

THE EFFECT OF INTERACTIVE DIGITAL MEDIA AND LEARNING MOTIVATION ON SOCIAL SCIENCE LEARNING OUTCOMES

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ABSTRACT

This research is motivated by teachers' low self-confidence in using interactive digital media, which impacts students' motivation and learning outcomes in social studies. It aims to determine the effect of interactive digital media and learning motivation on the learning outcomes of eighth-grade students at SMPN 7 Buton. The study employed a quantitative associative explanatory design involving 147 students from grades VII and VIII. Data were collected through observation, interviews, documentation, and closed questionnaires to measure motivation and understanding of interactive media. Data analysis used multiple linear regression, supported by qualitative analysis from interviews. The results show that interactive digital media and learning motivation have a positive and significant effect on student learning outcomes, as indicated by the media coefficient (0.342) and motivation coefficient (0.415) with a significance level of $0.00 < 0.05$. The novelty of this research lies in strengthening the synergistic role between interactive digital media use and learning motivation as key predictive factors that empirically improve learning outcomes, particularly in contexts with limited teacher digital competence. These findings suggest that optimizing simple, adaptive, and accessible interactive digital media can serve as a practical solution to overcome teachers' technical constraints while significantly enhancing student motivation and learning outcomes.

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INTRODUCTION

Current developments in education show the formation of a dynamic and integrated digital learning system, characterized by the use of information and communication technology (ICT) in the learning process (Seifu, 2020). This condition requires educators and students to have adaptive skills, critical thinking, creativity, collaboration, and the ability to learn continuously according to the demands of the 21st century (Sari et al., 2025). Therefore, formal educational institutions need to optimize the use of digital technology to improve the quality of learning. One possible implementation is through the use of interactive digital media that can provide a dynamic and participatory learning

experience. This aligns with the opinion of (Ahmad et al., 2021) which states that the use of animated videos, simulations, online quizzes, and digital learning forums is effective in improving conceptual understanding because it involves students' various senses.

However, some educational institutions still face challenges in creating meaningful learning and lack active student engagement, including at SMPN 7 Buton, Buton Regency, Southeast Sulawesi Province, which has not yet optimized the use of digital media in learning. Based on initial observations in classes VIII A and VIII C of SMP Negeri 7 Buton, social studies learning has utilized technology in the form of projectors to display PowerPoint slides on the topic "Social Inequality". However, this utilization is still one-way and not interactive, because the teacher tends to read the contents of the slides while students only take notes without any supporting activities such as group discussions, digital simulations, or the use of online quiz platforms.

Informal interviews with students revealed that text-dominated presentations without visual support such as images, animations, or videos made learning feel boring. Furthermore, interviews with teachers revealed that the main obstacle lies in the suboptimal integration of digital media routinely and thoroughly, despite the availability of infrastructure. This situation is exacerbated by teachers' low confidence in utilizing interactive digital media, as well as students' fear of making mistakes, which hinders exploration of interactive features. This low teacher confidence is a crucial issue because it not only impacts limited media selection but also influences learning designs that tend to be passive, so that the potential of interactive digital media is not optimally utilized in social studies learning, which is inherently contextual and dynamic. As a result, digital learning has not been able to encourage active participation or increase students' intrinsic motivation, so the learning process is still dominated by lecture methods that tend to be passive and monotonous.

This situation leads to a one-way learning process, minimal active participation, and insufficient space for students. This learning pattern is also inconsistent with the demands of 21st-century learning, which emphasizes student-centered learning and the interactive use of technology. Research by (Rombean et al., 2021) emphasizes that effective learning occurs when students are actively involved in the learning process, not just receiving information. In addition, research (Mayer, 2024) in multimedia learning theory, it is also explained that the use of interactive digital media that involves various senses can significantly increase conceptual understanding compared to passive presentation of information.

However, most previous studies have focused more on the effectiveness of digital media on learning outcomes, without in-depth examination of teacher psychological aspects, particularly self-confidence in integrating interactive digital media into social studies learning (Hidayat & Suryadi, 2023). Research (Afifa & Astuti, 2024) shows that the use of digital media has been proven to improve student learning outcomes and motivation, but the focus of the study is still limited to the learning output aspect. Furthermore, research (Belda et al., 2022) through the TPACK framework emphasizes the importance of technological competence, but has not specifically highlighted the dimension of teacher self-confidence as a determining factor in the success of digital media implementation. In the context of social studies learning that demands the presentation of social phenomena contextually, low teacher self-confidence is a major inhibiting factor that has not been widely explored as a research variable.

