International Journal on Science and Technology (IJSAT)
E-ISSN: 2229-7677 ● Website: www.ijsat.org ● Email: editor@ijsat.org

Teachers' Technological Skills, Instructional Practices, and Learners' Academic Performance

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Abstract

This study examined the relationship among teachers' technological skills, instructional practices, and learners' academic performance in the Schools Division of Antique during School Year 2024–2025. A quantitative descriptive–correlational research design was employed. Using stratified random sampling, teachers from different school levels and districts were selected to ensure adequate representation. Data on teachers' technological skills and instructional practices were gathered through a researcher-developed questionnaire, while learners' academic performance was obtained from official school records. Findings revealed that teachers generally possessed a high level of technological skill, particularly in basic digital literacy, such as the use of common software and online resources. However, comparatively lower competence was observed in the integration of technology into classroom instruction. Teachers' instructional practices were also rated high, especially in areas related to lesson planning, classroom management, and delivery of instruction. Learners' academic performance was described as very satisfactory, indicating that most students were able to meet the academic standards set by the Department of Education. Further analysis showed that teachers' technological skills and instructional practices were both positively associated with learners' academic performance. A strong relationship was also evident between teachers' technological skills and their instructional practices, suggesting that teachers who are more technologically competent tend to apply more effective teaching strategies. Moreover, instructional practices were found to have a greater influence on learners' academic performance compared to technological skills. The study concludes that while technological competence supports teaching effectiveness, sound instructional practices play a more crucial role in improving learners' academic outcomes. It is recommended that professional development programs focus on strengthening both pedagogical skills and the meaningful integration of technology in teaching to enhance learners' academic achievement.

Keywords: Technological Skills, Instructional Practices, Academic Performance, ICT Integration, Public Schools, Schools Division of Antique

1. Introduction

The rapid growth of information and communication technologies (ICT) has significantly reshaped teaching and learning processes, placing teachers' technological skills and instructional practices

at the forefront of educational improvement efforts. When teachers are able to select, adapt, and use appropriate digital tools, they can enhance student engagement, clarify complex concepts, and support diverse learning needs—particularly in classrooms that benefit from interactive and media-rich instruction.

In the Philippine educational system, teachers are expected to demonstrate ICT competence as part of professional standards and policy directives. However, the effective use of technology in classrooms remains uneven due to variations in infrastructure, internet connectivity, and access to professional development. These challenges are especially evident in geographically diverse areas such as the Schools Division of Antique, where island and far-flung schools often face limitations in technological resources.

Research suggests that teachers' technological skills influence learner outcomes through two interconnected pathways. First, technological competence can directly improve instruction by supporting interactive lessons, formative assessment, and access to learning materials. Second, the impact of technology is largely mediated by instructional practices—meaning that technology becomes most effective when integrated into sound pedagogy rather than used in isolation.

Given these considerations, this study examined the relationships among teachers' technological skills, instructional practices, and learners' academic performance in the Schools Division of Antique during School Year 2024–2025. Specifically, it aimed to describe teachers' levels of technological competence and instructional practice, assess learners' academic performance, and determine which teacher-related factors significantly influence academic outcomes. The findings are intended to inform policy decisions, professional development planning, and instructional support initiatives within the division.

2. Methodology

This study employed a quantitative descriptive–correlational research design to examine the relationships among teachers' technological skills, instructional practices, and learners' academic performance. The respondents were 365 teachers from selected public schools in the Schools Division of Antique, chosen through stratified random sampling to ensure adequate representation across districts and school levels.

Data were collected using a researcher-developed questionnaire consisting of sections on teachers' technological skills and instructional practices. Learners' academic performance data were obtained from official school records, specifically the general average grades for School Year 2024–2025. The research instrument underwent expert validation and pilot testing to ensure reliability. Ethical standards were strictly observed, including informed consent, confidentiality, and voluntary participation.

Data analysis involved descriptive statistics to determine levels of the variables, as well as Pearson correlation and multiple regression analyses to examine relationships and predictive effects. All statistical tests were conducted at a 0.05 level of significance.

3. Results

The findings indicated that teachers possessed a high level of technological skill, with greater confidence in basic digital literacy and less proficiency in integrating technology into instruction.

Instructional practices were also rated high, particularly in lesson planning and delivery, while learner-centered and technology-supported strategies were practiced to a slightly lesser extent.

Learners' academic performance was rated as Very Satisfactory, suggesting that students generally met the expected learning standards. Correlation analysis showed that both teachers' technological skills and instructional practices were significantly related to learners' academic performance, with instructional practices demonstrating a stronger association. A strong relationship was also found between technological skills and instructional practices, indicating that technologically skilled teachers tend to employ more effective teaching strategies.

