

Integration of Technology in Teaching Filipino to College Students: A Case Study of Effective Practices

Ronnie B. Rubi

Bicol State College of Applied Sciences and Technology, Naga City, Philippines

Contact: 09388657651, E-mail: ronbrubz@gmail.com

KEYWORDS Digital Tools. Language. Multimedia. Teaching Challenge

ABSTRACT This study explores the integration of technology in teaching Filipino to college students, aiming to identify effective practices, challenges faced by educators, and the impact on student engagement and learning outcomes. Through a case study approach, the research examines how educators utilise digital tools and platforms to enhance Filipino instruction, focusing on interactive resources, multimedia, and collaborative technologies. Findings indicate that technology significantly boosts student engagement, improving retention and participation, while also fostering better learning outcomes through instant feedback and accessible resources. However, challenges such as technical issues, limited device access, and distractions were noted. The study recommends ongoing professional development for educators, investment in infrastructure, and a balanced approach to blending traditional and digital teaching methods. These insights contribute to optimising technology use in Filipino classrooms, promoting a more engaging and effective learning environment for students.

INTRODUCTION

In the 21st century, the integration of technology in education has become a global imperative, transforming traditional pedagogical approaches and enriching the teaching-learning experience. The increasing reliance on digital tools has shifted how educators deliver content, engage learners, and assess outcomes. The United Nations Sustainable Development Goal 4 emphasises quality education and highlights the role of technology in achieving inclusive and equitable learning opportunities (United Nations 2015). Across the globe, educational systems are adapting to this shift, investing in digital infrastructures, teacher training, and innovative pedagogies to prepare students for a technology-driven world (De Chavez et al. 2025).

In the Philippines, the Department of Education (DepEd) has been at the forefront of promoting technology-enhanced learning. The implementation of initiatives such as the Digital Rise Program underscores the government's commitment to leveraging Information and Communication Technology (ICT) to enrich instruction and improve learning outcomes (Digital Rise Program: Enhancing ICT Integration in Philippine Education 2019). Central to this vision is the integration of technology in subject areas that form the core of the K-12 curriculum, including Filipino. As the national language, Filipino plays a vital role in fostering national identity, cultural appreciation, and commu-

nication skills. Integrating technology into its instruction ensures that the teaching of Filipino remains relevant and responsive to the needs of 21st century learners (Lamorinas et al. 2024).

The rapid advancements in educational technology offer numerous benefits, such as facilitating differentiated instruction, enhancing student engagement, and providing access to diverse resources. Interactive applications, multimedia tools, and online platforms have proven effective in making language learning more dynamic and student-centred. These tools also address the diverse learning preferences of students, allowing them to acquire knowledge at their own pace. However, the success of technology integration relies on more than just access to tools, as it requires innovative and effective practices that align with pedagogical goals and the specific needs of the subject being taught (International Commission on the Futures of Education 2021).

Despite the widespread recognition of technology's potential in education, there is limited research focusing specifically on its integration in teaching Filipino. While existing studies have explored the broader implications of technology in education (Mishra and Koehler 2006; Schrum and Levin 2013), the unique challenges and opportunities presented in teaching Filipino as a language and cultural subject remain underexplored. Filipino teachers often face unique contextual barriers, including limited resources, inadequate infrastruc-

ture, and a lack of training specific to language teaching with technology (Nettey et al. 2024; Tomaro 2018). These challenges are compounded by resistance to change among some educators and learners, further hindering the adoption of innovative practices.

Furthermore, most frameworks for technology integration in education, such as the Technological Pedagogical Content Knowledge (TPACK) model, are generalised and do not address the particular requirements of teaching Filipino (Harris et al. 2009). The teaching of Filipino involves not only language acquisition but also the promotion of cultural awareness and critical thinking, which necessitates strategies that go beyond conventional methods. Teachers must find ways to integrate technology while preserving the cultural and linguistic integrity of the subject. Existing literature highlights the gap in identifying and documenting effective practices that can guide Filipino teachers in overcoming these challenges and optimising the use of technology in their classrooms.

This study seeks to address these gaps by documenting and analysing effective practices in the integration of technology in teaching Filipino. Through a case study approach, it aims to provide a comprehensive understanding of how educators successfully incorporate technology into their teaching strategies, navigate challenges, and create impactful learning experiences for their students. By focusing on practical and context-specific solutions, this research will shed light on the ways in which technology can enhance language instruction while maintaining the cultural richness and relevance of the Filipino subject.

