was accepted, indicating that learning media had a positive and statistically significant effect on students' learning outcomes.

Tabel 5. Coefficient of Determination Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.907 ^a	.823	.821	2.770

Furthermore, the R-square value of 0.823 indicates that 82.3% of the variation in student learning outcomes can be attributed to the use of educational media. This implies that learning media use is quite successful in improving student learning outcomes, with the remaining 17.7% being influenced by variables not included in this study.

Discussion

The results of the data analysis show that the use of instructional media in this study improved students' learning outcomes. The results of hypothesis testing, which showed a statistically significant correlation between students' academic progress and the use of instructional media, corroborate this conclusion. These findings are in line with earlier research by Sindiani et al., (2023), which showed that incorporating instructional media enhances learning outcomes by encouraging more student engagement and a deeper understanding of the subject. These parallels reinforce the argument that instructional media serve as a critical component in optimizing the learning process.

The observed effectiveness is further reflected in the heightened level of student participation during the learning activities. Students exhibited

increased attentiveness, improved understanding, and more responsive interactions toward the material delivered in class. This phenomenon can be explained through Bruner's learning theory, as well as Dale's Cone of Experience, which emphasize that learning becomes more meaningful when learners are exposed to direct experiences and concrete representations. In this context, instructional media function as a bridge that transforms abstract concepts into more tangible forms, thereby facilitating clearer comprehension and more effective knowledge construction (Fauziati, 2021).

In addition, the positive impact of instructional media is also evident in the enhancement of students' learning motivation. Students' attention and curiosity are piqued by the use of interesting and varied media, which motivates them to participate more actively in their education. As a result, students participate actively in class discussions and educational activities rather than just being passive consumers of knowledge. This condition aligns with contemporary educational principles that emphasize the importance of active student participation as a key factor in achieving optimal learning outcomes.

Furthermore, the relatively high coefficient of determination ($R^2 = 0.823$) indicates that learning media contributed substantially to variations in students' learning outcomes. This finding may be explained by the learning conditions at Muhammadiyah 4 Junior High School, where classroom instruction had previously relied predominantly on conventional teaching approaches with limited use of diverse instructional media. The integration of various learning media, including visual, digital, and interactive resources, likely created a more engaging learning environment that significantly increased students' attention, participation, and understanding of Islamic Religious Education materials. Consequently, the strong effect observed in this study may reflect the considerable contrast between traditional teacher-centered instruction and the implementation of integrated learning media, resulting in a substantial improvement in students' responsiveness and academic achievement.

These results indicate that the use of instructional media in this study has improved students' learning outcomes. This efficacy is demonstrated by students' increased comprehension of the subject matter as well as their active participation in the learning process. Therefore, the integration of appropriate instructional media is highly recommended as a strategic approach to enhance the overall quality of teaching and learning activities.

CONCLUSION

It may be concluded that all of the instruments used in this study satisfy the necessary validity requirements based on the research's conclusions and the data analysis that followed. The obtained

correlation coefficients (r -count), which continuously above the essential r -table value of 0.2017 and vary from 0.4335 to 0.7383, provide evidence of this. Additionally, the reliability assessment reveals that the learning media variable (X) had a Cronbach's Alpha coefficient of 0.9248 and the learning outcomes variable (Y) had a Cronbach's Alpha value of 0.9163. Both values exceeding the permitted threshold indicate a very high level of internal consistency and assurance that the instruments are dependable for measuring the desired constructs. Furthermore, the normality test findings indicate that the data are normally distributed and meet the requirements for parametric statistical analysis with a significance value of 0.200, which is greater than 0.05.

Additionally, the hypothesis test results show a significance value of 0.000, which is less than the predefined cutoff of 0.05. This result demonstrates that there is a statistically significant correlation between students' learning outcomes and their use of educational media. Thus, it can be said that using instructional media has a significant and beneficial impact on raising students' academic achievement. These results highlight how crucial it is to incorporate relevant learning materials as a calculated tactic to improve the efficiency of the teaching and learning process.

REFERENCES

- Abnisa, A. P., & Zubairi, Z. (2023). Pengaruh Media Pembelajaran Terhadap Hasil Belajar Pendidikan Agama Islam di MTs Daaruss Sa'adah Cipondoh Tangerang. *Edukasia: Jurnal Pendidikan Dan Pembelajaran*, 4(2), 2183–2198.



