



The effect of game-based learning assisted by an interactive flat panel (IFP) on students' retention and storytelling skills

Nur Cholisoh¹, Hariyanto², Abdul Muis³

^{1,2,3}Master's Program in Learning Technology, Universitas PGRI Argopuro Jember, Indonesia

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ABSTRACT

This study analyzed the effect of *Game Based Learning* (GBL) assisted by an *Interactive Flat Panel* (IFP) on elementary school students' learning retention and storytelling skills. A quantitative approach using a quasi-experimental *Pretest-Posttest Control Group Design* was employed. The experimental group received GBL assisted instruction through an IFP and digital platforms, while the control group received conventional instruction. The results showed that GBL assisted by IFP significantly improved students' learning retention and storytelling skills, with very large effect sizes for both outcomes. These findings demonstrate that integrating game-based learning with interactive technology enhances students' immediate retention of learning content and their ability to communicate ideas orally, indicating its effectiveness in promoting short-term learning gains.

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Corresponding Author:

Nur Cholisoh,

Master's Program in Learning Technology,

Universitas PGRI Argopuro Jember,

Jl. Jawa No.10, Tegal Boto Lor, Sumbersari, Kec. Sumbersari, Kab. Jember, Jawa Timur, 68121, Indonesia

Email: nurcholisoh.22@gmail.com

INTRODUCTION

The development of educational technology has brought substantial change to the learning process in elementary schools, from the way material is delivered and classrooms are managed to increasingly dynamic and adaptive patterns of interaction between teachers and students. The presence of tools such as interactive projectors, educational applications, instructional videos, and digital platforms has made learning more vivid and contextual, enabling students to grasp abstract concepts in more concrete and enjoyable ways. Research shows that the use of digital learning media in elementary schools can significantly increase student motivation and engagement in the learning process (Lubis, 2024). The advancement of digital technology has also driven a paradigm shift from teacher-centered learning toward student-centered learning, giving students broader opportunities to explore knowledge, collaborate, and develop 21st-century skills ((Haleem et al., 2022).

Despite various technological innovations that have been applied in learning, the low level of students' learning retention remains a persistent challenge in elementary schools. Learning retention is students' ability to store and recall information or knowledge they have previously learned over a certain period of time. Research indicates that low student engagement in learning correlates with a low ability to remember and retain information that has been studied (Munastiwi

& Marpuah, 2024), while learning that involves visualization and active interaction has been shown to significantly improve students' memory retention (Rosita et al., 2025)

In addition to learning retention, storytelling skill is also an important language competency that needs to be developed among elementary school students, as it supports oral communication, the expression of ideas, and social interaction. Various studies indicate that the storytelling and speaking skills of elementary school students remain in the low category, particularly in the aspects of organizing ideas, vocabulary use, and fluency in delivering stories (Hernawati et al., 2024), which is often influenced by students' limited opportunities to actively practice speaking during lessons (Iswari et al., 2022). Learning that is still dominated by conventional methods further causes students to be less motivated to develop their storytelling ability in front of the class (Nuroh & Frestiya Adiyawati, 2023)

One learning innovation that is increasingly being applied to address these problems is *Game Based Learning* (GBL), an approach that integrates game elements such as challenges, rules, feedback, and rewards into learning activities in order to achieve specific educational objectives (Debrenti, 2024; Guan et al., 2024). Various research findings indicate that the implementation of GBL can increase learning motivation, encourage students' active participation, and have a positive impact on learning outcomes and concept mastery, as students gain a deeper learning experience compared to conventional learning (Mao et al., 2022; Pacheco-Velazquez et al., 2024)

Game Based Learning was selected as the primary strategy in this study rather than other student-centered models such as *Problem-Based Learning* (PBL) or *Project-Based Learning* (PjBL) because its built-in mechanics clear rules, immediate feedback, scoring, and repeated practice map directly onto the cognitive processes theorized to support retention, namely encoding, rehearsal, and retrieval, and provide frequent, low stakes opportunities for students to verbalize and reconstruct information, which is directly relevant to storytelling performance. PBL and PjBL, by contrast, are organized around extended problem-solving or project completion across multiple sessions and are less structured around the repeated retrieval practice that this study specifically targets, making GBL a more directly aligned strategy for the two outcomes examined here.