The findings of this study will contribute to the growing body of literature on technology integration in education and serve as a valuable resource for educators, policymakers, and stakeholders. It will provide actionable insights and recommendations to help Filipino teachers harness the potential of technology to address the evolving needs of their learners. Additionally, it will inform professional development programs and policy initiatives aimed at fostering effective technology integration in Filipino classrooms. Ultimately, this study aspires to bridge the gap between technological advancements and pedagogical practices, ensuring that the teaching of the Filipino language evolves in step with the demands of a globalised and digitalised world.

Objectives of the Study

This study seeks to explore the effective practices in integrating technology in teaching Filipino for college students. Furthermore, the study seeks to explore how educators overcome challenges in using technology in Filipino classrooms, analyse the impact of technology integration on student engagement and learning outcomes in Filipino. Lastly, based on the findings provide recommendations to optimise technology use in teaching Filipino.

MATERIAL AND METHODS

The study employed a qualitative case study design to gain an in-depth understanding of the integration of technology in teaching Filipino. Case studies are particularly effective for exploring complex phenomena within real-life contexts (Yin 2017). This approach enables the researcher to document specific practices, analyse challenges, and assess their resolutions while capturing the nuances of technology's impact on teaching and learning.

The research was conducted in a state college of the Bicol Region, Philippines, focusing on Filipino courses. Participants include Filipino educators, college students, and administrators. Specifically, a purposive sample of 5 college instructors proficient in integrating technology into their Filipino lessons were selected, along with a focus group of 12 students enrolled in Filipino courses from the four departments of the college. Additionally, key personnel supporting technology integration in instruction were also interviewed. Participants were chosen through purposive sampling to ensure the richness and relevance of the data collected (Creswell and Poth 2018).

Data collection involved four primary methods, that is, semi-structured interviews, focus group discussions (FGDs), and classroom observations. Semi-structured interviews were conducted with educators to explore their teaching practices, challenges, and strategies for overcoming obstacles, as well as their perceptions of technology's impact on student engagement and learning outcomes. Administrators and IT staff were also interviewed to gain insights into institutional support, policies, and technological infrastructure. FGDs with students were conducted to gather perspectives on their experiences with technology-enhanced Fili-

pino instruction, engagement, and learning outcomes. Classroom observations documented real-time practices in technology integration, focusing on tools, teaching strategies, and student interactions.

Thematic analysis was employed to analyse the qualitative data, following the framework proposed by Braun and Clarke (2006). This process involves familiarisation with the data through reviewing transcripts and field notes, coding significant data points, grouping codes into overarching themes, and interpreting the themes in relation to the study's objectives. To ensure data validity, triangulation will be used by cross-verifying information from multiple sources (Denzin 2018).

Ethical considerations are central to this study. Participants were briefed about the study's objectives and procedures, and informed consent was obtained prior to participation. Pseudonyms were used, and data were securely stored to ensure confidentiality. Participation was voluntary, and participants were told they may withdraw at any time without repercussions. Ethical clearance was also secured from the relevant institutional review board to uphold research integrity.

RESULTS

Presented in Table 1 are the effective practices in integrating technology in teaching Filipino for college students.

Use of Multimedia Tools

The use of multimedia tools such as videos, interactive slides, and language-learning apps emerged as a cornerstone practice in integrating technology into Filipino teaching. Teachers leverage these tools to make lessons engaging, improve comprehension, and deepen students' appreciation of Filipino culture. For instance, videos show-

casing cultural festivals or traditional Filipino folktales provide visual and auditory stimuli, which enhance students' understanding of language nuances.

One participant shared, "*Kapag gumagamit kami ng videos, mas nakikita ng mga estudyante ang kaugnayan ng wikang Filipino sa kanilang kultura. Nakakatulong ito na maengganyo sila sa klase.*" (When we use videos, students better see the connection of the Filipino language to their culture. This helps in encouraging them to participate in class).

Gamification

Gamified platforms such as Kahoot and Quizlet are widely used to boost student motivation and engagement. These tools turn language learning into an interactive and competitive experience, encouraging active participation. For example, using a Kahoot quiz on Filipino idiomatic expressions fosters retention by making the process enjoyable.

