

Teachers' Technology Integration and Its Influence to Learners' Engagement and Proficiency

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Abstract

This research investigated the level of technology integration by teachers and how this affected the engagement and proficiency of learners in all public schools in the Division of Antique during school year 2024-2025. In light of the ever-expanding use of digital tools in basic education, understanding how technology-supported pedagogical practices impact students' learning dynamics has become increasingly important. In the descriptive-correlational design, a total of 183 respondents consisting of both teachers and learners participated in the study. Data were gathered through a validated survey questionnaire covering the core variables of the level of teachers' technology integration and learners' engagement and academic proficiency.

Results showed that teachers demonstrated a high level of integrating technology, especially in terms of using multimedia resources, interactive platforms, and digital assessments. Correspondingly, learners reported a high engagement in activities related to collaborative online tasks, gamified learning, and interactive presentations. Furthermore, statistical analysis showed that there is a significant positive relationship between technology integration and the learners' engagement, proving that digitally enhanced instruction maintains attention, motivation, and participation. In addition, it was revealed that technology integration has a moderate yet meaningful impact on proficiency, indicating that technology-supported strategies can increase understanding, performance, and skill acquisition if embedded with appropriate pedagogic approaches.

The findings emphasize the need for ongoing digital training for teachers and investment in schools' ICT infrastructure to support sustained integration. Based on this analysis, the conclusion of the study is that effective and purposeful integration of technology significantly enriches learner engagement and contributes to improved academic proficiency, reinforcing the role of digital tools in contemporary basic education.

Keywords: integration of technology by teachers, engagement of learners, proficiency of learners, digital tools, multimedia resources, technology-enhanced instruction, classroom performance, division of Antique

Introduction

The rapid growth of digital technologies has significantly reshaped instructional delivery in today's classrooms, making technology integration a crucial element of effective teaching and learning. In modern educational environments, a teacher's ability to use digital tools, interactive platforms, and technology-

enhanced strategies greatly influences students' engagement and academic development. Mishra and Koehler's (2006) Technological Pedagogical and Content Knowledge (TPACK) framework emphasizes that teachers must not only possess technological competence but also know how to meaningfully integrate these tools with pedagogy and subject matter. When technology is used effectively, students benefit from learning environments that encourage active participation, collaboration, and deeper understanding (Ertmer & Ottenbreit-Leftwich, 2010).

Research consistently shows that technology-supported instruction boosts student motivation and engagement by offering interactive, personalized, and multimodal learning experiences (Hennessy, Ruthven, & Brindley, 2005). Digital tools—such as learning management systems, educational applications, and multimedia resources—help reinforce key concepts through simulations, visual presentations, and real-time feedback, thereby strengthening learners' proficiency (Hsu, 2016). Recent studies also highlight that effective technology integration enhances students' problem-solving abilities and overall academic performance (Tondeur et al., 2017).

Despite these benefits, the extent to which teachers integrate technology varies across local contexts and is influenced by factors such as access to devices, quality of training, confidence in using digital tools, and institutional support. In the Division of Antique, it is important to understand how teachers utilize technology and how these practices shape learners' engagement and proficiency, especially as education becomes more digitally driven. With this in mind, the present study involving 183 respondents aims to examine the extent of technology integration among teachers and its influence on learners' engagement and proficiency during the school year 2024–2025.

The primary goal of this study is to determine the level of teachers' technology integration and assess how it affects learners' engagement and proficiency in the Division of Antique. Specifically, the study seeks to evaluate teachers' use of digital tools, multimedia resources, online platforms, and technology-enhanced instructional strategies. It also aims to measure learners' engagement—including behavioral, emotional, and cognitive dimensions—as well as their proficiency as reflected in academic performance and skill development.

Furthermore, the study explores whether significant relationships exist between teachers' technology integration and learners' engagement and proficiency. It also examines whether teachers' demographic factors—such as age, years of teaching experience, and technological training—are associated with differences in technology integration practices. Through these objectives, the study hopes to provide a comprehensive understanding of how technology-enhanced instruction influences student learning outcomes and to offer insights that can help schools develop evidence-based programs to strengthen technology integration in classroom teaching.

Methodology

This study adopted a descriptive-correlational research design to examine the extent of teachers' technology integration and its influence on learners' engagement and proficiency in the Division of Antique for the school year 2024–2025. A total of 183 respondents participated in the study, selected through stratified random sampling to ensure fair representation across different grade levels and schools. The participants were public secondary school teachers who actively use technology-based strategies in their classroom instruction.