As educational technology continues to develop, the *Interactive Flat Panel* (IFP) has increasingly been used as a supporting learning medium that integrates various digital learning resources into a single touchscreen interactive device (Naitboho et al., 2025). The use of IFP allows students not only to passively receive information but also to actively engage through touch, discussion, and direct exploration of materials, which has been shown to increase student engagement and learning motivation compared with the use of conventional media (Hartanto & Wahyuningsih, 2026; Sari et al., 2026). Although research on GBL, IFP, learning retention, and storytelling skills has developed, studies that integrate the *Game Based Learning* model with *Interactive Flat Panel* support to simultaneously improve elementary school students' learning retention and storytelling skills remain relatively limited and are not widely reported in the current literature.

Most prior studies on *Game Based Learning* have examined its effect on a single outcome such as learning achievement, motivation, or speaking ability in isolation. To the researchers' knowledge, no prior study has jointly examined *Game Based Learning* assisted by *Interactive Flat Panel* on both learning retention and storytelling skills within the same sample using multivariate analysis. This study therefore contributes empirical evidence on whether a single GBL-IFP intervention can simultaneously affect a cognitive outcome (retention) and a communicative outcome (storytelling), a combination that has not been jointly investigated in the existing literature.

This research is important to conduct at SDN Kepatihan 01 Jember because, based on preliminary observations and pre-research tests on fourth-grade students, it was found that 65% of students (36 of 56 students) scored below the minimum mastery criterion (KKM) on the learning retention aspect of Indonesian language learning, particularly in the weakness of recalling and re-

explaining the previous week's material. In the initial assessment of storytelling skills, the classical average score reached only 55 (categorized as poor); 70% of students still had difficulty with the coherence of the story plot, and 80% of students showed very low levels of confidence and speaking fluency. On the other hand, the school already has *Interactive Flat Panel* facilities that have not been optimally used as a game-based learning medium, even though the characteristics of fourth-grade students who are at the concrete operational stage – greatly require real visualization and hands-on learning experience. Based on this description, this study aims to determine (a) the effect of *Game Based Learning* assisted by IFP on students' learning retention, (b) the effect of *Game Based Learning* assisted by IFP on students' storytelling skills, and (c) the simultaneous effect of the application of *Game Based Learning* assisted by IFP on the learning retention and storytelling skills of students at SDN Kepatihan 01 Jember.

Fourth grade was selected for this study because students at this level are beginning to transition toward more complex narrative and reasoning tasks within the Indonesian elementary curriculum, while still benefiting from the concrete, activity-based scaffolding that *Game Based Learning* provides, making it a developmentally appropriate stage at which to examine both retention and storytelling outcomes simultaneously.

RESEARCH METHODOLOGY

This study used a quantitative approach because it aimed to examine the effect of implementing *Game Based Learning* assisted by an *Interactive Flat Panel* (IFP) on students' learning retention and storytelling skills through the measurement of numerical data analyzed using statistical techniques (Creswell & Creswell, 2023). The type of research used was quasi-experimental research, because the classroom conditions at the school had already been established beforehand, so the researcher did not have the opportunity to conduct full random assignment of subjects as in a true experiment.

The research design used was a *Pretest-Posttest Control Group Design* with two groups, namely the experimental group and the control group. Both groups were given a pretest to determine students' initial ability. Subsequently, the experimental group was given treatment in the form of learning using *Game Based Learning* assisted by IFP, while the control group received learning using the method commonly applied by the teacher. After the treatment was completed, both groups were given a posttest to determine the changes in learning outcomes that occurred. The research design is presented in Table 1.