One teacher noted, "*Kapag nagkakarawit nang mga quiz games arog kang Pinoy Henyo, hindi nila napapansin na natututo na sila. Mas natatandaan nila ang mga leksyon.*" (With games like Pinoy Henyo, they do not realize they are already learning. They remember the lessons better).

Blended Learning Approaches

The combination of face-to-face and online learning modalities provides flexibility and ensures that students can access materials beyond classroom hours. Teachers often supplement in-class activities with online exercises, allowing students to learn at their own pace.

A respondent explained, "*Napansin ko na mas nagiging independent ang mga estudyante kapag may access sila sa online materials. Mas may panahon silang mag-review ng mga leksyon.*" (I noticed that students become more independent when they have access to online materials. They have more time to review lessons).

Table 1: Effective practices in integrating technology in teaching Filipino

Themes	Key findings
Use of multimedia tools	Teachers use videos, interactive slides, and language-learning apps to enhance comprehension and cultural appreciation.
Gamification	Platforms like Kahoot and Quizlet are utilised to motivate and engage students in learning Filipino.
Blended learning approaches	Combining face-to-face and online learning provides flexibility, improving access to materials.
Language learning platforms	Digital tools like Duolingo or local Filipino apps are integrated for vocabulary and grammar enhancement.

Language Learning Platforms

The integration of digital tools such as Duolingo or locally developed Filipino apps aids in vocabulary building and grammar enhancement. These platforms provide immediate feedback and personalised learning pathways, addressing students' individual needs. One participant remarked, "*Ang mga language apps tulad ng Duolingo ay malaking tulong sa pag-aaral ng mga bata ng mga bagong salita at tamang gramatika.*" (*Language apps like Duolingo are a big help in teaching students new words and correct grammar*).

Presented in Table 2 are the challenges in using technology in Filipino college classrooms.

Technical Issues

Technical issues, such as unreliable internet connectivity and limited access to devices, are prevalent challenges in integrating technology into Filipino college classrooms. These problems are more pronounced in rural areas where technological infrastructure is underdeveloped. To address this, educators prepare offline content and low-bandwidth materials, such as downloadable modules and pre-recorded video lessons, ensuring that students can continue learning even with limited resources.

One participant noted, "*Hindi maiiwasan ang problema sa internet, lalo na sa probinsya. Kaya naghahanda kami ng offline materials para sigurado pa rin ang pagkatuto ng mga estudyante.*" (*Internet problems are unavoidable, especially in the provinces. That's why we prepare offline materials to ensure students can still learn*).

Digital Literacy Gaps

Another challenge is the varying levels of digital literacy among both educators and students. Many lack the technical skills to effectively use

digital tools for teaching and learning. To bridge this gap, institutions have implemented workshops and training sessions that focus on enhancing digital competencies.

One educator shared, "*Marami sa amin ang hirap gumamit ng mga bagong teknolohiya, pero malaking tulong ang training sessions na ibinibigay ng aming paaralan.*" (*Many of us struggle with using new technologies, but the training sessions provided by our school are a big help*).

Content Adaptation

The lack of readily available culturally relevant and curriculum-aligned digital resources forces educators to create or adapt materials. Teachers spend additional time developing content that reflects Filipino culture and literature while aligning with pedagogical goals.

One participant explained, "*Kulang ang mga materials na nakalap sa kultura natin, kaya kadalasan kailangan naming gumawa ng sarili naming mga resources.*" (*There is a lack of materials that are rooted in our culture, so we often have to create our own resources*).

Resistance to Change

Resistance to adopting technology remains a significant hurdle, particularly among educators who are more accustomed to traditional teaching methods. This resistance stems from unfamiliarity, perceived complexity, or fear of failure. Mentoring programs and the demonstration of tangible benefits have been effective in reducing this resistance and fostering a positive attitude toward technology integration.

One educator stated, "*Noong una, ayoko talagang gumamit ng technology kasi nakakapanibago at parang komplikado. Pero nang makita ko kung paano nito napapadali ang pagtuturo,*"

Table 2: Challenges in using technology in Filipino college classrooms

Themes	Key findings
Technical issues	Offline content preparation and use of low-bandwidth materials address unreliable internet and device limitations.
Digital literacy gaps	Workshops and training sessions for both educators and students improve competency in using digital tools.
Content adaptation	Teachers create or adapt digital materials to ensure cultural and curricular relevance.
Resistance to change	Mentoring programs and showcasing benefits reduce resistance among educators and students.

naengganyo na rin ako.” (At first, I really didn’t want to use technology because it felt new and complicated. But when I saw how it made teaching easier, I became more motivated).

