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Enhancing Instructional Delivery Through Effective Use of Software Applications in Senior High School

Alma Nica D. Malleon[1], Mariquit M. Pedrasa[2], Jessica Niña M. Cuevas[3], Jel Fellize Datinggaling[4], Pee Jay R. Barrientos[5], Dr. Nerrie E. Malaluan[6]

[1]PhD Student, Batangas State University
23-59424@g.batstate-u.edu.ph
[2]PhD Student, Batangas State University
23-57473@g.batstate-u.edu.ph
[3]PhD Student, Batangas State University
23-51269@g.batstate-u.edu.ph
[4]PhD Student, Batangas State University
23-55527@g.batstate-u.edu.ph
[5]PhD Student, Batangas State University
23-53674@g.batstate-u.edu.ph
[6]Professor, Batangas State University
nerrie.malaluan@g.batstate-u.edu.ph

Abstract:

The integration of software applications in instructional delivery is crucial for enhancing teaching and learning outcomes in senior high schools, especially as educational systems continue to adapt to technological advancements. This study investigates the frequency of use and challenges faced by teachers in incorporating educational software applications into their teaching practices at two schools in Batangas. Using a quantitative descriptive research design, data were collected through a structured survey administered to 30 Senior High School teachers. The findings show that traditional software tools like Microsoft Office and Canva are frequently used, while more specialized platforms such as Google Classroom and Padlet are underutilized due to barriers such as insufficient infrastructure, student access issues, and budgetary constraints. The study also identified challenges including lack of training, technical support, and outdated technology. Despite these obstacles, teachers expressed openness to integrating more technology into their teaching practices. The results highlight the need for better support systems to foster the adoption of digital tools, including professional development opportunities that focus on digital pedagogy and specific software training. Furthermore, schools need to address infrastructure limitations and resource constraints to ensure that teachers can fully leverage the potential of educational technologies. The study concludes with recommendations for continuous teacher training, infrastructure improvement, and the development of policies that encourage technology adoption in classrooms. These insights aim to guide educational leaders in formulating data-driven strategies to enhance digital instruction, thereby maximizing the benefits of software applications in senior high schools.

Keywords **— software applications, instructional delivery, senior high school, technology integration, teacher challenges**

I. INTRODUCTION

The integration of technology into educational settings has become a critical factor in advancing teaching and learning outcomes. Since the post-pandemic, the world has been witnessing another systemic change led by the emergence of GenAI tools that is fast leading to an inevitable systemic change in all facets of human endeavors, including

education (Ukwandu, et.al., 2025). As senior high schools strive to meet the demands of 21st-century education, incorporating software applications into classroom instruction has emerged as a powerful tool for enhancing instructional delivery. In the evolving landscape of Philippine education, the strategic integration of technology into classroom instruction has become a cornerstone of effective teaching and learning. The Department of Education (DepEd), through its regional and division offices, has introduced several initiatives aimed at strengthening Information and Communications Technology (ICT) integration, including the Digital Rise Program, the Learning Management System (LMS) under DepEd Commons, and capacity-building programs for teachers. Software applications designed for educational use—such as learning management systems, digital assessment tools, content creation platforms, and collaborative learning environments—can significantly support teachers in planning, delivering, and assessing instruction. Despite the availability of numerous educational software applications, the effectiveness of their use largely depends on how well they are integrated into pedagogical practices. Wang, et.al. (2024) in their study on balancing enjoyment and learning in teaching software project management with game-based learning found out that the game successfully balanced enjoyment and learning, a critical factor in boosting motivation and concentration, which in turn enhances the learning experience. These tools, when used effectively, not only enrich student engagement but also streamline administrative and instructional processes. The mere availability of technological resources does not guarantee their meaningful use. School administrators often face the dual challenge of ensuring both the provision of appropriate digital tools and the development of teachers' capacity to integrate these tools effectively into their instructional practices. Without a strategic approach to implementation, professional development, and ongoing support, software applications may remain underutilized or misaligned with instructional goals. The teachers' internal and external barriers considerably affect technology integration; thus, there is a need to strategize in enhancing the capabilities of school leaders and teachers in software applications in instructional delivery (Cheng, 2023). By examining the frequency of use of the software applications in instructional delivery, the study seeks to provide insights that can guide educators, administrators, and policymakers in fostering more engaging, efficient, and impactful teaching and learning environments. This study will explore the current landscape of technology integration, identify the challenges and barriers from the perspective of educators in using software applications in the local setting. The findings aim to inform administrative decision-making regarding technology investment, teacher training, and instructional design, ultimately contributing to improved educational outcomes at the senior high school level. By providing evidence-based insights, the research will support school administrators and regional education leaders in developing informed, strategic approaches to improving digital instruction and maximizing the educational benefits of software applications in senior high schools across the region.