Table 1. Research design

Group	Pretest	Treatment	Posttest
Experimental	O1	X	O2
Control	O3	-	O4

Note: O1 = pretest of the experimental group; O2 = posttest of the experimental group; O3 = pretest of the control group; O4 = posttest of the control group; X = learning using *Game Based Learning* assisted by IFP.

Based on the table, the research was conducted on fourth-grade students at SDN Kepatihan 01 Jember, consisting of an experimental class and a control class. The selection of the location was based on three main considerations: first, the school already had *Interactive Flat Panel* (IFP) facilities as an interactive learning medium; second, the characteristics of fourth-grade students, who are at the concrete operational stage of development, align with the need for visual, interactive learning that involves direct experience; and third, the students' learning retention and storytelling skills at the school still required improvement based on preliminary observations.

The population of this study consisted of all fourth-grade students at SDN Kepatihan 01 Jember (classes IV A, IV B, IV C, and IV D) enrolled in Indonesian language learning on the theme *Asal Usul* during the 2026/2027 academic year. Because students were already organized into pre-

existing class groups, a *cluster random sampling* technique was used: two of the four classes with comparable academic characteristics, based on school records and pretest scores, were randomly selected, with one class randomly assigned as the experimental group and the other as the control group. The resulting sample consisted of 56 students, 28 in the experimental group and 28 in the control group.

Table 2. Learning retention indicators

No	Indicator	Description
1	Recall	The ability to state or re-explain previously learned information without cues
2	Recognition	The ability to identify previously learned information or concepts when given cues
3	Re-explaining concepts	The ability to express previously learned concepts using one's own words
4	Applying knowledge	The ability to use learned information or concepts in new situations or problems
5	Retention of information	The ability to retain learning outcomes after a certain period of time

Table 3. Storytelling skill indicators

No	Indicator	Description
1	Story coherence	The ability to convey a sequence of events systematically and understandably
2	Vocabulary use	The ability to use word choices that are accurate, clear, and appropriate to the story context
3	Speaking fluency	The ability to tell a story fluently without excessive pauses, repetition, or hesitation
4	Intonation	The ability to use appropriate pitch variation in accordance with the nuance of the story
5	Expression	The ability to display facial expressions and gestures that support the delivery of the story

Based on the tables above, the learning retention variable was measured through a test given after students participated in the learning, with indicators covering the ability to recall, recognize, re-explain concepts, apply knowledge, and retain information over a certain period of time (Ormrod et al., 2023; Woolfolk, 2021), as presented in Table 2. The storytelling skill variable was measured through a performance assessment based on indicators of story coherence, vocabulary use, speaking fluency, intonation, and expression (Nurgiyantoro, 2021; Tarigan, 2015), as presented in Table 3.

In this study, the experimental group's treatment consisted of *Game Based Learning* activities delivered through the IFP using a combination of digital game-based platforms, namely Wordwall, Quizizz, and Kahoot!, through which students selected answers, matched pictures, and arranged story sequences. The learning retention test was administered as a posttest immediately after the treatment concluded; a separate, time-delayed retention test was not conducted in this study, and this measurement choice is discussed further in the Limitations section. The 20-item retention test was validated through expert judgment (score 47/50, 94%, categorized as "highly appropriate without revision") and was found to be reliable based on a try-out involving 30 respondents (Cronbach's $\alpha = 0.780$). The storytelling performance rubric was likewise validated through expert judgment (score 47/50, 94%, "highly appropriate without revision"). Scoring of students' storytelling performance was conducted by a single rater; inter-rater reliability was not established, which is acknowledged as a limitation of the measurement procedure (see Limitations).

The data obtained were analyzed using the *Independent Samples t-test* to examine the effect of GBL assisted by IFP on each of the learning retention and storytelling skill variables separately, as well as the *Multivariate Analysis of Variance* (MANOVA) test to examine the simultaneous effect on both variables.