Table 3 presents the impact of technology integration on student engagement and learning outcomes.

Increased Engagement

The integration of technology in teaching Filipino has significantly increased student engagement. Interactive activities, such as quizzes and games, along with multimedia tools like videos and animations, create an engaging learning environment that fosters active participation. These tools capture students’ attention and make learning enjoyable, reducing boredom and disengagement in class.

One teacher shared, “*Kapag gumagamit kami ng interactive tools, mas nakilahok ang mga estudyante sa mga talakayan at aktibidad.*” (When we use interactive tools, students are more involved in discussions and activities).

Improved Learning Outcomes

Technology-driven lessons have led to notable improvements in student performance, particularly in grammar, reading comprehension, and oral skills. The use of language-learning apps, interactive grammar exercises, and multimedia storytelling provides diverse opportunities for students to practice and apply their knowledge.

A student remarked during the interview, “*Mas madali kong natutunan ang tamang gramatika gamit ang mga apps na nagbibigay ng instant feedback.*” (I learned proper grammar more easily using apps that provide instant feedback).

Enhanced Accessibility

Digital resources have made learning more accessible by providing students with 24/7 access to materials. This allows for independent, self-paced learning, which is particularly beneficial for students who require additional time to grasp complex concepts or who need to revisit lessons for reinforcement.

One participant shared, “*Ang mga estudyante ko ay may pagkakataong balikan ang mga materyal sa oras na gusto nila. Natututo sila sa sar-*

ili nilang bilis.” (My students have the opportunity to revisit materials whenever they want. They learn at their own pace).

Collaborative Learning

The integration of tools like Google Workspace fosters collaborative learning by enabling group activities and improving teamwork and communication skills. Features such as shared documents, real-time editing, and virtual meetings encourage students to work together effectively, even outside the classroom.

One educator explained, “*Napansin ko na mas nagiging maayos ang komunikasyon ng mga estudyante kapag gumagamit kami ng collaborative tools tulad ng Google Docs.*” (I noticed that students communicate better when we use collaborative tools like Google Docs).

DISCUSSION

As shown in Table 1, the practice of using multimedia tools aligns with Mayer’s Cognitive Theory of Multimedia Learning, which posits that individuals learn more effectively when information is presented through both verbal and visual modalities (Mayer 2024). The integration of multimedia also resonates with findings from Varona (2022), who emphasised the importance of contextualised digital materials in enhancing language learning outcomes.

In the same manner the effectiveness of gamification in learning is well-documented in literature. Li et al. (2023) highlighted that gamification enhances intrinsic motivation and engagement, which are critical for effective language acquisition. The Filipino context underscores this further, as interactive methods cater to students’ preferences for collaborative and playful learning environments.

Blended learning supports the principles of constructivism, which emphasise the role of learners in constructing their own knowledge through exploration and interaction (Vygotsky 1978). Studies by Anthony Jnr et al. (2022) demonstrated that blended learning is particularly effective in Philippine higher education, as it accommodates diverse learning paces and styles.

Furthermore, the use of language learning platforms supports the concept of microlearning, where

learners engage in short, focused activities tailored to specific objectives. According to studies, digital platforms enable self-directed learning and enhance language proficiency by providing interactive, on-demand resources (Adelakun 2023; Kabel and Messabis 2024).

Table 2, on the other hand, exhibited challenges in integrating technology. Among these findings are technical issues which align with the study of Ogbo et al. (2021), who emphasised that offline solutions are critical in addressing the digital divide in developing countries. Similarly, Tate and Warschauer (2022) highlighted the importance of digital equity, advocating for alternative solutions to support learners in underserved areas.

The challenge of digital literacy is somehow being resolved by training provided by corresponding institutions. This practice is supported by research from Yurtseven Avci et al. (2020), who stressed that continuous professional development programs are essential to equip educators with the skills needed to integrate technology effectively. Furthermore, the concept of digital literacy is emphasised in the review of Pangrazio et al. (2020), which identifies technical, cognitive, and social-emotional components as critical for navigating digital environments.