Consequently, efforts to optimize the use of digital platforms as a means of delivering material depend not only on the availability of technology but also heavily on teachers' technical and pedagogical readiness to manage it. The ineffectiveness of digital learning indicates that teachers' competency in using interactive digital media still needs improvement, both in terms of platform selection, learning design, and managing student interactions. This aligns with the findings of (Wijanarko et al., 2022) through the TPACK framework which emphasizes that effective technology integration in learning requires synergy between technological knowledge, pedagogy, and content. In addition, research (Lestari et al., 2024) shows that the main barrier in utilizing technology is not only the availability of facilities (first-order barriers), but also internal teacher factors such as self-confidence, belief, and teaching readiness (second-order barriers). Other findings from (Könings et al., 2021) also emphasizes that the quality of learning is greatly influenced by the active role of teachers in designing learning experiences that deeply involve students.

Furthermore, the geographical location of SMPN 7 Buton, located in a coastal area and relatively far from urban centers, reinforces the urgency of this research. Limited internet access and digital infrastructure mean that interactive digital media cannot be utilized optimally. This condition aligns with findings (Passy & Ovenden-Hope, 2020), which show that schools in coastal areas tend to experience barriers to technology access, which impacts teacher performance in delivering learning materials. Given the characteristics of students with limited access to digital learning resources, the use of adaptive and contextual interactive media is increasingly urgent to bridge the learning gap.

Therefore, this study is not only focused on improving the motivation and learning outcomes of eighth-grade students of SMP Negeri 7 Buton, but also directed to examine and address teacher problems in optimally utilizing interactive digital media. The purpose of the study was to determine the effect of interactive digital media and learning motivation on the social studies learning outcomes of eighth-grade students of SMPN 7 Buton, Buton Regency, Southeast Sulawesi Province. Thus, it is hoped that there will be synergy between teacher readiness and student involvement so that digital learning can take place more effectively, interactively, and meaningfully.

RESEARCH METHODS

The type of research uses associative quantitative research, with an explanatory approach. This design examines the relationship between variables while explaining the influence or causal relationship between the research variables. The purpose of the study was to determine the influence of interactive digital media and learning motivation on the social studies learning outcomes of grade VIII students of SMPN 7 Buton, Buton Regency, Southeast Sulawesi Province. The focus of the study was the use of interactive digital media (X_1) and learning motivation (X_2) as independent variables that are suspected to have an influence on social studies learning outcomes (Y) as the dependent variable.

This research was conducted at SMPN 7 Buton, located in Wasaga Village, Pasarwajo District, South Buton Regency, Southeast Sulawesi Province. The implementation period was from June to September 2025, covering the stages of preparation, implementation, data collection, data analysis, and preparation of the research report. The research subjects consisted of 147 students of grades VII and VIII, using a saturated sampling technique (total sampling). The interactive digital media used in the research was a social studies learning video based on the CapCut application that was designed contextually and systematically. The video was designed by integrating visual elements, audio, text, and illustrations relevant to the material, so that it could present information more interestingly and easily understood by students. The video preparation was carried out through several stages, namely determining the material, preparing a storyboard, editing the video using the CapCut feature, adding audio narration, supporting music, and inserting reflective questions in certain parts of the video. Video media is based on the principles of multimedia learning that emphasizes the combination of visual and auditory elements to improve optimal information processing. Furthermore, the video content is systematically structured, from concept presentations to contextual examples to simple practice exercises, encouraging active student engagement throughout the learning process. Interactive elements are introduced through the inclusion of prompt questions and reflection breaks, allowing students to think critically about the material presented.