Prior to hypothesis testing, normality (*Shapiro-Wilk test*, appropriate given $n = 28$ per group) and homogeneity of variance (*Levene's test*) were assessed to confirm that the assumptions for parametric statistics were met. MANOVA was chosen over separate univariate tests because the study involved two conceptually related dependent variables, learning retention and storytelling skills, measured on the same students; analyzing them jointly controls the overall Type I error rate that would otherwise be inflated by running multiple univariate tests and allows the combined effect of the treatment on both outcomes to be evaluated simultaneously.

RESULTS AND DISCUSSIONS

This study was conducted on fourth-grade students at SDN Kepatihan 01 Jember, consisting of an experimental class and a control class. The experimental class was given treatment in the form of learning using *Game Based Learning* assisted by an *Interactive Flat Panel* (IFP), while the control class followed learning using the method commonly applied by the teacher. In its implementation, the IFP was used as a supporting medium for the application of GBL, allowing students to interact directly with educational games through activities such as selecting answers, matching pictures, and arranging story sequences, thereby creating a more active, engaging, and collaborative learning atmosphere.

Table 4. Descriptive statistics of learning retention and storytelling skills

Variable	Group	N	Pretest M (SD)	Posttest M (SD)
Learning Retention	Experimental	28	59.14 (5.82)	83.07 (4.91)
Learning Retention	Control	28	57.86 (5.41)	66.64 (5.01)
Storytelling Skills	Experimental	28	56.93 (5.96)	84.07 (4.23)
Storytelling Skills	Control	28	55.82 (5.73)	72.04 (6.08)

Note: Posttest scores for Learning Retention were obtained immediately after the treatment concluded (see Methods); no delayed retention measure was administered.

The Effect of Game Based Learning Assisted by Interactive Flat Panel on Learning Retention

The results of the study show that the use of *Game Based Learning* assisted by an *Interactive Flat Panel* had a significant effect on the learning retention of elementary school students. Based on the results of the *Independent Samples t-test*, the experimental group scored significantly higher ($M = 83.07$, $SD = 4.91$) than the control group ($M = 66.64$, $SD = 5.01$), $t(54) = 12.403$, $p < .001$, Cohen's $d = 3.31$, so the first hypothesis was accepted. Because this retention score was obtained from a test administered immediately after the treatment concluded rather than after a separate, delayed interval (see Methods and Limitations), this finding is best interpreted as evidence of stronger immediate learning gains and consolidation of information, rather than as direct evidence of long-term memory retention. This finding is nonetheless consistent with the broader theoretical view, as expressed by (Safitri et al., 2025), that GBL can improve learning competence through increased student engagement, intrinsic motivation, and meaningful learning experiences, which are theorized to make information easier to retain over time.

The higher learning retention in the experimental class can be explained by the core characteristic of GBL, which places students at the center of learning (student-centered learning). Students not only receive information passively but actively complete challenges, engage in discussion, and receive direct feedback, resulting in repeated elaboration of information that, according to information-processing theory, facilitates the transfer of information toward longer-term storage. This is in line with the systematic literature review (Dahalan et al., 2024), which explains that GBL consistently enhances student engagement, motivation, higher-order thinking skills, and learning retention. Elements of competition, scoring, rewards, and direct feedback during the game also increase students' attention to the material, as found (Nadeem et al., 2023), who reported that digital game-based learning can improve students' attention, motivation, engagement, and learning outcomes.