II. OBJECTIVES

This study is aimed at enhancing instructional delivery through the effective use of software applications in senior high school. The researchers aimed to understand how teachers integrate educational technology into their teaching practices by fulfilling the following specific objectives:

1. Determine the frequency of using the software applications in instructional delivery of
Senior High School Teachers
2. Identify the challenges encountered by teachers in using software applications in teaching.
3. Develop a training plan to maximize the use of software applications in enhancing instructional delivery.

III. MATERIALS AND METHODS

This study employed a quantitative descriptive research design, aimed at describing and analyzing the frequency of use and challenges associated with educational software applications in instructional delivery with the end view of proposing training plan. Descriptive research is a kind of study that

describes the nature of a situation as it exists at the time of the study and explores the causes of a particular phenomenon (Alicay, 2014). The primary objective was to quantify how often teachers used different software applications in their teaching practices and to explore the challenges they faced when utilizing these tools. The data were collected through a structured survey, which allowed for measuring usage patterns and identifying common obstacles teachers encountered.

The participants in this study included 30 Senior High School teachers from Tingloy SHS and Cabuyao INHS. A census approach was employed, meaning all teachers in these two schools were invited to participate, and all 30 teachers were considered respondents. As such, no sampling method was used. The survey instrument consisted of two main sections: one focused on the frequency of use of various software applications, which was assessed through a Likert scale (ranging from "Never Used" to "Always Used"), and the other assessed challenges faced by teachers, such as lack of training, technical issues, equipment constraints, and student access problems.

Data collection was conducted through an online survey, which was distributed via email or other online communication channels commonly used by the schools. Teachers were given a 2-day window to complete the survey. Prior to participation, they were required to sign an informed consent form outlining the study's purpose, their voluntary involvement, and the confidentiality of their responses.

Once the data were collected, it was analyzed using descriptive statistics. Measures such as the mean and frequency distribution were calculated to summarize the results, identifying trends in software usage and the specific challenges teachers faced. Statistical software such as SPSS or Excel was used for processing the data.

Ethically, the study ensured that participants' confidentiality was maintained, with no personally identifiable information included in the final report. Teachers were reminded that their participation was entirely voluntary and that they had the right to withdraw from the study at any time without any consequence.

However, there were certain limitations to the study. Given the small sample size of 30 teachers, the findings may not be fully generalizable to all Senior High School teachers. Additionally, using a census approach meant that the results reflected the specific context of the two participating schools rather than a wider educational context. Finally, as the study relied on self-reported data, there was the potential for bias, especially regarding the frequency of software use and the perceived challenges, as participants may have overestimated or underestimated their actual experiences.

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IV. RESULTS AND DISCUSSION

A. *Frequency of Use of the Software Applications in Instructional Delivery*

The frequency of use of software applications in instructional delivery among Senior High School teachers is a crucial aspect of integrating technology into education. Understanding how often these tools are utilized can provide insights into their effectiveness and identify areas for improvement in digital pedagogy. Table 1 shows a wide range of software application usage in instructional delivery, with some tools being consistently utilized, while others are seldom or never used. This variation suggests differing levels of integration and familiarity among teachers with various educational technologies.