Furthermore, content adaptation posed another challenge that is parallel to some studies, that is, the study by Merino and Metila (2024), which emphasises the need for localised digital resources in Philippine education. It also reflects the principle of contextualisation in education (Glahn and Gruber 2020), which highlights the importance of making content relatable and meaningful for learners.

Additionally, the issue of resistance to change may be reduced as educators and learners alike are slowly adopting technology. This aligns with Rogers' Diffusion of Innovation Theory, which posits that individuals are more likely to adopt new technologies when they see clear advantages (Garcia-Avilés 2020). Providing support and showcasing success stories can accelerate the acceptance of innovative practices in educational settings.

Institutions must invest in infrastructure that supports both online and offline learning to address technical issues. This includes expanding internet access and providing low-cost or free devices for students in need. Workshops and training sessions should be institutionalised to address digital literacy gaps. These programs must cater to different skill levels and focus on both educators and students. Efforts to create culturally relevant

digital materials must be prioritised. Partnerships between educators, curriculum developers, and content creators can produce high-quality localised resources for Filipino classrooms. Mentoring programs and showcasing successful technology integration practices are vital for overcoming resistance. Schools should create a culture of innovation by recognising and rewarding educators who adopt and excel in technology integration.

The study's findings are consistent with broader literature on challenges in technology integration. Alda et al. (2020) highlighted that infrastructure and digital literacy are foundational to successful technology adoption in Philippine education. By addressing these challenges, educational institutions can promote equitable and effective technology integration in Filipino classrooms.

Finally, Table 3 showcased impacts of technology integration in language education. Among the impacts is the increase in engagement of the learners. This finding aligns with Ben-Eliyahu et al. (2018), who defined engagement as a multidimensional construct encompassing behavioural, emotional, and cognitive involvement. Interactive activities address these dimensions by promoting active participation, emotional connection, and deeper cognitive processing. Research by Dabagh and Kitsantas (2012) further supports the idea that technology-enhanced environments promote higher engagement by allowing learners to take an active role in their education.

Additionally, an improved learning outcome was also observed, which aligned with Mayer's (2024) Cognitive Theory of Multimedia Learning. The theory posited that combining visual and auditory information improves comprehension and retention. Similarly, a study by Almacén and Labitad (2024), found that Filipino students exposed to multimedia-based lessons showed better academic performance compared to those in traditional learning setups.

What's more, technology integration enhances the accessibility to learning resources. This finding resonated with Bandura's (1986) Social Cognitive Theory, which highlights the importance of self-regulation in learning. Digital accessibility also supports UNESCO's (2020) emphasis on equity and inclusion in education, as it enables students from diverse backgrounds to participate fully in the learning process.

Ultimately, technology fostered collaborative learning. This observation supports Vygotsky's (1978) Social Constructivist Theory, which emphasises the role of social interaction in cognitive de-

velopment. Collaborative tools create a virtual space for students to engage in meaningful discussions and problem-solving activities, fostering a sense of community and shared learning.

The increased engagement and improved learning outcomes suggest that educators must shift towards student-centred teaching approaches that integrate technology. Schools should invest in training programs to equip teachers with the skills needed to maximise the potential of these tools. In addition, the enhanced accessibility provided by digital tools underscores the need for equitable distribution of resources. Schools should ensure that all students, especially those from marginalised communities, have access to the necessary devices and internet connectivity.

Collaborative learning also highlights the importance of fostering 21st century skills such as teamwork, communication, and digital literacy. Educational policies should emphasise these competencies to prepare students for the demands of the modern workforce.

The integration of technology in Filipino classrooms, therefore, represents a significant opportunity to transform traditional pedagogies and equip students with the skills necessary for success in a digital age.

Optimising Technology Use in Teaching Filipino Language

The findings of the study on integrating technology in teaching Filipino highlight actionable propositions aimed at addressing challenges, enhancing engagement, and improving learning outcomes. To begin with, improving access to infrastructure such as a stable internet, modern devices, and reliable technological systems is essential. Many classrooms face persistent technical issues, hindering the seamless integration of digital tools. By addressing these gaps, educational institutions can foster equity, ensuring all learners benefit from digital innovations. Such investments create an enabling environment for technology use in education, bridging accessibility divides, especially for underprivileged learners.