The use of an *Interactive Flat Panel* also contributed to this success, as it enabled the presentation of material through a combination of text, images, animation, video, and simulation that could be operated directly via touchscreen, helping students understand concepts more concretely (Bahar & Iriandy, 2025). From the perspective of *Information Processing Theory* (Atkinson & Shiffrin, 1968), information that receives attention is processed through an encoding stage before being stored in long-term memory, and repeated game activities accompanied by direct feedback give students the opportunity to continuously carry out encoding and retrieval processes, thereby strengthening memory traces. These results are also relevant to Ausubel's *Meaningful Learning*

Theory, which asserts that learning takes place optimally when students are able to integrate new information into their existing cognitive structures rather than merely memorizing it (Bryce & Blown, 2024), as well as Mayer's (Mayer, 2024) *Cognitive Theory of Multimedia Learning* (CTML), which explains that presenting information multimodally through visual and verbal channels simultaneously strengthens the organization of information in working memory before it is stored in long-term memory.

The Effect of Game Based Learning Assisted by Interactive Flat Panel on Storytelling Skills

The results of the study show that the use of *Game Based Learning* assisted by an *Interactive Flat Panel* had a significant effect on the storytelling skills of elementary school students. The results of the *Independent Samples t-test* show that the experimental group scored significantly higher ($M = 84.07$, $SD = 4.23$) than the control group ($M = 72.04$, $SD = 6.08$), $t(54) = 8.600$, $p < .001$, Cohen's $d = 2.30$, so the second hypothesis was accepted, with a between-group difference of 12.03 points on the posttest. This difference becomes clearer when within-group change is examined: the experimental group's storytelling score rose from a pretest mean of 56.93 to a posttest mean of 84.07, a gain of 27.14 points, whereas the control group's score rose from a pretest mean of 55.82 to a posttest mean of 72.04, a gain of only 16.22 points. In other words, the experimental group's improvement was substantially larger than the control group's natural gain from repeated practice and maturation alone, indicating that the GBL-IFP treatment itself—rather than general exposure to the storytelling task across the two testing occasions—accounts for a meaningful share of the observed difference. This finding is in line with research showing that GBL can increase learning engagement, social interaction, and students' communication skills through authentic and enjoyable learning activities (Alotaibi, 2024; Gunawan, 2025).

The improvement in storytelling skills in the experimental class shows that the characteristics of GBL are able to create a learning environment that encourages students to use language actively. During learning, students completed game challenges, engaged in discussion, expressed opinions, gave reasons for the answers they chose, and presented the results of their discussions, thereby practicing speaking fluency, enriching vocabulary, and increasing courage in expressing ideas. This finding is supported (Gunawan, 2025), who stated that the implementation of GBL significantly improves students' *speaking skills*, confidence, speaking fluency, and communicative competence.

In addition to the learning strategy, the use of the *Interactive Flat Panel* also contributed, because the multimodal presentation of material helped students understand the content of the story more concretely, remember the sequence of events, recognize characters and settings, and build relationships between concepts. Research on *digital storytelling* shows that support from digital media combining visual, audio, and narrative elements can improve speaking fluency, pronunciation accuracy, vocabulary mastery, and students' confidence in telling stories (Azzahra Henda Puspitasari et al., 2024; Hamidah et al., 2023). From the perspective of the *Cognitive Theory of Multimedia Learning*, the combination of GBL and IFP helps students build a more complete mental representation, making it easier for them to remember information while also retelling it in a coherent and communicative story form (Mayer, 2024).

The Simultaneous Effect of Game Based Learning Assisted by Interactive Flat Panel on Learning Retention and Storytelling Skills

The results of testing the third hypothesis using Multivariate Analysis of Variance (MANOVA) show that the use of Game Based Learning assisted by an Interactive Flat Panel had a simultaneous, significant effect on the learning retention and storytelling skills of elementary school students, as evidenced by Wilks' $\Lambda = 0.206$, $F = 102.341$, $p < .001$, so the third hypothesis was accepted. This finding indicates that the application of GBL assisted by IFP does not only affect one aspect of learning outcomes but is able to improve two competencies at once, namely the ability to consolidate and apply learned information shortly after instruction and the ability to communicate

that information back through storytelling activities. This result is in line with the systematic review (Alotaibi, 2024), which concluded that GBL has a positive impact on the development of cognitive ability, learning motivation, engagement, and students' social and communication skills, as well as the findings of (Dahalan et al., 2024) that GBL can improve learning outcomes as well as thinking, collaboration, and communication skills.

