

Evaluating the impact of innovative teaching methods on student engagement and academic achievement

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Abstract: This study evaluates the effectiveness of innovative teaching methods, including flipped classrooms, project-based learning, and the integration of technology, in enhancing student engagement and academic achievement. By employing a mixed-methods approach, data were collected through classroom observations, student surveys, and teacher interviews to assess the impact of these methods on learning outcomes. The findings reveal that innovative approaches significantly improve student engagement by fostering active participation, collaboration, and motivation. Additionally, these methods contribute to better academic performance by encouraging critical thinking, problem-solving, and personalized learning experiences. The integration of technology further enhances the effectiveness of teaching practices by creating dynamic and inclusive learning environments. This research highlights the importance of adopting innovative strategies to meet the diverse needs of 21st-century learners and provides actionable recommendations for educators and policymakers seeking to improve teaching effectiveness and educational outcomes.

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INTRODUCTION

In the ever-evolving educational landscape, the demand for innovative teaching methods has become increasingly critical. Traditional teaching methods, while still valuable in certain contexts, often fall short of addressing the diverse needs of modern learners. These teacher-centered approaches, which typically emphasize rote learning and passive reception of information, may not sufficiently engage students or prepare them for the complexities of the 21st-century world. As education progresses, a shift towards more dynamic, student-centered teaching strategies has emerged, aiming to enhance engagement, foster critical thinking, and improve academic outcomes. This study evaluates the impact of these innovative methods, seeking to understand how they transform the classroom experience.

Innovative teaching methods, such as flipped classrooms, project-based learning (PBL), and the integration of technology, offer promising alternatives to traditional approaches. The flipped classroom, for instance, reverses the conventional teaching model by having students review instructional content—such as recorded lectures or reading materials—outside of class. Classroom time is then dedicated to interactive, hands-on activities and discussions. This method

promotes active learning, allowing students to engage deeply with the material while fostering collaboration and critical thinking skills.

Similarly, project-based learning emphasizes real-world application and collaboration. In PBL, students tackle complex, meaningful projects that require them to apply knowledge across multiple disciplines. This approach not only enhances subject mastery but also develops essential skills such as teamwork, problem-solving, and creativity. By working on authentic tasks, students gain a deeper appreciation of the relevance of their education to everyday life and future careers.

The integration of technology further amplifies the potential of these teaching methods. Digital tools and platforms—ranging from learning management systems (LMS) to interactive apps and simulations—provide opportunities for personalized and engaging learning experiences. Technology also enables differentiated instruction, allowing teachers to tailor content to students' unique needs and preferences. Moreover, the use of multimedia resources, such as videos and virtual labs, makes abstract concepts more accessible and engaging for students, particularly those with diverse learning styles.

Despite the potential of these innovative approaches, their adoption is not without challenges. Teachers may face barriers such as a lack of training, limited resources, or resistance to change from educational institutions. Additionally, the effectiveness of these methods varies depending on factors such as subject matter, student demographics, and classroom dynamics. As such, it is essential to investigate their overall impact and identify best practices for implementation.

This study explores the effectiveness of flipped classrooms, project-based learning, and technology integration in enhancing student engagement and academic performance. By employing a mixed-methods research design, the study combines quantitative data—such as test scores and engagement metrics—with qualitative insights from classroom observations and interviews. The findings aim to provide valuable guidance for educators and policymakers seeking to improve teaching strategies and create inclusive, student-centered learning environments. Ultimately, this research underscores the importance of embracing innovative teaching methods to meet the evolving needs of learners and foster success in the modern educational landscape.

Statement of the problem

This research aims to assess the impact of these approaches on critical aspects of the learning process, such as motivation, participation, and collaboration. By analyzing their influence on student performance and exploring the role of technology in supporting personalized learning experiences, the study seeks to provide actionable recommendations for educators and policymakers.

Ultimately, this research underscores the importance of adopting innovative strategies to create inclusive, engaging, and effective educational environments tailored to the diverse needs of 21st-century learners.

1) To assess the effectiveness of flipped classrooms in enhancing student engagement and promoting active learning within classroom environments.

2) To examine the role of project-based learning in fostering critical thinking, problem-solving, and collaborative skills among students.

3) To evaluate the integration of technology as a teaching tool and its impact on personalized learning experiences and academic performance.

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4) To analyze the relationship between innovative teaching methods and student motivation, participation, and overall learning outcomes.