<https://doi.org/10.62775/edukasia.v4i2.565>

- Albay, E. M., & Eisma, D. V. (2025). Using design thinking for developing pre-service teachers' creativity in designing teaching plans to promote interactive learning in mathematics. *Learning and Instruction, 96*, 102070. <https://doi.org/10.1016/j.learninstruc.2024.102070>
- Aqmarina, D. N., & Susilo, M. J. (2025). Pengaruh Penggunaan Media Interaktif Terhadap Hasil Belajar Siswa pada mata pelajaran Peendidikan Agama Islam. *Ta'lif: Jurnal Pendidikan Agama Islam*, 40–53.
- Arciniegas-Romero, G., Narváez-Pinango, M., Pozo-Revelo, D., & Álvarez-Tinajero, N. (2025). Socio-emotional competencies of mathematics teachers in the learning environment of high school students: a systematic review. *Cogent Education, 12*(1). <https://doi.org/10.1080/2331186X.2025.2505267>
- Boakye-Yiadom, F., Donkor, E. K., & Mensah, R. O. (2025). Exploring the role of project-based learning in higher education to promote indigenous knowledge through sculpture students' engagement with Ghanaian Adinkra symbols. *Discover Global Society, 3*(1), 4. <https://doi.org/10.1007/s44282-024-00135-8>
- Buenadicha-Mateos, M., Sánchez-Hernández, M. I., González-López, O. R., & Tato-Jiménez, J. L. (2025). From Engagement to Achievement: How Gamification Impacts Academic Success in Higher Education. *Education Sciences, 15*(8), 1054. <https://doi.org/10.3390/educsci15081054>
- Chen, F. (2025). The relationship between digital literacy and college students' academic achievement: the chain mediating role of learning adaptation and online self-regulated learning. *Frontiers in Psychology, 16*. <https://doi.org/10.3389/fpsyg.2025.1590649>
- Cosentino, G., Anton, J., Sharma, K., Gelsomini, M., Giannakos, M., & Abrahamson, D. (2025). Hybrid teaching intelligence: Lessons learned from an embodied mathematics learning experience. *British Journal of Educational Technology, 56*(2), 621–649. <https://doi.org/10.1111/bjet.13525>
- Dey, A., & Munshi, S. A. (2025). Fun with Images: An Analysis of the Role of Visual Literacy in Facilitating Easy and Enjoyable Learning with a Focus on Future Prospects. *Libri, 75*(2), 109–127. <https://doi.org/10.1515/libri-2024-0143>
- Diekuu, J.-B., Mekala, M. S., Abonie, U. S., Isaacs, J., & Elyan, E. (2025). Predicting student next-term performance in degree programs using AI-based approach: a case study from Ghana. *Cogent Education, 12*(1). <https://doi.org/10.1080/2331186X.2025.2481000>
- Engzell, J., Norrman, C., Norberg, A., &



- Lundvall, C. (2025). Soundwaves of knowledge: using podcasts to facilitate learning in higher education. *Educational Media International*, 62(3), 361–379. <https://doi.org/10.1080/09523987.2025.2533120>
- Fauziati, E. (2021). Implikasi Teori Belajar Bruner dalam Model Pembelajaran Kurikulum 2013. *Jurnal Papeda*, 3(2), 128–136.
- Hasan, M., Milawati, Darodjat, Harahap, T. K., Tasdim, T., Mufit Anwari, A., Rahmat, A., Masdiana, & Made Indra, I. (2021). *Media Pembelajaran*. CV.Tahta Media Group.
- Hazzan-Bishara, A., Kol, O., & Levy, S. (2025). The factors affecting teachers' adoption of AI technologies: A unified model of external and internal determinants. *Education and Information Technologies*, 30(11), 15043–15069. <https://doi.org/10.1007/s10639-025-13393-z>
- Ihsan, M. R. C., Setiawan, B. A., & Tamami, B. (2024). Metode Pembelajaran Konvensional Dalam Arus Perubahan Kurikulum Merdeka Belajar Pada Mata Pelajaran Pendidikan Agama Islam SMK Muhammadiyah 7 Purwoharjo. *Jurnal National Multidisciplinary Sciences UMJember Proceeding Series*, 3(3), 557–563.
- Kusnadi, K., Hatta, M., Brotosaputro, G., Amri, A., & Harris, S. (2025). Information Technology and Its Impact on Modern Classroom Dynamics: A Computer Science Perspective. *Aptisi Transactions on Technopreneurship (ATT)*, 7(1), 282–293. <https://doi.org/10.34306/att.v7i1.523>
- Kusum, J. W., Akbar, M. R., & Fitrah, M. (2023). *Dimensi Media Pembelajaran (Teori dan Penerapan Media Pembelajaran Pada Era Revolusi Industri 4.0 Menuju Era Society 5.0)*. PT. Sonpedia Publishing Indonesia.
- Latipah, E., Nurwita, I., Z, L. A., & Fatimah, D. (2025). Shaping Noble Character: The Impact of Islamic Religious Education on Student Morals at Junior High School. *AL-ISHLAH: Jurnal Pendidikan*, 17(1). <https://doi.org/10.35445/alishlah.v17i1.6462>
- Nurhasanah, E., Lasmanawan, I. W., Suharta, I. G. P., & Widiana, I. W. (2025). Strategic Management and Innovation in Curriculum Development. *Journal of English Language and Education*, 10(3), 344–358. <https://doi.org/10.31004/jele.v10i3.841>
- Nursobah, A., Arjuna, A., Ulhaq, M. M., & Ariska, M. (2025). Integrative Model of Religious Habituation in Building Students Religious Character. *Fitrah: Journal of Islamic Education*, 6(2), 310–325. <https://doi.org/10.53802/fitrah.v6i2.1142>
- Özdemir, O., Karaçoban, F., & Efendioğlu, A. (2025). Improving Students' Reading Comprehension Performance in Elementary