Data collection consisted of initial observations, interviews, and a closed-ended questionnaire using a 5-point Likert scale to measure the effectiveness and feasibility of using interactive digital media in social studies learning. The initial questionnaire consisted of 13 statements, which were then tested for validity and reliability before being used in the study. Data analysis was carried out quantitatively with multiple linear regression tests and qualitative analysis of the results of teacher interviews and initial observations. The selection of multiple linear regression tests was based on the research objective of analyzing the simultaneous influence of more than one independent variable, namely interactive digital media and learning motivation, on the dependent variable, namely social studies learning outcomes. This test allows researchers to determine the contribution of each variable partially or together (simultaneously), thus providing a more comprehensive picture of the relationship. The criteria for making a

hypothesis decision if the p-value < 0.05 , then the hypothesis can be accepted, which indicates that interactive digital media and learning motivation have a significant effect on social studies learning outcomes.

RESEARCH RESULTS

This study aims to analyze the influence of interactive digital media and learning motivation on student learning outcomes in Social Studies (IPS) in eighth grade students of SMP Negeri 7 Buton, Buton Regency, Southeast Sulawesi Province. The approach used combines quantitative and qualitative data analysis to obtain a comprehensive picture. The results show that interactive digital media and learning motivation have a significant influence on improving student learning outcomes. This finding is supported by empirical data presented in tabular form and reinforced by the researcher's findings in the field. The following description presents a more detailed, systematic, and structured explanation of the research results.

Before the questionnaire instrument was used to measure the effectiveness and feasibility of using interactive digital media in social studies learning, the data accuracy was first tested through validity and reliability tests. Validity tests were conducted on 13 questions. Analysis using product-moment correlation showed that all questions had a correlation coefficient (r_{xy}) greater than the r_{table} value of 0.291 at a 5% significance level. Thus, all questions used in this study have been proven valid.

After the validity of the test items was confirmed, a reliability test was conducted to determine the instrument's consistency. Based on calculations using the Cronbach's Alpha formula, the reliability coefficient was 0.984, exceeding the minimum criterion of 0.70, indicating that the instrument was highly reliable and consistent in measuring improvements in student learning outcomes. The complete results of the validity and reliability tests are presented in Table 1 below.

Table 1. Validity and Reliability Test Results

Tes Aspects	Method	Results	Information
Validity	Korelasi Product-Moment	13 valid questins	$R_{xy} > r_{table} (0,291)$
Reliability	Cronbach's Alpha	0.984	Reliabel (> 0.70)

Source: Results of primary data processing using SPSS version 22, 2026.

The research findings showed that students were able to understand each statement in the questionnaire and provided consistent responses to the indicators of interactive digital media use, as demonstrated by minimal confusion when completing the instrument and the appropriateness of the answers to classroom learning conditions. This indicates that the instrument accurately captured students' learning experiences, particularly with the support of interactive videos that helped students reflect on their learning process.

In line with this, the results of the descriptive analysis indicate that the average student social studies learning outcome of 78.56 has exceeded the minimum completion criteria, although the standard deviation of 6.32 indicates variations in cognitive abilities between students. This variation is thought to be influenced by differences in access to digital media and levels of internal motivation. The average acquisition of interactive digital media use of 78.42 indicates a relatively high level of technology adoption at SMP Negeri 7 Buton, while the average learning motivation of 75.18 is in the strong category, reflecting a positive learning drive. Thus, the integration between understanding the instrument, the use of digital media, and learning motivation contributes to the achievement of student learning outcomes. Prior to the hypothesis test, prerequisite testing was conducted to ensure the validity of the statistical analysis.

Normality Test: Based on the 2-tailed significance value (Asymp. Sig.) of $0.200 > 0.05$, it can be concluded that the data are normally distributed.

Multicollinearity Test: Referring to the Tolerance value of $0.642 > 0.10$ and the VIF of $1.558 < 10$ for both variables, each variable can be viewed as an independent factor that makes a unique contribution to social studies learning outcomes at SMP Negeri 7 Buton.

Heteroscedasticity Test: The significance value obtained for the interactive digital media variable (X1) is 0.432 and the motivation variable X2 is 0.215, with a significance level of > 0.05 , it can be concluded that there is no heteroscedasticity problem in the regression model.

After the prerequisite tests were fulfilled, multiple linear regression analysis was conducted to determine the simultaneous and partial influence of the variables of interactive digital media use and learning motivation on students' social studies learning outcomes.

Table 2. Results of Multiple Linear Regression Analysis

Variables	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
Digital Media (X ₁)	0,342	0,042	0,412	8,143	0,000
Learning Motivation (X ₂)	0,415	0,045	0,468	9,222	0,000

Source: Results of primary data processing using SPSS version 22, 2026.