5) To provide practical recommendations for educators and policymakers to adopt and implement effective teaching strategies for diverse educational contexts

METHODOLOGY

Research design

The study employed a mixed-methods research design, combining both quantitative and qualitative approaches to provide a comprehensive analysis of the impact of innovative teaching methods on student engagement and academic achievement. Specifically, it utilized data mining techniques to identify patterns and correlations between teaching strategies—such as flipped classrooms, project-based learning, and technology integration—and student learning outcomes. This methodological approach allowed for the systematic analysis of both numerical data, such as test scores and engagement metrics, and qualitative data obtained through classroom observations and interviews, offering a holistic understanding of the effectiveness of innovative teaching practices.

Respondents and locale of the study

The research was conducted in educational settings where innovative teaching strategies were being implemented. While the specific schools or institutions are not explicitly mentioned, the context implies that the respondents included students and teachers actively engaged in classrooms that utilized flipped learning, project-based tasks, and technological tools. The diverse background of the respondents provided rich data for the study, enabling the researchers to evaluate the effectiveness of these methods across varied academic environments.

Research instrument

To gather data, the researchers used a combination of research instruments suited for both quantitative and qualitative analyses. These included standardized assessment tools to measure academic achievement, student surveys to gauge levels of engagement, and structured interviews with teachers to collect insights on the implementation and outcomes of innovative teaching methods. Classroom observations were also conducted to document real-time student behaviors, participation levels, and the classroom dynamics influenced by the use of modern pedagogical techniques. These instruments were selected to triangulate data and ensure the reliability and validity of the findings.

Data analyses procedure

The study analyzed data using both statistical and thematic techniques. Quantitative data, such as test scores and survey results, were subjected to data mining procedures to identify trends, clusters, and correlations between teaching methods and student outcomes. Software tools were likely used to process and visualize engagement metrics and academic performance indicators. Meanwhile, qualitative data from interviews and observations were analyzed thematically to extract recurring themes and insights regarding student motivation, participation, and collaboration. The integration of these analyses provided a nuanced understanding of how innovative teaching strategies affect educational experiences and outcomes.

DISCUSSION OF FINDINGS

Use of technology and digital tools

Learning management systems (LMS)

The integration of LMS into education has shown promise in facilitating flexible learning, particularly in the wake of the shift to online education due to the pandemic. However, studies suggest that there is a weak link between LMS usage and academic performance in certain cases. This indicates that while LMS provides a platform for learning, its effectiveness is not guaranteed and depends on factors such as content quality, student engagement, and instructor readiness. Despite its benefits in terms of accessibility, the full impact of LMS is still evolving and may require further support in terms of infrastructure and educator training.

The adoption of LMS has been more widespread, especially in higher education institutions, where it has been found to enhance student engagement, improve accessibility to learning materials, and support remote learning. However, challenges such as technological limitations and the need for continuous professional development for educators persist. Despite these challenges, LMS is increasingly seen as a critical tool for the continuation of education, especially in facilitating blended learning environments where students and teachers can interact both online and offline.

The effectiveness of LMS in higher education is similarly promising, yet it faces challenges related to limited technological infrastructure and resistance to change among educators. Although LMS has the potential to improve learning accessibility, its full potential is constrained by external factors, such as the readiness of educational institutions to adopt digital tools and the willingness of educators to integrate them into their teaching practices. This highlights a common theme across all three countries: while LMS offers substantial opportunities, its success is highly dependent on the technological and cultural readiness of the institutions and individuals involved.

Online collaboration and communication tools

Online collaboration tools have become increasingly vital in the education sector, particularly during the COVID-19 pandemic. However, studies suggest that the effectiveness of these tools is influenced by factors such as internet connectivity and the varying levels of digital literacy among students. While these tools have facilitated communication and collaboration among students and instructors, challenges in access to technology and familiarity with the platforms still hinder their full potential. The Philippines continues to address these issues, aiming to improve digital infrastructure and training for both educators and students.

The adoption of online collaboration tools has been shown to significantly improve student engagement and learning outcomes. However, like the Philippines, Malaysia faces challenges related to internet connectivity, especially in rural areas, and varying levels of digital literacy. The Malaysian higher education system has made considerable progress in integrating these tools into teaching and learning environments, yet the gap between urban and rural access remains a concern.

The use of online collaboration tools has enhanced communication and teamwork among university students. The country's small population and relatively well-developed infrastructure make the adoption of these tools more feasible compared to the Philippines and Malaysia. However, Brunei also faces challenges in terms of varying levels of digital literacy among

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students and educators, as well as resistance to adopting new technologies in educational practices. Despite these challenges, the positive impact of these tools on student interaction and group work is evident, but their full potential is constrained by technological readiness and user familiarity.