Building digital literacy among educators and students emerges as another critical recommendation. Regular training programs can equip both groups with the skills needed to navigate modern educational technologies effectively. Findings revealed gaps in digital competency, which limit the

creative use of tools like language-learning apps and gamified platforms. Research supports the idea that professional development initiatives directly enhance educators' ability to integrate innovative methods into teaching, ultimately benefiting student outcomes (Chetty et al. 2024). When educators are confident in their digital skills, they are better positioned to deliver lessons that are both engaging and effective.

The study also recommends creating culturally relevant and adaptive content. While technology introduces global tools like Duolingo or Quizlet, these resources need to align with the linguistic and cultural context of Filipino learners. Teachers reported the need to adapt materials to include culturally authentic content, a strategy supported by research on culturally responsive teaching. This approach ensures that while leveraging global technologies, the unique aspects of Filipino language and culture are preserved and celebrated.

Encouraging gamification and collaborative learning platforms is another effective strategy to foster engagement. The use of platforms like Kahoot and Google Workspace enhances interaction and teamwork, vital for language acquisition. The findings are consistent with studies that highlight gamification's role in increasing motivation and making lessons interactive and student-centred (Dicheva et al. 2023). These tools not only make learning enjoyable but also develop essential 21st century skills such as collaboration and problem-solving.

Promoting hybrid and flexible learning models is another crucial recommendation. Combining online and face-to-face instruction allows for flexibility, catering to diverse learning styles and providing access to materials beyond traditional classroom hours. Blended learning has been shown to enhance student autonomy, offering self-paced opportunities for learners (Isteniè 2024). Such models align with the modern demands for inclusivity and adaptability in education.

Lastly, addressing resistance to change through mentoring programs and awareness campaigns is vital. Both educators and students may exhibit hesitance toward adopting new technologies. By showcasing successful implementations and the tangible benefits of integrating technology, stakeholders can develop a more open and adaptive mindset. Change management strategies, as highlighted in Kotter's framework which is analysed by Rajan and Ganesan (2017), suggest that involving all stakeholders in the transition process fosters greater acceptance and smoother implementation.

These options provide a strategic framework for optimising technology integration in teaching Filipino. They address technical challenges, improve digital literacy, promote culturally relevant content, and leverage innovative teaching strategies. Collectively, they pave the way for a modernised, inclusive, and effective approach to Filipino language education, preparing students for a digitally-driven world while preserving cultural identity.

CONCLUSION

The study explored the effective practices, challenges, and impacts of integrating technology in teaching Filipino to college students, providing insights into optimising its use. Key findings reveal that multimedia tools, gamified learning platforms, and hybrid models are effective in fostering engagement and improving learning outcomes. However, challenges such as technical issues, digital literacy gaps, and resistance to change underscore the need for targeted interventions. The integration of technology was found to enhance student engagement, provide accessible learning opportunities, and facilitate collaborative learning, ultimately contributing to improved language proficiency and teamwork skills. These findings emphasise the transformative potential of technology when thoughtfully integrated into Filipino language education.

RECOMMENDATIONS

To maximise the benefits of technology integration, institutions should invest in stable internet connectivity, updated devices, and reliable classroom technologies to address technical challenges that hinder learning. Prioritising underserved schools can ensure equitable access to resources. Conduct regular workshops for educators and students to improve their digital literacy and competency in using educational tools. Professional development initiatives should focus on effective pedagogical strategies for technology integration. Encourage the creation of materials that reflect Filipino cultural and linguistic contexts. This ensures that global technologies are adapted to meet local educational needs while preserving cultural identity. Promote the use of gamified learning tools and collaborative platforms to enhance student engagement and teamwork. These tools

make lessons more interactive and enjoyable, fostering deeper learning experiences.

Furthermore, expand the use of hybrid and flexible approaches, combining online and face-to-face instruction. This model caters to diverse learning styles and allows students to access resources beyond the classroom. Also, address resistance to change through mentoring programs and awareness campaigns. Highlighting success stories and tangible benefits of technology integration can help stakeholders embrace innovation.