The simultaneous improvement in learning retention and storytelling skills indicates that an effective learning process does not only produce mastery of material during the lesson but also builds students' ability to retain knowledge and communicate it back in a coherent manner. GBL provides a learning environment that encourages active participation through challenges, competition, and collaboration, while IFP provides a rich visual environment that makes it easier for students to understand the relationships between concepts. In accordance with the principles of the *Cognitive Theory of Multimedia Learning*, the integration of these two components allows students to select relevant information, organize it into a coherent knowledge structure, and integrate it with prior knowledge (Mayer, 2024) so that the success of learning is not caused solely by the use of digital technology, but by the way that technology is used to support a learning strategy oriented toward students' construction of knowledge.

Unlike most previous studies that examined the effect of GBL on learning outcomes, motivation, or speaking ability separately, this study examined the simultaneous effect of GBL assisted by IFP on two dependent variables at once through MANOVA analysis. This approach provides a more comprehensive picture of learning effectiveness because it shows that a single learning strategy can affect more than one student competency at the same time, while also reinforcing the relevance of *Information Processing Theory*, the *Cognitive Theory of Multimedia Learning*, and the constructivist approach in explaining how game-based learning supported by interactive media can improve students' cognitive and communication abilities simultaneously.

It should also be acknowledged that part of the observed improvement may be attributable to factors beyond the specific pedagogical mechanisms of *Game Based Learning* itself. Because the experimental group experienced a novel medium (IFP) and instructional format that differed markedly from their usual routine, a *novelty effect*—in which engagement rises temporarily simply because a learning experience is new and different—cannot be ruled out based on the present design. Likewise, if the experimental and control groups were taught under different classroom conditions, a *teacher effect* could partly account for between-group differences independent of the instructional method itself. The design also cannot exclude a general *Hawthorne-type effect*, whereby students in the experimental group may have performed better partly because they were aware of taking part in a new and closely observed learning activity, rather than solely because of GBL's specific pedagogical features. Disentangling these alternative explanations from the specific contribution of GBL and IFP would require designs such as multiple intervention cycles, comparison against an alternative novel-but-non-GBL intervention, or a longer implementation period that allows novelty to wear off, approaches recommended for future research.

Limitations, this study has several limitations that should be considered when interpreting its findings. First, learning retention was measured immediately after the instructional treatment ended rather than after a separate, time-delayed interval; consequently, the results reflect students' immediate post-instruction performance on tasks designed to tap recall, recognition, re-explanation, and application, rather than long-term memory retention in the strict sense. Future studies should incorporate a delayed post-test administered days or weeks after instruction to more directly evaluate retention over time. Second, storytelling performance was scored by a single rater using a validated rubric; because inter-rater reliability was not established, the possibility of rater subjectivity cannot be ruled out, and future research should involve multiple independent raters with reported inter-rater agreement. Third, the quasi-experimental design, necessitated by the use of pre-existing class groups, did not allow full random assignment of individual students, which limits the extent to which alternative explanations such as pre-existing class-level

differences, teacher effects, or a novelty effect can be ruled out (see Discussion). Fourth, the sample was limited to 56 fourth-grade students from two classes at a single school, which constrains the generalizability of the findings to other grade levels, subject areas, or school contexts. These limitations should be addressed in future research through delayed post-testing, multi-rater scoring with reported reliability, larger and more diverse samples, and designs that can help disentangle the specific effects of GBL, IFP, and general novelty.