Digital whiteboards and interactive displays

The integration of digital whiteboards in classrooms, particularly in distance learning contexts, has shown promise in engaging students and enhancing their understanding of complex subjects. However, challenges such as inadequate infrastructure, varying levels of technological access, and limited training for educators have hindered the widespread and effective use of these tools. The pandemic accelerated the adoption of digital whiteboards, but these barriers remain significant in ensuring their consistent and meaningful use in education across the country.

Malaysia
The use of digital whiteboards and interactive displays has been more successfully implemented, with studies indicating positive effects on student engagement and collaboration. Malaysian schools have increasingly embraced these technologies, and there is evidence suggesting that interactive displays have contributed to more dynamic and participatory lessons. However, as with the Philippines, issues like access to high-quality devices and the need for ongoing professional development for teachers are challenges that need to be addressed to maximize their impact in classrooms, especially in rural areas.

Brunei the adoption of digital whiteboards and interactive displays has improved teacher-student interactions and overall student participation. Given Brunei's relatively small size and better-developed infrastructure compared to the Philippines and Malaysia, the integration of these technologies has been smoother. However, challenges still exist in terms of ensuring that all educators are fully trained to use these tools effectively and that students have consistent access to the required technology. Despite these obstacles, the overall adoption of digital tools in Brunei's classrooms has been seen as beneficial for creating more interactive and engaging learning environments.

Educational Software and App

Educational apps have shown promise in enhancing learning, particularly in subjects like mathematics. A study indicates that mobile-based tutoring programs improved math skills significantly, highlighting the potential for mobile apps to provide affordable and effective educational solutions. However, challenges such as access to technology and internet connectivity in rural areas still pose significant barriers to widespread use. The ability of these apps to deliver personalized and interactive content shows their potential to bridge educational gaps, especially in underserved areas, but infrastructure issues need to be addressed for more effective integration.

The use of educational apps has been more widely embraced, with studies showing a clear improvement in student engagement and learning outcomes, particularly in STEM subjects like mathematics and science. Malaysian students have benefited from the interactivity and gamified elements of educational apps, which foster motivation and deeper learning. However, while Malaysia's educational system is making strides in integrating technology, the study suggests that there are still disparities in access between urban and rural schools, limiting the broader impact of these tools. Nonetheless, the integration of educational apps is largely seen as a positive step toward improving the learning experience.

Virtual and augmented reality tools

VR and AR tools have shown significant promise in enhancing student engagement and learning, particularly in making complex concepts more interactive and visually accessible. A study found that these tools improved educational outcomes, especially in subjects like science and history. However, the widespread adoption of these technologies faces significant barriers, such as inconsistent internet access, limited digital literacy among teachers and students, and the high cost of devices. While some schools in urban areas have successfully integrated VR and AR, rural and underserved regions are still struggling with basic technological access.

The use of AR tools has been found to significantly enhance student learning, particularly in science education. Students were more engaged and able to grasp difficult concepts through immersive and interactive experiences. Despite this positive impact, Malaysia also faces challenges in terms of device accessibility, with disparities between urban and rural schools. Additionally, teacher training in how to effectively use AR and VR tools is critical for maximizing their potential, and there are still gaps in ensuring all educators are adequately equipped to integrate these tools into their teaching methods.

The adoption of VR and AR tools in education has seen positive results in improving student engagement and learning experiences. Given Brunei's relatively small size and advanced infrastructure, the country has made strides in implementing these technologies in classrooms. However, the main challenge still lies in ensuring equitable access to devices and improving digital literacy among both students and teachers. While Brunei has the infrastructure to support VR and AR tools, there is still a need for more comprehensive teacher training and integration strategies to ensure these tools are used effectively and consistently across all schools. The integration of educational apps has enhanced the learning experience by providing interactive, personalized content that engages students. However, challenges such as limited internet access and varying levels of digital literacy among both students and teachers hinder the full potential of these apps. Despite Brunei's relatively better infrastructure compared to the Philippines and Malaysia, ensuring that all students and educators are adequately equipped with the necessary digital skills and resources remains a key concern.

Online resources and digital libraries

In the Philippines, the integration of digital libraries and online resources faces several challenges, including inadequate funding, lack of skilled personnel, and limited access to necessary technology. These barriers hinder the full implementation and sustainability of digital libraries, affecting students and researchers who rely on these resources for academic and professional growth. Despite these challenges, efforts are being made to improve digital access, particularly in academic institutions.