Table 1
Frequency of Use of the Software Applications in Instructional Delivery

Indicator	Mean Score	Freq 4	Freq 3	Freq 2	Freq 1	Verbal Interpretation
Microsoft Office	3.90	27	3	–	–	Always Used
Google Workspace	2.93	11	7	11	1	Often Used
Canva	3.30	14	13	1	2	Always Used
LMS (e.g., Google Classro	2.33	0	12	16	2	Seldom Used

om)						
ClassPoint	1.90	0	8	11	11	Seldom Used
Kahoot!	2.27	5	6	11	8	Seldom Used
Quizziz	2.33	5	4	17	4	Seldom Used
Padlet	1.77	0	9	5	16	Seldom Used
Nearpod	1.60	0	4	10	16	Never Used
Mentimeter	2.17	5	4	12	9	Seldom Used
Flipgrid	1.80	0	9	6	15	Seldom Used
Genially	1.53	0	4	8	18	Never Used
Loom	1.53	0	4	8	18	Never Used
Desmos/GeoGebra	2.00	2	9	6	13	Seldom Used
Schoology	1.77	0	6	11	13	Seldom Used
Quippper	1.97	3	6	8	13	Seldom Used
Edmodo	1.73	0	8	6	16	Never Used

The results reveal a varied pattern in the frequency of software application use among Senior High School teachers. The tool with the highest frequency of use is Microsoft Office, with a mean score of 3.90, verbally interpreted as "Always Used." This result confirms its dominant role in classroom instruction, lesson planning, and content presentation. Its long-standing presence in education and offline usability likely contribute to its consistent integration across subjects. Canva follows with a mean of 3.30, also interpreted as "Always Used," reflecting its growing popularity among teachers in creating visually engaging materials, particularly in subjects that benefit from rich multimedia content. Recent studies reveal varied patterns in teachers' use of educational technology. While traditional tools like Microsoft Office remain dominant, newer platforms like Canva are gaining popularity (Tomczyk et al., 2023).

Google Workspace, which includes tools like Google Docs, Sheets, and Slides, received a mean score of 2.93, interpreted as "Often Used." This suggests that many teachers are transitioning to cloud-based productivity tools but may still depend on Microsoft Office for more familiar functionalities. The use of Learning Management Systems (LMS) such as Google Classroom and Moodle had a mean score of 2.33, falling into the "Seldom Used" category. Despite being a critical platform for organizing digital content, this result indicates that LMS platforms are not yet fully embedded into regular teaching routines, possibly due to lack of institutional mandates, insufficient training, or perceived complexity. Students perceive Google Workspace as easy to use and beneficial for productivity, showing positive attitudes and intentions to continue using it (Emilzoli et al., 2025). However, Learning Management Systems (LMS) like Moodle and Google Classroom are not yet fully integrated into teaching routines. While Moodle is preferred by more experienced users for its complex features, Google Classroom is considered easier for beginners (Santiadi et al., 2024).

A range of interactive digital tools showed low utilization, including Kahoot! (2.27), Quizziz (2.33), Mentimeter (2.17), and Desmos/GeoGebra (2.00)—all categorized as "Seldom Used." These tools are typically used to support active learning and assessment but appear to be integrated only occasionally. The relatively lower scores suggest limited exposure, technical constraints, or subject-specific relevance as possible barriers to wider use. Comparative analyses of Kahoot and Mentimeter reveal differences in design and student engagement, emphasizing areas for improvement in computer and engineering education (Duvignau, 2025). Despite the benefits of digital tools in fostering student participation and personalized learning, faculty face challenges such as increased workload, limited institutional support, and inadequate training in digital pedagogy (Aldhilan et al., 2025).

On the other hand, several applications were found to be "Never Used" or barely utilized. These include Nearpod (1.60), Genially (1.53), Loom (1.53), and Edmodo (1.73). These platforms, while offering collaborative and multimedia capabilities, may be unfamiliar to many teachers or unsupported by school systems. For example, Genially and

Loom—which offer interactive content creation and video recording features, respectively—may require more intensive training or hardware that is not readily available to all instructors. Teachers find Nearpod and other Web 2.0 tools useful for promoting distance and collaborative learning, especially during the COVID-19 pandemic (Krouska et al., 2020). Nearpod's features cater to various learning styles, fostering socio-emotional learning, critical thinking, and learner agency (Caroy, 2023). However, challenges exist, including infrastructure readiness, digital access gaps, and the need for teacher training (Rukman et al., 2025; Caroy, 2023).