CONCLUSION

This study found that *Game Based Learning* (GBL) assisted by an *Interactive Flat Panel* (IFP) had a significant positive effect on fourth-grade students' learning retention, $t(54) = 12.403$, $p < .001$, Cohen's $d = 3.31$, and storytelling skills, $t(54) = 8.600$, $p < .001$, Cohen's $d = 2.30$, with MANOVA confirming a significant simultaneous effect on both outcomes, Wilks' $\Lambda = 0.206$, $p < .001$. Beyond confirming that GBL assisted by IFP outperforms conventional instruction, these findings contribute theoretically by showing that a single game-based, technology-supported intervention can simultaneously strengthen a cognitive outcome (information retention) and a communicative outcome (oral storytelling)—two competencies that prior GBL research has typically examined in isolation. This pattern is consistent with the idea that repeated, feedback-rich game activities support both the encoding and retrieval processes emphasized by information-processing theory and the active language use that storytelling performance requires, suggesting that GBL's engagement mechanisms operate across cognitive and communicative domains rather than being outcome-specific. Practically, these results suggest that teachers can use GBL assisted by IFP as a single, time-efficient strategy to target more than one learning goal at once, rather than implementing separate activities for content mastery and speaking practice. However, because learning retention in this study was measured immediately after instruction rather than after a delayed interval, and because storytelling was scored by a single rater, these findings should be treated as evidence of short-term learning and communicative gains rather than confirmed long-term retention (see Limitations). Future research using delayed post-tests, multiple independent raters, larger and more varied samples, and designs that can help separate the effects of GBL, IFP, and general novelty is needed to strengthen and extend these conclusions.

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References

- Alotaibi, M. S. (2024). Game-based learning in early childhood education: a systematic review and meta-analysis. *Frontiers in Psychology*, 15.
- Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. *Psychology of Learning and Motivation*, 2, 89–195.
- Azzahra Henda Puspitasari, P., Lestari Damayanti, I., & Nurlaelawati, I. (2024). Investigating Students' Speaking Skills through Traditional Story-Based Digital Storytelling into Genre-Based Approach (GBA). *Pedagogy: Journal of English Language Teaching*, 12(2), 250–265.
- Bahar, A. S., & Iriandy. (2025). Enhancing the Digital Classroom Experience through the Integration of Interactive Flat Panel and Tug of Knowledge as Cloud-Based Learning Media. *Information Technology Education Journal*, 784–794.
- Bryce, T. G. K., & Blown, E. J. (2024). Ausubel's meaningful learning re-visited. *Current Psychology*, 43(5), 4579–4598.
- Creswell, J. W., & Creswell, J. D. (2023). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications.