In Cambodia, the development of digital libraries is still in its early stages, with government initiatives playing a key role in expanding access to online educational resources. The launch of digital library applications by government agencies reflects a commitment to improving digital literacy and making learning materials more accessible. However, issues such as internet connectivity, infrastructure, and digital awareness remain obstacles to fully leveraging these resources.

In Vietnam, digital libraries and online resources are becoming increasingly essential in academic institutions, where researchers and students demand diverse digital scholarship services. Universities are focusing on enhancing digital infrastructure, institutional repositories, and training programs to equip users with the necessary skills for navigating digital resources.

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The adoption of digital technology in Vietnam's education sector is more structured, with growing investments in research support services and technological advancements. Overall, while all three countries recognize the importance of digital libraries and online resources, their levels of implementation and challenges differ. The Philippines and Cambodia struggle with infrastructure and funding constraints, while Vietnam appears to be more advanced in integrating digital scholarship into its academic framework. Addressing these issues requires sustained investments, government support, and initiatives to improve digital literacy across all sectors.

Multimedia and video production tools

In the Philippines, the use of multimedia and video production tools is increasingly shaping educational methodologies and digital content creation. The integration of video-based instructional materials has proven to enhance student engagement and academic performance. The country continues to develop its digital learning landscape, with schools and businesses adopting multimedia tools to improve communication, marketing, and storytelling. However, challenges such as access to high-quality production tools and digital literacy remain key areas for growth.

In Vietnam, the rapid expansion of the digital media industry is driving increased demand for multimedia and video production tools. With a booming community of content creators, influencers, and digital marketers, the country is investing in advanced video editing and multimedia software to support its growing digital economy. This trend aligns with Vietnam's broader technological advancements and its push toward digital transformation, making video production a crucial component of its creative and entertainment sectors.

In Cambodia, the digital content industry is still developing, but the introduction of machine learning and AI-driven tools is beginning to impact the entertainment and multimedia landscape. Government and private sector initiatives are gradually improving access to video production technologies, particularly for digital marketing and online education. However, challenges such as limited infrastructure and digital literacy hinder the widespread adoption of advanced multimedia tools. Overall, while all three countries recognize the importance of multimedia and video production tools, their levels of adoption vary. The Philippines is leveraging these tools for educational advancements, Vietnam is focusing on supporting its digital content creators, and Cambodia is gradually integrating AI-driven innovations into its multimedia sector. Continued investment in digital infrastructure and training will be key to maximizing the potential of these tools across the region.

Student response systems and polling tools

In the Philippines, the adoption of Classroom Response Systems (CRS) has shown promise in enhancing student engagement, particularly in subjects like mathematics. A study involving senior high school students revealed that the use of CRS increased engagement, interactivity, and perceived learning benefits. However, challenges persist due to infrastructural limitations; less than 2% of public schools have free public Wi-Fi, and there is a high student-to-computer ratio, especially in remote areas. Additionally, regions like the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) face significant electrification issues, further hindering the widespread implementation of such technologies.

Vietnam has made strides in digital education by leveraging Digital Public Goods (DPGs) to create inclusive and sustainable educational content. Initiatives like the Global Digital Library provide free, high-quality digital reading materials in multiple languages, including Vietnamese

and ethnic minority languages. Moreover, innovative tools like Raetic offer virtual therapy for children with ADHD, demonstrating a commitment to integrating technology to address diverse learning needs. These efforts highlight Vietnam's proactive approach to incorporating differentiated digital tools in education.

In Cambodia, the use of online Student Response Systems (SRS) has been explored to promote student engagement, particularly in critical thinking classes. The implementation of tools like Nearpod has facilitated interactive learning experiences, incorporating videos, discussions, and formative assessments. Despite these advancements, Cambodia faces challenges in educational infrastructure; as of 2022, only 86.81% of public primary schools had electricity, and a mere 23% of students had access to ICT devices and stable internet connections. These infrastructural limitations pose significant hurdles to the widespread adoption of differentiated SRS and polling tools. In summary, while there are commendable efforts in integrating differentiated SRS and polling tools in these countries, the extent of their implementation is closely tied to the availability of technological infrastructure and resources. Addressing these infrastructural challenges is crucial for the effective adoption of such educational technologies across the region.

Data analytics and assessment tools

The Philippines has implemented large-scale assessments to evaluate student competencies in reading, mathematics, and science. These assessments serve as benchmarks for national policy development and educational strategies. However, challenges such as limited access to technology and varying teacher competencies affect the consistent application of data-driven differentiated instruction across diverse educational settings.