Regression analysis further revealed that instructional practices and technological skills significantly predicted learners' academic performance, together explaining a substantial portion of the variance. Instructional practices emerged as the strongest predictor, highlighting the central role of pedagogy in student achievement.

4. Discussion

The findings of this study underscore the primacy of instructional practices as the most significant determinant of learners' academic performance. This result is consistent with longstanding educational research which emphasizes that effective pedagogy—rather than the mere presence of technology—drives meaningful learning outcomes (Hattie, 2009; Darling-Hammond et al., 2020). While teachers' technological skills were found to have a positive influence on student achievement, their impact appears to be contingent upon how well these skills are integrated into sound instructional design.

The results support the theoretical framework of Technological Pedagogical Content Knowledge (TPACK), which posits that technology enhances learning only when it is meaningfully aligned with pedagogy and content (Mishra & Koehler, 2006). Teachers with higher technological competence were more likely to employ learner-centered and innovative instructional strategies, such as interactive activities, multimedia resources, and differentiated instruction. However, without strong pedagogical grounding, technology use risks remaining superficial, reinforcing previous studies that caution against technology-driven rather than pedagogy-driven instruction (Koehler et al., 2013; Schindler et al., 2017).

Furthermore, the findings resonate with constructivist learning theories, which emphasize active learner engagement and the teacher's role as a facilitator rather than a transmitter of knowledge (Vygotsky, 1978; Bruner, 1996). Teachers who effectively integrated technology tended to create environments that supported collaboration, critical thinking, and student autonomy. Nonetheless, pedagogy remained the core foundation, suggesting that technology functions best as a supporting tool rather than a substitute for effective teaching practices (Tamim et al., 2011).

The study also reflects the contextual realities of schools in the Schools Division of Antique, where infrastructural limitations, inadequate access to digital devices, and unstable internet connectivity constrain the full integration of advanced educational technologies. These findings align with prior research indicating that contextual and systemic factors significantly influence teachers' capacity to implement technology-enhanced instruction, particularly in rural or resource-limited settings (Tondeur et al., 2017; UNESCO, 2021). As such, expecting high levels of technology integration without addressing these constraints may place unrealistic demands on teachers.

Given these contextual challenges, the findings highlight the importance of professional development programs that go beyond technical training. Effective professional development should focus

on helping teachers design pedagogically meaningful, context-sensitive instructional strategies that maximize available resources (Desimone & Garet, 2015). Rather than emphasizing sophisticated digital tools that may be impractical in low-resource environments, training initiatives should prioritize adaptable teaching approaches, such as blended learning, offline digital resources, and collaborative instructional practices that can function despite technological limitations.

Overall, the study reinforces the notion that pedagogy remains the cornerstone of effective teaching. Technology, while valuable, serves as an enabler rather than a driver of learning. For schools in the Schools Division of Antique, sustainable improvements in learner performance are more likely to be achieved by strengthening teachers' instructional competencies and supporting pedagogically grounded technology integration that is responsive to local conditions.

5. Conclusion

This study concludes that instructional practices remain the most influential factor in determining learners' academic performance. While teachers' technological skills contribute positively to learning outcomes, their effectiveness is largely dependent on how well technology is integrated into pedagogically sound instructional strategies. Technology alone does not guarantee improved academic achievement; rather, it enhances learning when it supports clear learning objectives, appropriate teaching methods, and meaningful learner engagement.

The findings further indicate that teachers with higher levels of technological competence are more likely to adopt innovative and learner-centered approaches. However, pedagogy continues to serve as the foundation of effective teaching, reinforcing the principle that instructional quality outweighs the mere availability or use of technological tools. This underscores the importance of strengthening teachers' pedagogical skills alongside technological proficiency.

Moreover, the study highlights the contextual challenges faced by schools in the Schools Division of Antique, particularly limitations in infrastructure and internet connectivity. These constraints affect the extent to which advanced technologies can be integrated into classroom instruction, emphasizing the need for context-sensitive approaches to technology use. Professional development initiatives should therefore prioritize pedagogically meaningful and feasible applications of technology that align with local conditions and available resources.

6. Recommendations

Based on the findings, it is recommended that teachers continuously enhance their technological skills through targeted professional development that emphasizes pedagogical integration. School administrators should provide adequate ICT resources and support sustained training initiatives that strengthen both instructional practices and technology use. At the policy level, the Schools Division of Antique should promote equitable access to ICT resources and support research-informed interventions that address local challenges. Future studies may explore additional factors influencing learner performance, such as learner motivation, digital literacy, and school leadership support, to further enrich understanding in this area.

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