The data suggest that teachers heavily rely on traditional, general-purpose tools (e.g., Microsoft Office) and to a lesser extent on newer, interactive, or specialized platforms. Factors contributing to this trend may include digital literacy levels, availability of school infrastructure, administrative support, and training opportunities. The infrequent use of powerful teaching tools indicates missed opportunities for enhancing student engagement and fostering 21st-century learning skills.

These findings highlight the need for targeted capacity-building initiatives such as training workshops, resource allocation, and institutional encouragement to help teachers adopt and integrate a broader range of educational software. Promoting digital pedagogies and embedding them into professional development programs may bridge the gap between technology availability and effective instructional use.

B. Challenges in Using Software Applications

Senior High School teachers face various challenges in effectively utilizing software applications for instruction, with issues such as limited access to reliable devices and internet connectivity hindering their ability to integrate technology into teaching. Additionally, a lack of sufficient training and technical support further complicates the seamless adoption of educational software in the classroom. Table 2 highlights the various challenges faced by Senior High School teachers in utilizing software applications for instruction. These issues underscore the importance of addressing infrastructure, support systems, and professional development to improve technology integration in classrooms.

Table 2
Challenges in Using Software Applications

Indicators	Mean Score	Verbal Interpretation
Insufficient ICT Training or Skills	2.67	Moderately Experienced
Limited Equipment or Infrastructure	3.17	Moderately Experienced
Outdated Technology	2.73	Moderately Experienced
Technical Issues	2.87	Moderately Experienced
Time Constraints	3.17	Moderately Experienced
Lack of Technical Support	2.93	Moderately Experienced
Student Access Issues	3.47	Highly Experienced
Budgetary Constraints	3.47	Highly Experienced
Resistance to Change	2.77	Moderately Experienced
Lack of Administrative Support	3.17	Moderately Experienced

The analysis of the challenges encountered by Senior High School teachers in using software applications reveals that a wide range of issues are moderately to highly experienced. The most pressing challenges identified were Student Access Issues and Budgetary Constraints, both with a mean score of 3.47, and interpreted as Highly Experienced. These results indicate that many students lack access to reliable devices or stable internet connections at home, making it difficult for teachers to assign or implement technology-based tasks effectively. Likewise, limited financial resources within schools pose a significant barrier to acquiring software licenses, upgrading hardware, or securing adequate internet services—further constraining the digital teaching environment. Despite high access to technology in some schools, its use remains low due to various factors (Cuban et al., 2001). Teachers encounter difficulties such as poor internet connectivity, lack of support systems, and limited electronic resources (Del Mundo, 2022). Additionally, the absence of technology policies and maintenance issues hinder effective integration

(Ramorola, 2013). To address these challenges, comprehensive support mechanisms are needed, including financial assistance for device acquisition, improved internet infrastructure, and extensive teacher training programs (Cabasan, 2024). While technology integration can enhance digital skills and instruction levels (Del Mundo, 2022), its implementation often sustains existing teaching practices rather than transforming them (Cuban et al., 2001). Overcoming these obstacles is crucial for creating equitable and inclusive digital learning environments in senior high schools.

The rest of the challenges fall under the moderately experienced category. Among these are limited equipment or infrastructure, time constraints, and lack of administrative support, all with a mean of 3.17, suggesting that although these are not as severe as the top two concerns, they remain consistent obstacles for teachers. Inadequate computer labs, insufficient classroom technology, and time limitations for exploring or preparing digital tools contribute to the reduced frequency and depth of software integration. Moreover, the lack of institutional encouragement or policy-driven support for technology use may demotivate teachers from innovating their instructional practices. The integration of digital technology in education faces numerous challenges, as identified by several studies. Common barriers include limited infrastructure and equipment, lack of administrative support, and time constraints (Magtoltol & Oropa, 2025; Sailin, 2014). Teachers often struggle with insufficient training, inadequate technical support, and unstable internet connections (Magtoltol & Oropa, 2025).