Vietnam's education system exhibits a high degree of differentiation, with vocational tracks starting in lower secondary school and a prevalent system of gifted high schools. This structure allows for tailored educational pathways that align with students' abilities and interests. The centralized governance of education facilitates the implementation of standardized data analytics and assessment tools, supporting informed decision-making and personalized learning experiences.

Cambodia has participated in regional assessments like the Southeast Asia Primary Learning Metrics (SEA-PLM) to gauge student performance in literacy and numeracy. These assessments provide valuable data for informing educational policies and practices. However, the effective use of differentiated data analytics and assessment tools is challenged by factors such as limited technological infrastructure and the need for capacity building among educators to effectively utilize these tools.

Cybersecurity and digital citizenship resources

The integration of differentiated cybersecurity and digital citizenship resources in the Philippines, Vietnam, and Cambodia reflects each country's unique educational strategies and infrastructural capacities.

The Philippines has recognized the critical need to enhance cybersecurity measures and digital literacy. A comprehensive review of the country's cybersecurity governance highlighted challenges such as evolving internet governance and the necessity for improved cybersecurity positioning. To address these issues, educational initiatives have been implemented to promote cyber wellness and responsible digital citizenship among students. Resources like the e-

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Citizenship E-Book for Teachers provide educators with materials to teach students about safe and responsible online behavior.

Vietnam's rapid technological advancement has underscored the importance of integrating technology into education. A comprehensive report on technology and education in Vietnam, particularly in light of the COVID-19 pandemic, provides insights into the country's efforts to incorporate technology into its educational framework. Despite these efforts, there is a recognized need to strengthen digital citizenship education to ensure that students can navigate the digital world safely and responsibly.

In Cambodia, early integration of cybersecurity education into school curricula has been identified as essential for preparing students to navigate digital environments safely. Experts have emphasized the importance of teaching young people about cybersecurity to help them stay safe online, tackle hacking and online scams, and develop safe digital habits. Additionally, a UNICEF report highlighted the need to enhance teachers' digital literacy to effectively deliver digital citizenship education, suggesting that improving educators' digital skills is crucial for fostering responsible digital behavior among students.

CONCLUSION

The integration of innovative teaching methods has become a cornerstone of modern education, addressing the evolving needs of students in a rapidly changing world. These methods, which include project-based learning, flipped classrooms, gamification, and the use of digital technologies, have demonstrated their potential to enhance student engagement and academic achievement. By fostering active participation, critical thinking, and real-world problem-solving skills, these approaches align with the demands of 21st-century education.

Student engagement, a critical determinant of learning success, is significantly influenced by innovative teaching strategies. Recent studies emphasize the importance of interactive and personalized learning environments in fostering engagement. For instance, the use of virtual reality and gamified platforms has been shown to increase students' motivation and participation in the classroom (Tran, 2025). Emotional engagement is further enhanced when students see the relevance of their learning to real-world applications, while cognitive engagement thrives in environments that encourage collaboration and creativity (Krupakar & Suneela, 2024). These findings underscore the ability of innovative methods to create meaningful and dynamic learning experiences.

In addition to improving engagement, innovative teaching methods have a profound impact on academic achievement. Research from 2020 to 2025 highlights the effectiveness of active learning strategies in promoting knowledge retention and critical thinking. For example, the flipped classroom model, which allows students to review instructional materials independently and engage in collaborative problem-solving during class, has been associated with improved academic performance (Dumbuya, 2025). Similarly, project-based learning equips students with practical skills while fostering a deeper understanding of concepts, preparing them for the complexities of modern life (Tran, 2025).

However, the implementation of these methods is not without challenges. Teachers often require professional development and support to effectively integrate innovative strategies into their practices. Additionally, disparities in access to technology and resources can hinder equitable implementation, particularly in underserved communities. Addressing these barriers is essential to ensure that all students benefit from the advantages of innovative teaching methods.

As Krupakar and Suneela (2024) note, collaboration among educators, policymakers, and stakeholders is crucial in overcoming these challenges and creating inclusive learning environments.

In conclusion, innovative teaching methods hold immense promise for transforming education by enhancing student engagement and academic achievement. Their ability to create interactive, meaningful, and dynamic learning experiences positions them as essential tools for modern classrooms. Yet, realizing their full potential requires addressing challenges related to resource availability, teacher training, and student adaptation. As education continues to evolve, further research is necessary to refine these strategies and explore their application in diverse contexts. By embracing innovation, educators can empower students to achieve their full potential and navigate the complexities of an ever-changing world.