Based on the analysis results in Table 2 above, the Sig. value obtained is $0.000 < 0.05$, with a regression coefficient of 0.342 for variable X1 and 0.415 for variable X2. This indicates that every one-point increase in learning motivation scores will be followed by a 41.5-point increase in social studies learning outcomes. Conceptually, interactive digital media functions as an external stimulus that can attract attention and facilitate understanding. However, its effectiveness is highly dependent on students' psychological readiness to respond to this stimulus.

Junior high school students are in the early adolescent developmental phase, and psychological aspects such as interest, curiosity, the need for recognition, and the drive to achieve are highly influential factors in learning engagement. Students with high motivation tend to be more active in exploring material, make optimal use of available media, and exhibit greater learning resilience despite limited resources. Conversely, without strong motivation, the use of interactive digital media has the potential to become merely a passive tool that does not significantly impact student understanding.

This more significant influence on learning motivation variables is explained by the psychological tendency of junior high school students to be more responsive to internal drives than solely external stimuli. Digital media is designed to stimulate initial interest, but learning motivation determines sustained engagement in the social studies learning process. Consequently, integrating interactive digital media into social studies learning cannot simply focus on technical aspects or sophisticated tools, but must be accompanied by pedagogical strategies that can build and maintain student learning motivation.

Hypothesis testing was conducted using a t-test with H0 stating that there is no significant influence of the use of interactive digital media and student learning motivation on social studies learning outcomes, and H1 stating that there is a significant influence of the use of interactive digital media and student learning motivation on social studies learning outcomes. The results of the hypothesis testing are presented in the following table.

Table 3. t-Test Results

Variables	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
Media Digital (X ₁)	0,342	0,042	0,412	8,143	0,000
Motivasi Belajar (X ₂)	0,415	0,045	0,468	9,222	0,000

Source: Results of primary data processing using SPSS version 22, 2026.

Referring to table 3 above, the t-test results show that the interactive digital media variable (X1) has a significant effect on learning outcomes (Y) with a t-count value of $8.143 > 1.976$ and a significance of $0.00 < 0.05$. Similarly, the learning motivation variable (X2) also has a significant effect with a t-count value of $9.222 > 1.976$ and a significance of $0.00 < 0.05$, as well as being the most dominant variable in influencing student learning outcomes. So it can be concluded that H1 is accepted, meaning that there is a significant influence of the use of interactive digital media and student learning motivation on social studies learning outcomes. This finding is reinforced by conditions in the classroom which show that students who actively utilize interactive digital media tend to understand the material

more easily, while students with high learning motivation show more consistent involvement, such as actively asking questions, completing assignments on time, and focusing during learning.

Table 4. F-Test Results

Source of Variation	Sum of Square	df	Mean Square	F	Sig.
Regression	3542,124	2	1771,062	98,421	0,000
Residual	2591,234	144	17,995		
Total	6133,358	146			

Source: Results of primary data processing using SPSS version 22, 2026.

Based on Table 4 above, it provides evidence that the use of interactive digital media and learning motivation simultaneously influence social studies learning outcomes at SMPN 7 Buton. This is evidenced by the F value obtained of 98.421 with a significance level of $0.000 > 0.05$.

Table 5. Coefficient of Determination

R	R Square	Adjusted R Square	Std. Error of the Estimate
0,760	0,578	0,572	4,242

Source: Results of primary data processing using SPSS version 22, 2026.

The analysis results in table 5 above show an R Square (R²) value of 0.578. This indicates that 57.8% of the variation in the social studies learning outcomes variable is influenced by variations in the interactive digital media and learning motivation variables. The remaining 42.2% (100% - 57.8%) is explained by other factors not included in this research model, such as teacher pedagogical competence, school facilities and infrastructure, home tutoring, and family environmental conditions (sociocultural).

DISCUSSION

This study comprehensively demonstrates that the use of interactive digital media supported by learning motivation has a very significant influence on the success of social studies learning of students at SMP Negeri 7 Buton. This finding is not only demonstrated through statistical analysis with a contribution value of 57.8%, but also indicates a synergistic relationship between technological factors (interactive digital media) and psychological factors (learning motivation) in improving the quality of learning. This relatively high contribution indicates that learning success is not solely determined by the media, but also by how the media is able to activate students' internal motivation.