Lack of Technical Support (2.93), Technical Issues (2.87), Outdated Technology (2.73), and Resistance to Change (2.77) also emerged as moderately experienced. These results highlight the need for responsive technical assistance, modernized devices, and change management strategies to help teachers transition confidently into digital pedagogies. Meanwhile, Insufficient ICT training or skills, with a mean of 2.67, suggests that while many teachers possess basic technological competencies, a gap remains in their ability to fully maximize software tools for teaching and learning. Research on digital tool usage in education reveals a complex landscape. Despite high access to technology, many teachers remain occasional users or non-users, often sustaining existing teaching practices rather than transforming them (Cuban et al., 2001).

Overall, the data clearly show that while teachers are open to the use of technology in instruction, they face several persistent systemic and contextual challenges. To enhance instructional delivery, it is essential for schools and education stakeholders to address both infrastructure and capacity-building needs through targeted investments, professional development, and supportive leadership. Research indicates that while integrating technology in education offers significant benefits, teachers face numerous challenges. Common barriers include limited technical support, inadequate infrastructure, and insufficient training (Magtoltol & Oropa, 2025).

C. Proposed training plan

Title: Empowering Educators: Enhancing Instructional Delivery Through Effective Use of Software Applications

The training plan is designed to be completed over a four-week period, with two sessions conducted each week. Each session will run for approximately 2.5 hours, providing sufficient time for both input and hands-on practice. The training follows a practical, activity-based format, emphasizing real-time application and peer collaboration rather than lecture-style delivery. In total, the program includes 12 structured sessions, each focusing on specific software tools and strategies aligned with actual classroom needs. This flexible duration ensures that teachers can engage deeply with the tools, practice creating outputs such as digital lesson plans and quizzes, and reflect on their learning through guided feedback and collaborative sharing. The schedule also accommodates teachers' regular workload, minimizing disruption to academic responsibilities while maximizing professional growth.

Session	Topic / Focus	Hands-On Activities	Expected Output	Tools / Apps Used

1	Digital Orientation & Baseline Assessment	- Pre-training digital skills self-assessment- Showcase common software used in SHS- Group discussion: challenges and expectations	Self-assessment result and training plan alignment	Google Forms, Google Slides
2	Document and Presentation Skills	- Create a lesson plan in Word- Design a slide presentation using PowerPoint or Google Slides- Share via Google Drive	Digitized lesson plan and class presentation	MS Office (Word, PPT), Google Slides
3	Google Workspace Application	- Collaborate on a shared Google Doc- Create and share materials in Google Drive- Conduct a live Google Meet session simulation	Collaborative learning resource shared in Drive	Google Docs, Drive, Meet
4	Interactive Visuals Creation	- Design an infographic or visual aid using Canva- Present output to peers for feedback	Printable/downloadable class visual material	Canva
5	Setting Up Google Classroom	- Create a class in Google Classroom- Upload learning materials- Simulate class announcements and assignments	Functional Google Classroom set up	Google Classroom
6	Gamified Quizzes & Formative Assessment	- Create a quiz using Kahoot! or Quizziz- Conduct a live game-based review session	Interactive class quiz with summary results	Kahoot!, Quizziz
7	Interactive Boards & Student Engagement Tools	- Set up a Padlet wall- Use Mentimeter for Q&A and polling- Test engagement during simulated class	Interactive digital board and live poll	Padlet, Mentimeter
8	Screen Recording & Video Lesson Creation	- Record a mini-lecture using Loom- Upload and share to Google Drive or Class	3-5 minute instructional video	Loom
9	Subject-Specific Tools (e.g., Math)	- Use Desmos or GeoGebra to create a math activity- Demonstrate usage in mock class	Interactive math activity/demo	Desmos, GeoGebra
10	Collaborative Reflection & Peer Teaching	- Peer demo: Each teacher presents using a tool of choice- Group feedback using rubric	Teacher-led digital lesson delivery	Any preferred tool
11	Planning for Integration	- Develop a 1-week tech-integrated lesson plan- Discuss classroom application strategies	Digital teaching plan draft	MS Word / Google Docs
12	Post-Training Assessment & Showcase	- Complete post-assessment survey- Exhibit selected digital outputs- Recognition and reflection sharing	Portfolio of created materials	Google Forms, Offline showcase

V. CONCLUSION

Based on the findings of the study, the following conclusions are drawn:

1. Senior High School teachers predominantly use traditional tools like Microsoft Office and Canva for classroom instruction, while more interactive platforms such as Google Classroom, Kahoot!, and Nearpod are seldom utilized, likely due to technical constraints, insufficient training, and perceived complexity.
2. Student access issues and budgetary constraints are the most pressing challenges faced by teachers, highlighting the disparity in students' access to reliable devices and internet connectivity, which significantly hampers the effective use of educational technology.