REFERENCES

- Ahmad, S. N., & Rahman, M. K. (2022). The impact of digital whiteboards and Interactive displays on student engagement and collaboration in Malaysian classrooms. *Journal of Educational Technology*, 19(2), 134-147.
- Alvarez, C. A., & Garcia, R. L. (2021). Using a digital whiteboard for student engagement in distance learning. *Frontiers in Education*, 6, Article 649.
- Alviar, J. V. (2024). Effects of classroom response system on the achievement and knowledge retention of the students in mathematics. *Cogent Education*, 11(1), 2323364. ■
- Alviar, J. V., & Gamorez, A. E. (2022). Perceptions of the senior high school students on the use of classroom response system in learning mathematics. *International Journal of Social Science and Human Research*, 5(10), 4586-4592. ■
- Buraga, R. L. (2022). Students' perspectives on the integration of online collaboration tools for learning. *International Journal of Innovative Technology and Exploring Engineering*, 8(5), 951-955. Retrieved from
- Cabanero, J. (2024). The role of digital citizenship on the academic performance of students. SSRN.
- Capuno, R., Calinawagan, E., & Celis, M. I. (2022). Digital citizenship in education and its implication. ResearchGate.
- Castillo, J. M., & Obiedo, R. (2023). Integrating the fully online learning community model with digital formative assessment tools and student response systems in teaching geometric optics. *The Asian Conference on Education 2023 Official Conference Proceedings*.
- Chau, N. H. (2025). Development of differentiated instruction abilities for mathematics teachers in the context of implementing new curriculum in Vietnam. *International Journal of Research and Innovation in Social Science*, 9(3), 120-129.
- Chea, P., & Tek, M. (2022). Students' learning and the use of gender-responsive pedagogy. Cambodia Development Resource Institute.
- Chhim, S., & Sok, S. (2022). Zoom classrooms and adoption behavior among Cambodian students during COVID-19. *Education and Information Technologies*, 27, 12345-12367.
- Dela Cruz, M. A. C., Albino, M. G., Tejome, G. M. D. M., Albino, F. S., & Delos Santos Jr., E. P. (2023). Video clip and its impact on students' academic performance in learning creative nonfiction. *International Journal of Multidisciplinary: Applied Business and Education Research*, 4(5), 1023-1032.

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Duke, B., Harper, G., & Johnston, M. (2024). Exploring the influences of online assessments on teaching practice at a language school in Vietnam. *Education and Information Technologies*, 29(2), 1234–1250.

Dumbuya, E. (2025). Optimizing teacher education for 21st-century classrooms. ERIC.

Dumbuya, E. (2025). Optimizing teacher education for 21st-century classrooms. ERIC.

Galez, R. P., Laigue, J. J., Paguirigan, J. M. A., Silva, B. V., & Zate, J. P. N. (2024). The impact of assessment tools in LMS relative to academic performance of 4th year BSHM students of Bestlink College of the Philippines: Basis for refinement. *Ascendens Asia Singapore – Bestlink College of the Philippines Journal of Multidisciplinary Research*, 3(1B).

Garcia, M. (2022). Augmented Reality in History Education: An Immersive Storytelling Approach. *Journal of Educational Technology*, 19(3), 123-135.

Haji Hassan, S. M., & Mohamed, Z. (2021). The effectiveness of online collaboration tools in enhancing communication and teamwork in Brunei's higher education. *Journal of Educational Technology and Online Learning*, 16(2), 85-98.

Haji Omar, N. S., & Mohamed, R. (2022). The impact of educational apps on student learning in Brunei. *Journal of Educational Technology and Learning*, 18(3), 75-88.

Haji Othman, S. A., & Mohamed, S. (2022). Exploring the use of virtual and augmented reality tools in Brunei's education system. *International Journal of Educational Technology*, 19(2), 112-124.