Theoretically, the effectiveness of interactive digital media can be explained through the Cognitive Theory of Multimedia Learning developed by Richard E. Mayer, which states that information is processed through two main channels, namely visual and verbal (Mayer, 2024). In the context of this research, the use of interactive digital media allows for the simultaneous integration of text, images, animation, and audio, thus helping students construct more structured and meaningful mental representations. This condition implies a reduction in cognitive load because information is presented in a more organized manner, allowing students to allocate their cognitive capacity to understand, analyze, and relate social studies concepts more deeply (Alzubi, 2023). Learning that connects visual and verbal representations has been proven to improve the quality of students' understanding of the material (Abdurrahman et al., 2019).

In addition to cognitive aspects, the results of this study also emphasize the important role of learning motivation as a variable that strengthens the effectiveness of interactive digital media. (Maulidya & Astuti, 2025) revealed that interactive learning media can increase the efficiency of material delivery, thus significantly improving student learning outcomes. In this study, learning motivation functions as a mediator that bridges the media's influence on learning outcomes, where increased motivation encourages students' active involvement in the learning process. This aligns with the findings of (Budiarawan, 2019) which shows that students with higher levels of motivation tend to have better learning outcomes.

This learning motivation is also influenced by the modeling process and outcome expectations as explained in social learning theory. (Bazrafkan et al., 2019) states that modeling is closely related to learning methods that not only convey knowledge but also display skills, attitudes, and perceptions that can be imitated by students. Meanwhile, outcome expectations are related to factors such as interest, satisfaction, completeness, and curiosity that arise as a consequence of the learning experience. In the context of SMP Negeri 7 Buton, student motivation develops through social interactions, especially when students observe the success of peers or receive verbal encouragement from teachers who act as competent social models. This condition shows that positive reinforcement, such as appreciation and feedback from teachers, can significantly stimulate student learning motivation. This is in line with Bandura's theory which emphasizes that individuals are active agents (self-regulated learners) who are able to control their learning behavior based on social observations and experiences (Gupta et al., 2024). Thus, learning motivation in this study is not only influenced by learning media, but also by social dynamics and students' internal processes in interpreting learning experiences.

The results of the multiple linear regression test which showed a significance value of $0.000 < 0.05$ confirmed that the model used in this study has strong predictive ability in explaining the relationship between interactive digital media variables and learning motivation on social studies learning outcomes. The regression coefficient value of the interactive digital media variable (X1) of 0.342 and learning motivation (X2) of 0.415 indicates that both variables make a positive contribution to improving learning outcomes. Specifically, a larger coefficient on the learning motivation variable indicates that students' internal factors have a more dominant role than external factors in determining learning success.

The partial t-test results further strengthen these findings, where the interactive digital media variable (X1) has a significant influence on learning outcomes with a t-count value of $8.143 > 1.976$ and a significance of $0.00 < 0.05$. Similarly, the learning motivation variable (X2) shows a greater influence with a t-count value of $9.222 > 1.976$ and a significance of $0.00 < 0.05$, as well as being the most dominant variable in influencing student learning outcomes. This difference in the strength of influence indicates that interactive digital media functions as a learning stimulus, while learning motivation acts as an internal mechanism that optimizes the use of the stimulus.

In addition to quantitative analysis, the findings of this study were also strengthened by qualitative data from interviews with classroom teachers. Based on the interviews, teachers stated that the use of interactive digital media made students more enthusiastic and active during the learning process. Teachers revealed that students who had previously tended to be passive began to show courage in asking questions, answering questions, and participating in class discussions. This demonstrates that interactive digital media not only functions as a tool to assist in delivering material but also creates a more dynamic and participatory learning environment (Selfa-sastre et al., 2022). The teacher also added that interactive digital media helped simplify the delivery of social studies material, which was previously considered abstract and difficult for students to understand. The visualization of images, animations, and systematic presentation of the material made it easier for students to grasp the concepts being taught. This finding corroborates the results of the regression analysis, which showed that interactive digital media significantly influenced student learning outcomes.