3. The proposed training program focused on professional development of teachers, training in digital pedagogy, and improved technical support to enhance the effective integration of educational software into instructional practices.

VI. RECOMMENDATIONS

Recommendations

In light of the findings and conclusions from this study, the following recommendations are endorsed:

1. There is a clear need for ongoing training programs focused on digital pedagogy and the effective use of educational software. Workshops should address both basic technical skills and the pedagogical benefits of interactive and cloud-based tools.

2. Schools should prioritize infrastructure improvements, including upgrading internet connectivity, increasing device availability, and investing in licensed software to ensure teachers have the tools needed for effective technology integration.

3. Educational institutions should establish policies that encourage the use of technology in classrooms. This includes offering incentives for teachers who successfully integrate digital tools and providing necessary technical support and resources to help teachers adopt new technologies.

VII. REFERENCES

[1] Aldhilan, D., Afzal, A., & Gul, F. (2025). The Digital Learning Paradox: Enhancing The Engagement Without Replacing Educators. Gomal University Journal of Research, 41(2), 129–142. https://doi.org/10.51380/gujr-41-02-02

[2] Alicar, C. B. (2014). Research methods and techniques. Great Books Publishing.

[3] Baharudin, S. N. a. B., Chandrasegaran, T. A., & Rajasegaran, D. D. A. (2024). Incorporating technology in classroom instruction: Challenges and Strategies. International Journal of Academic Research in Business and Social Sciences, 14(11). https://doi.org/10.6007/ijarbss/v14-i11/23074

[4] Blando, H. D. (2025). Bridging The Digital Divide: A Systematic Review Of Teacher Preparedness and Technology Integration In The Matatag Curriculum. Zenodo. https://doi.org/10.5281/zenodo.15113816

[5] Cabasan, R. A. (2024). Effective Technology Integration: Closing the Digital Gap among High School Students. Journal of Interdisciplinary Perspectives, 2(8). https://doi.org/10.69569/jip.2024.0295

[6] Caroy, A. A. (2023). A technology report on Nearpod. RELC Journal, 54(2), 551–560. https://doi.org/10.1177/00336882231153669

[7] Cheng, E. C. K., & Wang, T. (2023). Leading digital transformation and eliminating barriers for teachers to incorporate artificial intelligence in basic education in Hong Kong. Computers and Education Artificial Intelligence, 5, 100171. https://doi.org/10.1016/j.caeai.2023.100171

[8] *Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: Explaining an apparent paradox. American Educational Research Journal, 38(4), 813–834. https://doi.org/10.3102/00028312038004813*

[9] Del Mundo, H. J. C. (2022). 21st century digital skills, technology integration in instruction and challenges encountered by senior high school teachers in Muntinlupa National High School. International Journal Of Multidisciplinary Research and Analysis, 05(05). https://doi.org/10.47191/ijmra/v5-i5-35

[10] Duvignau, R. (2025). Kahoot vs. Mentimeter for Active learning in computer and engineering Education -- Who won? Who's next? ITiCSE 2025: Proceedings of the 30th ACM Conference on Innovation and Technology in Computer Science Education, 1, 214–220. https://doi.org/10.1145/3724363.3729086

[11] Emilzoli, M., Hernawan, A. H., Rullyana, G., & Priandani, A. P. (2025). The role of Google Workspace in facilitating collaborative and Participatory Learning higher education. Journal of Education Technology, 9(1). https://doi.org/10.23887/jet.v9i1.84112

[12] *Hunduma, C. M., & Seyoum, Y. (2023). Constraints Hindering ICT integration in Ethiopian public Secondary Schools: A literature review. International Journal of Membrane Science and Technology, 10(2), 691–702. https://doi.org/10.15379/ijmst.v10i2.1271*