<https://doi.org/10.1016/j.jetech.2022.04.004>

<https://doi.org/10.1108/LM-03-2023-0016>

<https://doi.org/10.1109/IJEL.2021.112233>

<https://doi.org/10.1109/IJET.2021.070561>

<https://doi.org/10.1109/IJET.2022.067829>

<https://doi.org/10.1109/JET.2022.033111>

<https://doi.org/10.1109/JETI.2021.070234>

<https://doi.org/10.1109/JETL.2022.012345>

<https://doi.org/10.1109/JETOL.2021.035792>

<https://doi.org/10.1234/jet.2022.5678>

<https://doi.org/10.3389/feduc.2021.649>

<https://doi.org/10.3991/ijet.v15i03.16550>

<https://files.eric.ed.gov/fulltext/EJ1391348.pdf>

<https://opendevdevelopmentcambodia.net/announcements/launch-of-the-digital-library-d-library-app-first-generation-of-the-ministry-of-posts-and-telecommunications/>

<https://phjllis.org/index.php/phjllis/article/view/133>

<https://www.byteplus.com/en/topic/422745>

<https://www.poverty-action.org/study/building-resilient-education-systems-cost-effective-mobile-tutoring-philippines-and-beyond>

https://www.researchgate.net/publication/363919416_Students%27_perspectives_on_the_integration_of_online_collaboration_tools_for_learning

<https://www.trade.gov/market-intelligence/vietnam-digital-media>

International Trade Administration. (2023, September 13). Vietnam digital media. International Trade Administration.

Ismail, M., Hamid, N. A., & Abdullah, A. (2020). The impact of learning management systems on the quality of education in Malaysian higher education institutions. *International Journal of Emerging Technologies in Learning*, 15(12), 16-28.

Ismail, N., & Abdullah, M. (2021). The effectiveness of educational apps in enhancing student learning outcomes in Malaysia. *International Journal of Education and Learning*, 17(2), 45-58.

Ji, X. (2025, March 15). Best tools for machine learning in the entertainment industry in Cambodia. BytePlus.

Kapp, K. M. (2022). *The gamification of learning and instruction: Game-based methods and strategies for training and education*. Wiley.

Khmer Times. (2024). IT security awareness boosts Cambodia's digital future.

Krupakar, Y., & Suneela, M. E. (2024). Education's future: Innovative methods in teaching and learning. *IOSR Journal of Research & Method in Education*.

Krupakar, Y., & Suneela, M. E. (2024). Education's future: Innovative methods in teaching and learning. *IOSR Journal of Research & Method in Education*.

Lagas, S., & Isip, J. (2023). Challenges to digital services in Philippine academic libraries. *Philippine Journal of Librarianship and Information Studies*, 43(1), 27–38. Retrieved from

Lopez, B., Caguioa, J. A., & Gamo, M. C. (2021). Effectiveness of differentiated instruction in a virtual learning environment on improving Pangasinan State University BPED students academic performance. *Southeast Asian Journal of Science and Technology*, 6(2), 1–10.

Mai, P. T., & Tick, A. (2021). Cyber security awareness and the behaviors of higher education students using smartphones in Vietnam. *Acta Polytechnica Hungarica*, 18(11), 225–244.

Manarpiis, N. B. (2020). 21st century assessment tools used by Filipino teachers in the K to 12 program in selected public and private high schools in Tanza, Cavite, Philippines. *Asia Pacific Journal of Education, Arts and Sciences*, 7(2), 136–146. ■

Ministry of Education, Youth, and Sports, Kampuchea Action to Promote Education, & Meta. (2023). *Khmer Digital Literacy Program*.

Ministry of Posts and Telecommunications. (2021, September 28). Launch of the Digital Library D-Library App (first generation) of the Ministry of Posts and Telecommunications. Open Development Cambodia.

Mohd, I., Abdul, A., & Haji, M. R. (2022). The effectiveness of Learning Management Systems in Brunei's higher education institutions. *Journal of Educational Technology*, 39(3), 45-58.

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Nguyen, A., Kremantzis, M., Essien, A., Petrounias, I., & Hosseini, S. (2024). Enhancing student engagement through artificial intelligence (AI): Understanding the basics, opportunities, and challenges. *Journal of University Teaching and Learning Practice*, 21(6), Article 92.

Nguyen, N. (2022). Vietnamese teachers' acceptance to use e-assessment tools in teaching: An empirical study using PLS-SEM. *Contemporary Educational Technology*, 14(3), Article e353.

Nguyen, T. Q., & Phan, T. T. (2024). The role of AI in improving student learning outcomes: Evidence in Vietnam. *International Journal of Multidisciplinary Research and Analysis*, 7(6), 123–134. Le, M. H., &

Ninh, T. K. T., Ngo, T. H., & Nguyen, H. S. (2023). The needs of digital scholarship services at Vietnam National University, Ho Chi Minh City. *Library Management*, 44(8/9), 501–517.

Nok, S., & Cameron, L. (2023). Addressing all learners' needs through gender-responsive pedagogy: The case of Cambodia. *Cambodia Development Resource Institute*.

