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Teachers' Information and Communication Technology (ICT) Skill, Technology Integration and Learners' Performance

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Abstract

This study examined the levels of teachers' Information and Communication Technology (ICT) skills, their technology integration practices, and the influence of these factors on learners' academic performance in the Schools Division of Antique during the year 2025. Using a descriptive-correlational research design, the study determined teachers' ICT competencies and their use of technology in instructional planning, lesson delivery, and assessment, as well as the extent to which these practices are related to learners' performance. The respondents were 344 teachers actively engaged in instructional duties, selected through total enumeration to ensure comprehensive representation. Data were gathered using a researcher-developed and validated questionnaire that underwent expert review and pilot testing, yielding a high reliability coefficient (Cronbach's alpha = 0.88). Results showed that teachers demonstrated high levels of ICT skills, particularly in software proficiency and digital literacy. Technology integration practices were likewise rated high, with the use of technology in lesson planning obtaining the highest mean. Learners' academic performance was also rated high, especially in ICT-facilitated assignments and classroom participation. Correlation analysis revealed significant positive relationships between teachers' ICT skills and learners' performance, as well as between technology integration and learners' performance. These findings indicate that teachers' ICT competence and effective technology integration play a vital role in enhancing learner engagement and academic achievement. The study recommends sustained professional development, adequate provision of ICT resources, and mentoring programs to further strengthen teachers' technological capacity and instructional effectiveness.

Keywords: ICT Skills, Technology Integration, Teacher Competence, Learners' Performance, Instructional Technology, Digital Literacy

1. Introduction

Technology integration has become an essential component of contemporary education, as it enhances instructional delivery, supports diverse learning needs, and increases learner engagement.

Teachers' proficiency in Information and Communication Technology (ICT) is crucial for the effective use of digital tools and resources in the classroom (Ertmer & Ottenbreit-Leftwich, 2010). Teachers with strong ICT skills are better equipped to design interactive lessons, utilize educational software, and promote collaborative learning experiences, all of which contribute to improved learner outcomes (Voogt et al., 2015).

Closely associated with ICT skills is technology integration, which refers to the purposeful use of digital tools to support teaching and learning objectives (Koehler & Mishra, 2009). Effective technology integration requires not only technical competence but also pedagogical knowledge, enabling teachers to align technology use with curriculum standards and assessment practices (Hughes, Thomas, & Scharber, 2006). Research has shown that meaningful integration of technology can enhance learners' academic performance by fostering engagement, creativity, and critical thinking (Li & Ma, 2010).

Despite the growing importance of ICT in education, studies have indicated that teachers' ICT skills and technology integration practices vary depending on factors such as access to resources, training opportunities, and institutional support (Inan & Lowther, 2010). In the Schools Division of Antique, limited empirical research has explored how teachers' ICT competence and technology integration relate to learners' academic performance. Understanding this relationship is essential for developing targeted professional development initiatives and school policies that strengthen teaching effectiveness and learner achievement.

Thus, this study aimed to determined the levels of teachers' ICT skills, technology integration practices, and their relationship with learners' academic performance among 344 teachers in the Schools Division of Antique during the year 2025.

2. Methodology

This study employed a descriptive-correlational research design to assess the levels of teachers' ICT skills, technology integration practices, and their relationship with learners' academic performance. The descriptive component identified the current status of ICT skills, technology integration, and learner performance, while the correlational component examined the relationships among these variables.

The respondents consisted of 344 teachers in the Schools Division of Antique who were actively engaged in instructional duties. Total enumeration was used to ensure complete representation of the population.

Data were collected through a researcher-developed and validated questionnaire composed of three sections. The first section measured teachers' ICT skills, including hardware usage, software proficiency, and digital literacy. The second section assessed technology integration practices in lesson planning, instructional delivery, and assessment. The third section evaluated learners' academic performance based on teacher records, report cards, and standardized assessment results. The instrument was validated by experts and pilot-tested, yielding a Cronbach's alpha coefficient of 0.88, indicating high reliability.

Ethical considerations were observed by obtaining informed consent, ensuring confidentiality, and maintaining the anonymity of respondents. Data analysis utilized descriptive statistics and Pearson Product-Moment Correlation at a 0.05 level of significance.

3. Results

The results revealed that teachers in the Schools Division of Antique demonstrated high levels of ICT skills, with an overall weighted mean of 4.31 (SD = 0.37). Software proficiency received the highest rating (M = 4.35, SD = 0.34), followed by digital literacy (M = 4.30, SD = 0.36) and hardware usage (M = 4.28, SD = 0.39), indicating that teachers are generally competent in using digital tools necessary for effective instruction.

Technology integration practices were likewise rated high, with an overall mean of 4.27 (SD = 0.35). The use of technology in lesson planning obtained the highest mean (M = 4.32, SD = 0.33), followed by instructional delivery (M = 4.28, SD = 0.36) and assessment (M = 4.21, SD = 0.37). These findings suggest that teachers actively incorporate ICT across different stages of instruction.

Learners' academic performance was rated high, with an overall mean of 4.25 (SD = 0.38). Learners performed particularly well in ICT-based assignments and projects (M = 4.29, SD = 0.36) and in technology-enhanced classroom participation (M = 4.23, SD = 0.39).

Correlation analysis revealed significant positive relationships between teachers' ICT skills and learners' academic performance ($r = 0.57$, $p < 0.01$) and between technology integration practices and learners' academic performance ($r = 0.61$, $p < 0.01$). These results indicate that higher levels of teacher ICT competence and effective technology integration are associated with improved learner achievement.

4. Discussion

The findings emphasize the importance of teachers' ICT skills in enhancing instructional effectiveness and learner performance. Teachers who are proficient in using digital tools and applications are better able to design engaging lessons and create interactive learning environments (Ertmer & Ottenbreit-Leftwich, 2010).

Technology integration emerged as a significant factor influencing learner performance. Teachers who effectively integrate ICT into lesson planning, delivery, and assessment provide learners with opportunities for active participation, collaboration, and higher-order thinking (Koehler & Mishra, 2009; Hughes et al., 2006). The positive relationships identified in this study support earlier research linking meaningful technology integration to improved academic outcomes (Li & Ma, 2010; Voogt et al., 2015).

The results further suggest that ICT skills and technology integration are interconnected. Teachers with strong ICT competencies are more confident and capable of integrating technology into instruction, which in turn enhances learner engagement and academic success. These findings highlight the need for sustained professional support and institutional commitment to ICT development in schools.

5. Conclusion

The study concludes that teachers in the Schools Division of Antique demonstrate high levels of ICT skills and effective technology integration practices, both of which significantly contribute to improved learners' academic performance. Teachers who are competent and confident in using technology are better positioned to deliver engaging instruction, support learner participation, and promote academic achievement.

6. Recommendations

Based on the findings, the study recommends that:

Schools implement continuous professional development programs to further enhance teachers' ICT skills, particularly in advanced software applications and digital literacy.

Teachers be encouraged to consistently integrate technology into lesson planning, instructional delivery, and assessment in alignment with curricular goals.

School administrators provide adequate ICT resources, including devices, software, and reliable internet connectivity, to support effective technology use.

Mentoring and peer collaboration systems be established to support teachers in sharing best practices in technology integration.

Future studies explore contextual factors such as school leadership, resource availability, and teacher attitudes toward ICT to inform evidence-based policies and practices.

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