Overall, these findings provide empirical evidence that improved learning outcomes are influenced not only by the use of technology-based learning media, but also by students' readiness and internal motivation to learn. The integration of interactive digital media and learning motivation creates more effective learning conditions, where students not only receive information but are also actively involved in the process of understanding and processing knowledge. These results align with research (Thomas et al., 2019) which shows that the combination of learning technology innovation and student psychological factors is the key to improving the quality of learning outcomes. The implication of these findings is that teachers and education policymakers need to focus not only on developing innovative learning media but also on strategies that can increase student motivation. Learning approaches that integrate technological and psychological aspects in a balanced way are believed to produce more optimal, sustainable, and relevant learning that meets students' needs in the digital age.

CONCLUSION

This comprehensive study demonstrates that the use of interactive digital media and learning motivation significantly influence students' social studies learning outcomes at SMP Negeri 7 Buton. This finding is supported by quantitative and qualitative data analysis. Quantitatively, the results of the multiple linear regression test showed a significance value of $0.000 < 0.05$, indicating a significant model. The regression coefficients for the interactive digital media variable were 0.342 and learning motivation was 0.415, indicating a positive influence on learning outcomes, with learning motivation being the most dominant variable.

The partial t-test results also indicated that interactive digital media significantly influenced learning outcomes, with a calculated t-value of $8.143 > 1.976$ and a significance level of $0.00 < 0.05$. Similarly, learning motivation had a greater influence, with a calculated t-value of $9.222 > 1.976$ and a significance level of $0.00 < 0.05$. Thus, the research hypothesis was accepted, indicating a significant influence between the use of interactive digital media and learning motivation on students' social studies learning outcomes.

Qualitatively, interviews with teachers indicate that the use of interactive digital media can increase student enthusiasm, participation, and engagement in learning. Students become more active in asking questions and discussing, and more easily understand social studies material that was previously considered abstract. These findings indicate that interactive digital media not only statistically improves learning outcomes but also positively changes students' learning behavior.

Overall, this study confirms that improvements in social studies learning outcomes are influenced not only by technological factors but also by internal student factors, particularly learning motivation. The integration of interactive digital media and learning motivation can create more effective, interactive, and student-centered learning. Therefore, it is recommended that teachers optimize the use of interactive digital media, coupled with strategies to increase learning motivation and supported by the provision of adequate technological facilities. This way, the quality of social studies learning can be optimally and sustainably improved. Furthermore, schools need to initiate workshops or training programs for teachers to independently create interactive digital media to boost their confidence and digital competence. This program is expected to provide concrete solutions to overcome the technical challenges faced by teachers, while also encouraging ongoing professional development, thereby optimally and sustainably improving the quality of social studies learning.

REFERENCES

- Abdurrahman, A., Setyaningsih, C. A., & Jalmo, T. (2019). Implementating Multiple Representation-Based Worksheet to Develop Critical Thinking Skills. *TURKISH SCIENCE EDUCATION*, 16(1), 138–155. <https://doi.org/10.12973/tused.10271a>
- Afifa, K., & Astuti, T. (2024). The Effect of Digital Learning Media on Motivation and Learning Outcomes of IPAS. *Jurnal Penelitian Pendidikan IPA*, 10(6), 3155–3165. <https://doi.org/10.29303/jppipa.v10i6.7513>
- Ahmad, N. ., Yakob, N., Bunyamin, M. ., Winarno, N., & Akmal, W. (2021). The Effect Of Interactive Computer Animation And Simulation On Students ' Achievement And Motivation In Learning Electrochemistry. *Jurnal Pendidikan IPA Indonesia*, 10(3), 311–324. <https://doi.org/10.15294/jpii.v10i3.26013>
- Alzubi, A. (2023). The role of multimedia tools in Hashemite Kingdom of Jordan education classroom teaching in the digital era. *European Journal of Interactive Multimedia and Education*, 4(2), 0–6. <https://doi.org/10.30935/ejimed/13378>
- Bazrafkan, L., Hayat, A., Tabei, S., & Amirsalari, L. (2019). Clinical teachers as positive and negative role models : an explanatory sequential mixed method design. *J Med Ethics Hist Med*, 12(11), 1–15. <https://doi.org/10.18502/jmehm.v12i11.1448>
- Belda, J., José, M., & Calvo, R. (2022). Integrating augmented reality in language learning: pre - service teachers ' digital competence and attitudes throught the TPACK framework. *Education and Information Technologies*, 12123–12146. <https://doi.org/10.1007/s10639-022-11123-3>
- Budiarawan, I. P. (2019). Hubungan motivasi belajar dengan hasil belajar pada mata pelajaran kimia. *Jurnal*