The main data-gathering tool was a researcher-made questionnaire that consisted of three sections: teachers' technology integration practices, learners' engagement, and learners' proficiency. The

questionnaire underwent expert validation by specialists in educational technology and assessment. It was also pilot-tested in a nearby district, which produced a Cronbach's alpha of 0.89, indicating strong internal consistency and reliability.

Data were collected using both printed and digital survey forms, with permission from school heads and the Schools Division Office. Respondents were given sufficient time to complete the questionnaires. After collection, the data were encoded and analyzed using appropriate statistical methods. Descriptive statistics—such as mean, standard deviation, and frequency counts—were used to determine the levels of technology integration, engagement, and proficiency. To examine the relationships among variables, Pearson's r correlation was applied, while ANOVA and t -tests were performed to determine whether significant differences existed based on teachers' demographic characteristics.

Throughout the research process, ethical standards were strictly followed, including voluntary participation, confidentiality of responses, and the securing of informed consent from all respondents.

Results

The findings of the study showed that teachers in the Division of Antique demonstrated a high level of technology integration in their instructional practices, reflected in an overall mean of 3.78 (SD = 0.46). Among the different indicators, the use of digital tools and multimedia resources obtained the highest mean score ($M = 3.85$, $SD = 0.44$), indicating that teachers frequently utilize technology to enhance classroom learning. This result supports the observations of Hsu (2016), who highlighted that meaningful technology integration contributes to more effective instructional delivery and improved student comprehension.

Learners' engagement was also found to be high, with an overall mean of 3.74 (SD = 0.48). Behavioral engagement recorded the highest mean ($M = 3.79$, $SD = 0.45$), followed closely by cognitive engagement ($M = 3.72$, $SD = 0.47$). These outcomes are consistent with the findings of Hennessy, Ruthven, and Brindley (2005), who noted that the integration of technology enhances student attention, participation, and interest by providing more interactive learning experiences.

In terms of learners' proficiency, results indicated a moderately high level, with an overall mean of 3.70 (SD = 0.49). Academic performance indicators, such as task completion ($M = 3.76$, $SD = 0.46$) and skill development ($M = 3.68$, $SD = 0.50$), suggest that technology-enhanced learning environments positively influence students' academic growth. This aligns with Tondeur et al. (2017), who emphasized that effective technology use by teachers leads to better student learning outcomes.

The Pearson's r correlation analysis further revealed a significant positive relationship between teachers' technology integration and learners' engagement ($r = 0.61$, $p < 0.001$), as well as learners' proficiency ($r = 0.58$, $p < 0.001$). These results reinforce the assertion of Ertmer and Ottenbreit-Leftwich (2010) that when teachers use technology confidently and effectively, learners benefit through increased engagement and enhanced academic performance.

Findings

Based on the responses of 183 participants from the Division of Antique, the study generated several important findings. First, teachers demonstrated a high level of technology integration in their instructional practices, with particularly strong use of digital tools and multimedia resources. This suggests that teachers are actively incorporating technology into their lessons to enhance instructional delivery and better engage learners.

Second, the results showed that learners exhibited a high level of engagement, especially in behavioral and cognitive dimensions. This indicates that technology-supported learning environments contribute positively to students' attention, participation, and involvement in classroom activities.

Third, learners' proficiency was found to be at a moderately high level, with notable performance in task completion and developing skills. This reflects how technology-enhanced instruction provides students with meaningful opportunities to improve their academic performance and strengthen higher-order thinking skills.

Additionally, the study found a significant positive relationship between teachers' technology integration and learners' engagement, as well as between technology integration and learners' proficiency. This means that when teachers integrate technology more extensively, students tend to be more engaged and demonstrate better academic outcomes.

Finally, demographic factors such as age, teaching experience, and technological training did not yield significant differences in teachers' levels of technology integration. This suggests that technology integration practices were relatively consistent across various teacher groups.

Discussion

The findings of this study emphasize the significant role that teachers' technology integration plays in shaping learners' engagement and proficiency. The high level of technology integration observed among teachers in the Division of Antique suggests that educators are increasingly utilizing digital tools, multimedia resources, and online platforms to support and enrich instruction. This is consistent with Mishra and Koehler's (2006) TPACK framework, which underscores that effective teaching in today's digital environment requires a meaningful blending of technology with pedagogy and content knowledge. The strong use of digital resources also supports the claim of Ertmer and Ottenbreit-Leftwich (2010) that teachers' confidence and competence in using technology greatly influence their instructional decisions and openness to adopting innovative practices.