REFERENCES

- Adelakun N 2023. Impact of information and communication technology on students' academic performance. *SSRN Electronic Journal*, 3. <https://doi.org/10.2139/ssrn.4417299>
- Alda R, Boholano H, Dayagbil F 2020. Teacher education institutions in the Philippines towards Education 4.0. *International Journal of Learning, Teaching and Educational Research*, 19. <https://doi.org/10.26803/ijlter.19.8.8>
- Almacan JEB, Labitad GF 2024. Multimedia tools on learners' performance in Filipino. *International Journal of Research Publication*, 2024(1): 631-648. <https://doi.org/10.47119/IJRP1001521720246923>
- Anthony Jnr B, Kamaludin A, Romli A, Mat Raffei AF, Phon D, Abdullah A, Ming G 2022. Blended learning adoption and implementation in Higher Education: A theoretical and systematic review. *Technology, Knowledge, and Learning*. <https://doi.org/10.1007/s10758-020-09477-z>
- Bandura A 1986. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Ben-Eliyahu A, Moore D, Dorph R, Schunn CD 2018. Investigating the multidimensionality of engagement: Affective, behavioral, and cognitive engagement across science activities and contexts. *Contemporary Educational Psychology*, 53: 87-105. <https://doi.org/https://doi.org/10.1016/j.cedpsych.2018.01.002>
- Braun V, Clarke V 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2): 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Chetty R, Dobbie W, Goldman B, Porter S, Yang C 2024. Changing Opportunity: Sociological Mechanisms Underlying Growing Class Gaps and Shrinking Race Gaps in Economic Mobility. *NBER Working Paper Series, Working Paper 32697*. National Bureau of Economic Research 1050 Massachusetts avenue Cambridge, MA 02138. <https://doi.org/10.3386/w32697>
- Creswell JW, Poth CN 2018. *Qualitative Inquiry and Research Design Choosing among Five Approaches*. 4th Edition. SAGE Publications, Inc.
- Dabbagh N, Kitsantas A 2012. Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *The Internet and Higher Education*, 15(1): 3-8. [https://doi.org/10.1016/j.iheduc.2011.06.002](https://doi.org/https://doi.org/10.1016/j.iheduc.2011.06.002)
- De Chavez PM, Bondoc JF, Sagum RC, De Jesus L 2025. The digital shift: A systematic review of technology integration in educational settings. *Ignatian International Journal for*