- Dahalan, F., Alias, N., & Shaharom, M. S. N. (2024). Gamification and Game Based Learning for Vocational Education and Training: A Systematic Literature Review. *Education and Information Technologies*, 29(2), 1279–1317.
- Debrenti, E. (2024). Game-Based Learning experiences in primary mathematics education. *Frontiers in Education*, 9.
- Guan, X., Sun, C., Hwang, G., Xue, K., & Wang, Z. (2024). Applying game-based learning in primary education: a systematic review of journal publications from 2010 to 2020. *Interactive Learning Environments*, 32(2), 534–556.
- Gunawan, I. D. (2025). The Implementation of Game-Based Learning to Enhance Students' Speaking Skills in Indonesian EFL Classrooms. *JOEY: Journal of English Ibrahimy*, 4(2), 15–27.
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285.
- Hamidah, F., Setiawan, F., & Mirnawati, L. B. (2023). Strengthening Digital Literacy of Elementary School Students Through Utilization of Wordwall as Game-Based Learning Interactive Media. *Jurnal Ilmiah Sekolah Dasar*, 7(2), 215–223.
- Hartanto, P., & Wahyuningsih, D. (2026). The Impact of Interactive Flat Panel Displays (IFPD) on Student Engagement and Learning Motivation. *Golden Ratio of Data in Summary*, 6(2), 79–88.
- Hernawati, E., Prihatin, Y., & Sudibyo, H. (2024). Efektivitas Metode Story Telling Bermedia Video Dongeng Animasi dalam Meningkatkan Keterampilan Berbicara Siswa Sekolah Dasar. *Journal of Education Research*, 5(4), 6519–6525.
- Iswari, D. R., Setiawan, D., & Huda, W. N. (2022). Analisis Kemampuan Berkomunikasi Siswa Kelas IV di SD Bulungcangkriang Selama Pembelajaran Daring. *Jurnal Prasasti Ilmu*, 2(1), 42–47.
- Lubis, M. (2024). Digital learning media in elementary science: stimulating or demotivating? *Assyfa Journal of Multidisciplinary Education*, 1(1), 18–26.
- Mao, W., Cui, Y., Chiu, M. M., & Lei, H. (2022). Effects of Game-Based Learning on Students' Critical Thinking: A Meta-Analysis. *Journal of Educational Computing Research*, 59(8), 1682–1708.
- Mayer, R. E. (2024). The Past, Present, and Future of the Cognitive Theory of Multimedia Learning. *Educational Psychology Review*, 36(1), 8.
- Munastiwi, E., & Marpuah, S. (2024). The Impact of Elementary Students' Attitudes Toward Online Learning on Memory Retention and Comprehension During the COVID-19 Pandemic. *Global Educational Research Review*, 1(1), 49–55.
- Nadeem, M., Oroszlanyova, M., & Farag, W. (2023). Effect of Digital Game-Based Learning on Student Engagement and Motivation. *Computers*, 12(9), 177.
- Naitboho, O., Naldo, R., Deku, E. R., Bulan, R. E., Bumbung, M. E., & Duka, S. (2025). The Effectiveness of Interactive Flat Panel (IFP) Utilization in Supporting Innovative IPAS Learning in Elementary Schools. *Paradigma: Jurnal Filsafat, Sains, Teknologi, Dan Sosial Budaya*, 31(2), 854–861.
- Nurgiyantoro, B. (2021). *Penilaian Pembelajaran Bahasa Berbasis Kompetensi*. BPFE-Yogyakarta.
- Nuroh, E. Z., & Frestiya Adiyawati, F. (2023). The influence of digital storytelling on story writing skills of class II elementary school students. *Jurnal Pendidikan Dasar Nusantara*, 8(2), 357–369.
- Ormrod, J. E., Anderman, E. M., & Anderman, L. H. (2023). *Educational Psychology: Developing Learners* (11th ed.). Pearson.
- Pacheco-Velazquez, E., Rodés, V., & Salinas-Navarro, D. (2024). Developing learning skills through game-based learning in complex scenarios: A case in undergraduate logistics education. *Journal of Technology and Science Education*, 14(1), 169.
- Rosita, D., Dewanti, S. S., & Ibrahim, I. (2025). The Impact of Augmented Reality-based Learning Media on Primary Students' Retention of Human Sensory System Concepts. *Journal of Integrated Elementary Education*, 5(2), 407–420.
- Safitri, R. R., Rahmania, U. G., Putri, A. F., & Jumadi, J. (2025). The Impact of Game-Based Learning on Student Competencies in Science: A Systematic Review. *Jurnal Pendidikan Dan Kebudayaan*, 10(1), 116–136.
- Sari, A. M., Muthoharoh, T., Murhartoyo, M., Aslamiah, A., & Amelia, R. (2026). Pemanfaatan Interactive Flat Panel (IFP)/Smartboard sebagai Media Pembelajaran Interaktif di SDN Pelambuan 4 Banjarmasin. *Jurnal Pendidikan Dan Pembelajaran Indonesia (JPPI)*, 6(1), 170–183.
- Tarigan, H. G. (2015). *Berbicara sebagai Suatu Keterampilan Berbahasa*. Angkasa.
- Woolfolk, A. (2021). *Educational Psychology* (15th ed.). Pearson.