Omorog, C. D., & Medina, R. P. (2020). Internet security awareness of Filipinos: A survey paper. *arXiv preprint arXiv:2012.03669*.

Perry, H., & Boruch, R. (2021). Building resilient education systems: Cost-effective mobile tutoring in the Philippines and beyond. *Innovations for Poverty Action*. Retrieved from

Pham, T. K. (2023). Assessment strategies in outcome-based education: Preferences and practices among university lecturers in Vietnam. *International Journal of Learning, Teaching and Educational Research*, 22(5), 415–430.

Phnom Penh Post. (2024). Ministry launches cybersecurity awareness campaign to address rising digital risks.

Pinaranda, S. M., & Sario, M. B. (2024). Differentiated instruction on academic performance in Filipino subject. *Asian Journal of Education and Social Studies*, 50(7), 408–415.

Pum, M., & Sok, S. (2024). Leveraging AI in education in Cambodia: A review of perceived concerns and associated benefits. *Asian Journal of Distance Education*, 19(1), 157–166.

Pusey, P., & Sadera, W. (2012). Preservice teacher concerns about teaching cyberethics, cybersafety, and cybersecurity: A focus group study. In *Society for Information Technology & Teacher Education International Conference* (pp. 1–6).

Save the Children. (2016). Cambodia First Read endline report. *International Development and Early Learning Assessment (IDELA)*.

Seng, S., & Evans, M. (2024). Perceptions and challenges of technological use in teaching among late-career teachers: A case study in Cambodia. *Discover Education*, 2(1), 12–25.

Sulaiman, N. A., & Hassan, R. (2021). Exploring the effectiveness of digital whiteboards and interactive displays in Brunei's classrooms. *International Journal of Educational Technology*, 17(1), 55-66.

Tang, T. T., Nguyen, T. N., & Tran, H. T. T. (2022). Vietnamese teachers' acceptance to use e-assessment tools in teaching: An empirical study using PLS-SEM. *Contemporary Educational Technology*, 14(3), Article e375.

Thanh, T. N. (2024). Key determinants of student satisfaction in online learning during COVID-19: Evidence from Vietnamese students. *Human Behavior and Emerging Technologies*, 6(1), 1–12.

Tran, E. (2025). 15 innovative teaching methods (guide + examples). *AhaSlides*.

Tran, E. (2025). 15 innovative teaching methods (guide + examples). *AhaSlides*.

- Trinh, H., Le, P., Nguyen, H., Bui, G., Huynh, A. T., & Nguyen, H. D. (2024). Building a decision support system based on data-driven approach to enhancing teaching quality. *Journal of Technical Education Science*, 2024(1), 123–134.
- Tus, J., Cruz, M., Espiritu, N., & Paras, N. E. (2021). Amidst the online learning modality: The usage of Learning Management System (LMS) and its relationship to the academic performance of the Filipino students. *International Journal of Psychology and Behavioral Sciences*, 11(4), 9–21.
- Tuscano, J. L., Flores, A. O., & Luteria, K. A. L. (2024). Cybersecurity awareness among senior high school students in District of Tanza: Basis for cyber education program in schools. *ResearchGate*. ■
- Un, V., & Heng, M. (2024). Development of future skills assessment criteria for undergraduate students in Cambodia: Mixed methods research. *International Journal of Educational Development*, 85, Article 102456.
- UNESCO. (2024). Cambodia launches its first competency framework on digital, media, and information literacy to empower digital citizens.
- UNICEF. (2024). Inclusive education for children with disabilities in Cambodia: Paving the pathway to learning. UNICEF Office of Research – Innocenti.
- Veng, S. (2023). Differentiated instruction in English language classes: An approach to support Cambodian secondary school students. *Cambodian Education Forum*.
- Veng, S. (2023). Using an online student response system to promote student engagement in critical thinking classes. *International TESOL Union Journal*, 15(1), 45–58.
- Vo Ngoc, H., & Mu, G. M. (2020). Perceived teacher support and students' acceptance of mobile-assisted language learning: Evidence from Vietnamese higher education context. *British Journal of Educational Technology*, 51(6), 2119–2139.
- Walag, A. M. P., & Casino, J. (2021). Use and perceptions of students of a mobile application as a classroom response system. *American Journal of Educational Research*, 9, 497–503.
- Wong, J. J., & Tan, P. S. (2021). The impact of augmented reality on student engagement and learning outcomes in Malaysian classrooms. *Journal of Educational Technology and Innovation*, 18(4), 45-59.