- Pendidikan Kimia Indonesia*, 3(2), 103–111. <https://doi.org/10.23887/jpk.v3i2.21242>
- Gupta, N., Ali, K., Jiang, D., Fink, T., & Du, X. (2024). Beyond autonomy : unpacking self-regulated and self-directed learning through the lens of learner agency- a scoping review. *BMC Medical Education*, 24(1519). <https://doi.org/10.1186/s12909-024-06476-x>
- Hidayat, N., & Suryadi. (2023). Improving Student Learning Outcomes. *Jurnal Visi Ilmu Pendidikan*, 15(1), 29–36. <https://doi.org/10.26418/jvip.v15i1.54889>
- Könings, K. D., Mordang, S., Smeenk, F., Stassen, L., & Ramani, S. (2021). Learner involvement in the co-creation of teaching and learning: AMEE Guide No. 138. *Medical Teacher*, 43(8), 924–936. <https://doi.org/10.1080/0142159X.2020.1838464>
- Lestari, M. I., Sumartiningsih, S., & Suharini, E. (2024). Hambatan dan tantangan pembelajaran ilmu pengetahuan sosial di sekolah dasar. *Elementary School Teacher Journal*, 7(2), 48–58. <https://doi.org/10.15294/9wvmet33>
- Maulidya, D. R., & Astuti, T. (2025). The Influence of Interactive Learning Media on the Learning Outcomes and Motivation of Grade V Students in the Science Subject. *Jurnal Penelitian Pendidikan IPA*, 11(1), 63–70. <https://doi.org/10.29303/jppipa.v11i1.9393>
- Mayer, R. E. (2024). The Past , Present , and Future of the Cognitive Theory of Multimedia Learning. *Educational Psychology Review*, 36(1), 1–25. <https://doi.org/10.1007/s10648-023-09842-1>
- Passy, R., & Ovenden-Hope, T. (2020). Exploring school leadership in coastal schools: ‘getting a fair deal’ for students in disadvantaged communities. *Journal of Education Policy*, 35(2), 222–236. <https://doi.org/10.1080/02680939.2019.1573382>
- Rombeau, C., Rahmadi, P., & Appulembang, O. D. (2021). Membangun Komunikasi Efektif Kepada Siswa Kelas III Sekolah Dasar [The Importance Of Delivering Information Appropriately In Building Effective Communication To Grade 3 Of Primary Students]. *Journal of Holistic Mathematics Education*, 5(1), 13–30. <https://doi.org/10.19166/johme.v5i1.2055>
- Sari, D. Y., Agrita, T. W., & Aprizan. (2025). Application Of Wordwall-Assisted Game Based Learning Model To Improve Indonesian Language Learning Outcomes Grade III SD Negeri 227/VIII Tirta Kencana. *Jurnal Ilmiah Ilmu Pendidikan Dan Sosial*, 14(3), 1757–1763. <https://doi.org/10.36526/sosioedukasi.v14i3.6177>
- Seifu, K. (2020). Determinants of information and communication technology integration in teaching-learning process at Aksum University. *Cogent Education*, 7(1). <https://doi.org/10.1080/2331186X.2020.1824577>
- Selfa-sastre, M., Pifarré, M., Cujba, A., Cutillas, L., & Falguera, E. (2022). The Role of Digital Technologies to Promote Collaborative Creativity in Language Education. *Frontiers in Psychology*, 13(2). <https://doi.org/10.3389/fpsyg.2022.828981>
- Thomas, L. J., Parsons, M., & Whitcombe, D. (2019). Assessment in Smart Learning Environments: Psychological factors affecting perceived learning. *Computers in Human Behavior*, 95, 197–207. <https://doi.org/10.1016/j.chb.2018.11.037>
- Wijanarko, A. W., Amaniam, Y. H., Sariyatun, & Ramadhan, S. (2022). IT synergy in the application of Technological Pedagogical Content Knowledge (TPACK) in the social studies learning process : A literature study. *Harmoni Sosial: Jurnal Pendidikan IPS*, 9(1), 14–26. <https://doi.org/10.21831/hsjpi.v9i1.40380>