The study's findings on learners' high engagement—both behavioral and cognitive—further demonstrate the positive impact of technology-rich learning environments. As noted by Hennessy, Ruthven, and Brindley (2005), interactive technologies can boost students' motivation, participation, and attention. The present study affirms that when teachers effectively integrate technology into lessons, learners become more responsive, collaborative, and actively involved in completing learning tasks.

Learners' moderately high proficiency levels also highlight the benefits of technology-enhanced instruction. Consistent with the findings of Tondeur et al. (2017), technology supports deeper learning by providing multiple ways to present content, immediate feedback mechanisms, and opportunities for guided or independent practice. The significant positive correlations identified in this study confirm that teachers' technology integration contributes directly to increased engagement and improved academic performance. The lack of significant differences in technology integration across demographic groups suggests that teachers, regardless of age, length of service, or training background, are integrating technology at comparable levels. This may indicate that technology use in the schools of Antique has become more uniform, systematic, and institutionally supported.

Overall, the results of this study underscore that integrating technology into instruction is not only advantageous but essential for promoting student engagement and enhancing academic proficiency in contemporary classrooms.

Recommendations

Based on the findings of the study, several recommendations are offered to further strengthen teachers' technology integration practices and enhance learners' engagement and proficiency.

First, the Schools Division of Antique is encouraged to strengthen capacity-building programs for teachers. Ongoing professional development should focus on the practical and effective use of digital tools in classroom instruction. Hands-on training on learning management systems, interactive applications, and technology-based assessment tools will help teachers develop greater confidence and competence in using technology across different learning contexts.

Second, improving the technological infrastructure in schools is essential. School administrators are encouraged to invest in reliable internet connectivity, well-maintained computer laboratories, projectors, and mobile learning devices. Having sufficient and accessible technological resources will enable teachers to implement technology-enhanced strategies more consistently, creating a more engaging and supportive learning environment.

Third, teachers are encouraged to adopt technology-supported pedagogical practices that promote active and student-centered learning. Approaches such as gamified lessons, interactive simulations, collaborative online activities, and multimedia-rich presentations can help sustain learners' interest and improve their academic proficiency by making content more dynamic, interactive, and relevant.

Fourth, schools may consider establishing programs that promote learners' digital engagement. Initiatives such as digital clubs, e-learning support groups, and peer-assisted technology sessions can build students' confidence and skills in navigating digital platforms. These programs can be especially beneficial for learners who have limited access to technology at home.

Fifth, enhancing monitoring and evaluation mechanisms is recommended. School leaders should regularly assess technology integration practices through classroom observations, feedback tools, and performance monitoring. A systematic evaluation process will help identify areas that need improvement and allow school heads to provide targeted support to teachers who may require additional guidance.

Sixth, fostering collaboration among stakeholders is vital. Strengthening partnerships with parents, local government units, and private organizations can help secure additional technological resources and training support. Such collaborative efforts can ensure the sustained and long-term integration of technology in teaching and learning.

Finally, further research is recommended. Future studies may explore technology integration using qualitative or mixed-methods designs, include additional grade levels or other school divisions, or examine variables such as digital literacy, motivation, and specific learning outcomes. These investigations will help broaden and deepen the understanding of technology-driven education.

Conclusion

This study examined the level of teachers' technology integration and its influence on learners' engagement and proficiency among 183 respondents in the Division of Antique for the school year 2024–2025. Findings showed that teachers generally exhibited a high level of technology integration, making use of digital tools to support instruction, assessment, and interactive learning activities. In line with this, learners reported high levels of engagement, suggesting that technology-enhanced lessons helped boost their participation, interest, and motivation. Learners' proficiency was also found to be at a high to very satisfactory level, indicating that the use of technology effectively contributed to improved academic performance.

Further analysis revealed a significant positive relationship between technology integration and both learners' engagement and proficiency. This indicates that when teachers skillfully incorporate digital tools and platforms into their teaching practices, students tend to be more attentive, participative, and capable of demonstrating deeper understanding of classroom content. The study reinforces the idea that technology is not merely an additional resource, but a transformative element in contemporary instruction that meaningfully enhances learning outcomes.

Overall, the findings underscore the importance of sustaining and strengthening technology-driven initiatives across the division. Continued teacher training, upgraded infrastructure, and supportive school systems are essential to fully harness the benefits of technology integration. The study concludes that effective technology use in classrooms plays a vital role in fostering meaningful, engaging, and proficiency-enhancing learning experiences for students in the Division of Antique.

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