[13] Krouska, A., Troussas, C., & Sgouropoulou, C. (2020). Usability and Educational Affordance of Web 2.0 tools from Teachers' Perspectives. PCI '20: Proceedings of the 24th Pan-Hellenic Conference on Informatics, 107–110. https://doi.org/10.1145/3437120.3437286

[14] Magtoltol, R., & Oropa, J. (2025). ICT landscape and digital literacy skills of basic education teachers. Journal of Interdisciplinary Perspectives, 3(6). https://doi.org/10.69569/jip.2025.173

[15] Ramorola, M. Z. (2013). Challenge of effective technology integration into teaching and learning. Africa Education Review, 10(4), 654–670. https://doi.org/10.1080/18146627.2013.853559

[16] Rukman, N. K., Susetyarini, E., Purwanti, E., Harahap, F. S., Fitri, S., & Infatsirin, I. (2025). A Systematic Literature Review on the Use of Nearpod for Interactive Learning. International Journal of Advanced Research, 13(06), 742–749. https://doi.org/10.21474/ijar01/21134

[17] Sailin, S. N. (2014). Barriers influencing teacher's technology integration in their teaching practice. Australian Journal of Basic and Applied Sciences, 1991–8178, 352–358. http://repo.uum.edu.my/21709/

[18] Santiadi, S., Majiah, A. T. P., Ruis, N. D. A., Annabel, K. F., & Karnalim, O. (2024). Analysis Perbandingan Moodle dan Google Classroom Menggunakan Technology Acceptance Model. Deleted Journal, 8(1), 13–19. https://doi.org/10.21460/jutei.2024.81.288

[19] Tomczyk, Ł., Limone, P., & Guarini, P. (2023). Evaluation of modern educational software and basic digital competences among teachers in Italy. Innovations in Education and Teaching International, 61(2), 355–369. https://doi.org/10.1080/14703297.2023.2173632

[20] Ukwandu, E., Omisade, O., Jones, K., Thorne, S., & Castle, M. (2025). The future of teaching and learning in the context of emerging artificial intelligence technologies. Futures, 103616. https://doi.org/10.1016/j.futures.2025.103616

[21] Wang, A. I., Knutsen, V. A., & Askestad, E. (2024). Balancing Enjoyment and Learning in Teaching Software Project Management with Game-Based Learning. Computers and Education Open, 7, 100226. https://doi.org/10.1016/j.caeo.2024.10022

[22] Wang, A. I., Knutsen, V. A., & Askestad, E. (2024). Balancing Enjoyment and Learning in Teaching Software Project Management with Game-Based Learning. Computers and Education Open, 7, 100226. https://doi.org/10.1016/j.caeo.2024.10022

[23] Wang, A. I., Knutsen, V. A., & Askestad, E. (2024). Balancing Enjoyment and Learning in Teaching Software Project Management with Game-Based Learning. Computers and Education Open, 7, 100226. https://doi.org/10.1016/j.caeo.2024.10022

[24] Wang, A. I., Knutsen, V. A., & Askestad, E. (2024). Balancing Enjoyment and Learning in Teaching Software Project Management with Game-Based Learning. Computers and Education Open, 7, 100226. https://doi.org/10.1016/j.caeo.2024.10022

[25] Wang, A. I., Knutsen, V. A., & Askestad, E. (2024). Balancing Enjoyment and Learning in Teaching Software Project Management

with Game-Based Learning. Computers and Education Open, 7, 100226. https://doi.org/10.1016/j.caeo.2024.10022

[26] Wang, A. I., Knutsen, V. A., & Askestad, E. (2024). Balancing Enjoyment and Learning in Teaching Software Project Management with Game-Based Learning. Computers and Education Open, 7, 100226. https://doi.org/10.1016/j.caeo.2024.10022

[27] Wang, A. I., Knutsen, V. A., & Askestad, E. (2024). Balancing Enjoyment and Learning in Teaching Software Project Management with Game-Based Learning. Computers and Education Open, 7, 100226. https://doi.org/10.1016/j.caeo.2024.10022

[28] Wang, A. I., Knutsen, V. A., & Askestad, E. (2024). Balancing Enjoyment and Learning in Teaching Software Project Management with Game-Based Learning. Computers and Education Open, 7, 100226. https://doi.org/10.1016/j.caeo.2024.10022