- Multidisciplinary Research*, 6(3): 524-530. <https://doi.org/10.5281/ZENODO.15663858>
- Denzin NK 2018. *The Qualitative Manifesto*. Routledge. <https://doi.org/10.4324/9780429449987>
- Dicheva D, Guy B, Dichev C, Irwin K, Cassel L 2023. A multi-case empirical study on the impact of virtual currency on student engagement and motivation. *Trends in Higher Education*, 2: 462-476. <https://doi.org/10.3390/higheredu2030027>
- Digital Rise Program: Enhancing ICT Integration in Philippine Education, Department of Education 2019. From <https://www.deped.gov.ph/> (Retrieved on 12 November 2025).
- García-Avilés J 2020. Diffusion of Innovation. In: J Bulck (Ed.): *The International Encyclopedia of Media Psychology*. John Wiley and Sons, Inc., pp. 1-8. <https://doi.org/10.1002/9781119011071.iemp0137>
- Glahn C, Gruber MR 2020. Designing for Context-Aware and Contextualized Learning. In: S Yu, M Ally, A Tsinakos (Eds.): *Emerging Technologies and Pedagogies in the Curriculum*. Springer Singapore, pp. 21-40. https://doi.org/10.1007/978-981-15-0618-5_2
- Harris J, Koehler M, Mishra P 2009. What Is Technological Pedagogical Content Knowledge? Contemporary Issues in Technology and Teacher Education, 9. From https://www.researchgate.net/publication/241616400_What_Is_Technological_Pedagogical_Content_Knowledge (Retrieved on 12 November 2025).
- International Commission on the Futures of Education 2021. *Reimagining Our Futures Together: A New Social Contract For Education*. From <https://unesdoc.unesco.org/ark:/48223/pf0000379707.locale=en> (Retrieved on 3 October 2025).
- Istèniè A 2024. Blended learning in higher education: the integrated and distributed model and a thematic analysis. *Discover Education*, 3(1): 165. <https://doi.org/10.1007/s44217-024-00239-y>
- Kabel N, Messabis A 2024. People's Democratic Republic of Algeria Investigating the Impact of Information and Communication Technologies (ICTs) Usage on Enhancing EFL Learners' Performance: The Case of Some Secondary Schools in Tissemsilt. Dissertation. Tiaret, Algeria: University of Ibn Khaldoun -Tiaret. From <http://bibdspace.univ-tiaret.dz/bitstream/123456789/14965/1/TH.M.ENG.2024.61.pdf> (Retrieved on 12 November 2025).
- Lamorinas D, Aubrey J, Bulado AJ, Mary J, Lutian 2024. Preserving initiatives for the Filipino language: Analysis of language protection through personal efforts among Filipino students. *Environment and Social Psychology*, 9. <https://doi.org/10.59429/esp.v9i12.3230>
- Li M, Ma S, Shi Y 2023. Examining the effectiveness of gamification as a tool promoting teaching and learning in educational settings: A meta-analysis. *Frontiers in Psychology*, 14: 1253549. <https://doi.org/10.3389/FPSYG.2023.1253549/BIBTEX>
- Mayer RE 2024. The past, present, and future of the Cognitive Theory of multimedia learning. *Educational Psychology Review*, 36(1): 8. <https://doi.org/10.1007/s10648-023-09842-1>
- Merino PMBS, Metila RA 2024. Localizing for learning: A designed teacher training program and its developed localized materials for mother tongue education. *Language and Education*, 38(6): 1080-1097. <https://doi.org/10.1080/09500782.2024.2352427>
- Mishra P, Koehler MJ 2006. Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6): 1017-1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- Nettey J, Osei Mensah R, Asafo-Adjei R, Adiza Babah P 2024. Analyzing the challenges basic school teachers face in integrating Information and Communication Technology into teaching and learning activities in a developing country. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186X.2024.2364544>
- Ogbo E, Brown T, Gant J, Sicker D 2021. When being connected is not enough: An analysis of the second and third levels of the digital divide in a developing country. *Journal of Information Policy*, 11: 104-146. <https://doi.org/10.5325/jinfopoli.11.2021.0104>
- Pangrazio L, Godhe AL, Ledesma AGL 2020. What is digital literacy? A comparative review of publications across three language contexts. *E-Learning and Digital Media*, 17(6): 442-459. <https://doi.org/10.1177/2042753020946291>
- Rajan R, Ganesan R 2017. A Critical Analysis Of John P. Kotter's Change Management Framework. *Asian Journal Of Research In Business Economics And Management*, 7: 181-203. From <https://api.semanticscholar.org/CorpusID:126311152> (Retrieved on 12 November 2025).
- Schrump L, Levin BB 2013. Leadership for twenty-first-century schools and student achievement: lessons learned from three exemplary cases. *International Journal of Leadership in Education*, 16(4): 379-398. <https://doi.org/10.1080/13603124.2013.767380>
- Tate T, Warschauer M 2022. Equity in online learning. *Educational Psychologist*, 57(3): 192-206. <https://doi.org/10.1080/00461520.2022.2062597>
- Tomaro Q 2018. ICT integration in the educational system of Philippines. *Journal of Governance and Public Policy*, 5. <https://doi.org/10.18196/jgpp.5399>
- UNESCO 2020. *Education For Sustainable Development: A Roadmap*. UNESCO. <https://doi.org/10.54675/YFRE1448>
- United Nations 2015. The 2030 Agenda and the Sustainable Development Goals. From https://repositorio.cepal.org/bitstream/handle/11362/40156/25/S1801140_en.pdf (Retrieved on 23 August 2025).
- Varona F 2022. Efficacy Of Multimedia In Teaching Communicative Skills In Filipino. *International Multilingual Journal of Science and Technology*, 7(6): 5069-5073. From https://www.researchgate.net/publication/363333506_Efficacy_of_Multimedia_In_Teaching_Communicative_Skills_In_Filipino (Retrieved on 13 October 2025)
- Vygotsky LS 1978. *Mind in Society: Development of Higher Psychological Processes*. Cambridge, MA, USA: Harvard University Press.
- Yin RK 2017. *Case Study Research and Applications Design and Methods*. 6th Edition. SAGE Publications, Inc.
- Yurtseven Avci Z, O'Dwyer LM, Lawson J 2020. Designing effective professional development for technology integration in schools. *Journal of Computer Assisted Learning*, 36(2): 160-177. <https://doi.org/10.1111/jcal.12394>

Paper received for publication in December, 2025
 Paper accepted for publication in February, 2026