- Schools: The Impact of Various Multimedia Animation Types. *Reading & Writing Quarterly*, 41(4), 326–342. <https://doi.org/10.1080/10573569.2024.2435889>
- Rahman, S. A., Ashar, A., & Fajardo, M. T. M. (2025). The effect of wordwall digital game media on improving students' learning outcomes and communication skills in social studies at elementary school. *Harmoni Sosial: Jurnal Pendidikan IPS*, 12(2), 138–152. <https://doi.org/10.21831/hsjpi.v12i2.87944>
- Rodliyah, S. (2021). *pendidikan dan ilmu pendidikan*. IAIN Jember press.
- Rohaeni. (2022). *Metode Penelitian*. EAI Publishing.
- Rosidin, Salam, mochamad F., Daniarti, wiwi D., Fitriyah, L., Trimansyah, Mashuri, S., Junaidin, Rohman, T., Purwaningrum, S., & Hermansyah. (2024). Strategi Pembelajaran Pendidikan Agama Islam. In *PT. Literasi Nusantara Abadi Grup*.
- Salbaş, H., & Ekmekçi, A. P. D. E. (2025). The impact of classroom environment on students' willingness to communicate in foreign language learning. *International Journal of Educational Research*, 129, 102517. <https://doi.org/10.1016/j.ijer.2024.102517>
- Sindiani, P., Dewi, R. S., & Bahrudin, F. A. (2023). Pengaruh Penggunaan Media Pembelajaran Moodle terhadap Hasil Belajar Peserta Didik. *Equilibrium: Jurnal Pendidikan*, 11(2), 203–214. <https://doi.org/10.26618/equilibrium.v11i2.10584>
- Singh, A. K., Kiriti, M. K., Singh, H., & Shrivastava, A. (2025). Education AI: exploring the impact of artificial intelligence on education in the digital age. *International Journal of System Assurance Engineering and Management*, 16(4), 1424–1437. <https://doi.org/10.1007/s13198-025-02755-y>
- Sudarno, N. L., Anggoro, S., & Fukui, M. (2025). Development of Augmented Reality Learning Media Based on Inquiry Based Learning Using Assemblr Edu on Light and Properties Material. *Journal of Educational Sciences*, 9(5), 3322–3335.
- Sugiyono. (2022). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*.
- Wirda, Y., Ulumudin, I., Widiputera, F., Listiawati, N., & Fujianita, S. (2020). *Faktor-faktor Determinan Hasil Belajar Siswa*. Pusat Penelitian Kebijakan, Badan Penelitian dan Pengembangan dan Perbukuan, Kementerian Pendidikan dan Kebudayaan.
- Yuliana, E., AR, M., & Usman, N. (2025). Principal Performance and Teacher Work Discipline on Learning Quality at Kindergarten in Aceh Besar. *Tafkir: Interdisciplinary Journal of Islamic Education*, 6(3), 909–923. <https://doi.org/10.31538/tijie.v6i3.1155>
- Zhao, J. (2025). Advancing english language education: A mixed-



methods analysis of AI-driven tools' impact on engagement, personalization, and learning outcomes. *Education and Information Technologies*, 30(15), 21773–21813.
<https://doi.org/10.1007/s10639-025-13560-2>

Zhou, H. (2025). Exploring the dynamic teaching-learning relationship in interactive learning environments. *Interactive Learning Environments*, 33(7), 4363–4393.
<https://doi.org/10.1080/10494820.2025.2462149>