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Examining the relationship between digital leadership competence and technology integration in public elementary schools in the Philippines

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ABSTRACT

Digital technology has become an important tool for improving administrative efficiency and decision-making in public elementary schools. However, limited local evidence explains how school heads' digital leadership competence relates to technology integration in school management in Santo Tomas District, Schools Division of Isabela. Thus, this study looked into digital leadership competence, the extent of technology integration, and the relationship between these variables. It employed a descriptive-correlational research design involving 15 elementary school heads and 75 elementary school teachers. Data were gathered through a structured questionnaire and analyzed using descriptive statistics and Pearson's product-moment correlation. The reported results showed high digital leadership competence ($M = 3.72$, $SD = 0.41$) and technology integration ($M = 3.58$, $SD = 0.45$). A positive relationship was reported between the two variables ($r = .62$, $p = .014$, $n = 15$). The findings point to the need for professional development in digital planning, data analysis, and technology-supported decision-making. Also, schools should provide adequate technological resources and technical support.

Keywords: Digital leadership, technology integration, school management, elementary education, capacity-building.

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INTRODUCTION

Digital technology has changed how schools manage information, communicate with stakeholders, and carry out administrative work. School heads use digital tools to prepare reports, maintain records, monitor school activities, and support decision-making. Their ability to use these tools affects how technology is applied in school management. Digital leadership competence is therefore an important concern in efforts to improve the administration of public elementary schools.

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The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2023) explained that technology can support educational delivery, develop digital skills, and assist planning and management. However, access to technology does not guarantee better educational outcomes. Schools also need appropriate policies, trained personnel, and resources that match their needs. School heads must understand how to use technology for administrative purposes and guide teachers and other personnel in its use.

Digital leadership involves more than operating computers or using online applications. It includes setting directions for technology use, supporting personnel, managing digital resources, protecting information, and using data to guide decisions. AlAjmi (2022) examined digital leadership among public elementary school principals in Kuwait. The study involved 113 principals and 404 teachers and found that principals' digital leadership positively influenced teachers' technology integration during the COVID-19 pandemic. This finding supports the need to examine school leadership and technology use together, although its focus on instructional integration differs from the administrative focus of the present study.

Kaya-Kasikci et al. (2023) examined leadership and the development of a school climate that supports technology integration. Using data from 11,245 public school teachers in Turkey, the researchers found that leadership contributed to technology integration through organizational conditions, including trust and enabling structures. Their findings also highlighted the role of teachers' self-efficacy in technology use. These results suggest that school leaders influence technology integration partly by creating conditions that support its use.

Recent reviews have examined the wider development of digital leadership research. Nagel et al. (2026) reviewed 38 empirical studies published between 2014 and 2024. They found that research on digitalization and school leadership remained fragmented, with differences in how researchers defined digitalization, leadership, and organizational change. Asriadi and Andriani (2026), in a systematic review of 42 empirical studies, found that much of the research focused on infrastructure readiness and teachers' digital literacy, while the strategic roles of principals and organizational outcomes received less attention. These reviews support the need to examine how school heads use digital competence to manage school operations, rather than focusing only on the availability of technology.

Philippine studies have also examined technological leadership in basic education. Maala and Lagos (2022) investigated school heads' technological leadership and teachers' technology integration. Their study reported a high level of technological leadership among the school heads examined and proposed a training program to address the development needs of school heads and teachers. Their findings highlight the relevance of professional development in the use and management of digital technology.

Alayan (2022) examined school heads' technological leadership and teachers' ICT integration in instruction in public elementary schools in the Division of Quezon. The study reported a positive relationship between technological leadership and teachers' technology integration. Although classroom technology use differs from administrative technology integration, the findings suggest that leadership may be associated with how technology is used in schools.

Other Philippine research has considered technology leadership alongside teacher competence and school conditions. Cejas and Guhao (2023) examined technological leadership, school climate, emotional intelligence, and teaching effectiveness among elementary school teachers in the Davao Region. Their work points to the importance of examining leadership within the wider organizational environment. Lambot and Yango (2023) investigated school heads' technology leadership skills and teachers' techno-pedagogical competence in the City Schools Division of Laguna. Their study also addressed the connection between leadership development and teachers' use of technology.

Subingsubing and Guhao (2025) examined instructional and technology leadership, teachers' attitudes toward ICT, and ICT literacy in public schools in the Caraga Region. Their study used structural equation modeling to investigate relationships among these variables. Ariate and Bacasmot (2025) similarly examined technology leadership, teachers' attitudes toward ICT, and technology literacy skills in public elementary schools in Davao Oriental. These studies reinforce the relevance of leadership and personnel competence in technology integration.

Maltez (2025) investigated school structure, technology integration in instruction, and school heads' leadership. Panganiban (2023) investigated technology leadership and technology integration in selected science high schools in the National Capital Region. Delgado (2024) also examined school heads' digital leadership and technology integration in public schools in Lucena City Division. These studies provide additional Philippine contexts for examining technology leadership, although their settings and research variables differ from those of the present study.

Despite this growing body of research, technology integration in administrative management requires further investigation. School management involves digital recordkeeping, electronic communication, administrative reporting, planning, resource management, and monitoring of school performance. These functions differ from classroom instruction and require school heads to apply digital tools to organizational decisions. Findings about teachers' classroom technology use cannot automatically explain how digital leadership relates to administrative practices.

This concern is relevant to Santo Tomas District in the Schools Division of Isabela. Public elementary school heads are responsible for school operations, personnel supervision, record management, stakeholder communication, and school improvement activities. Digital tools can help them carry out these duties, but their use may depend on leadership competence, equipment availability, internet connectivity, technical assistance, and personnel readiness. These conditions require investigation using information from the schools themselves.

Research conducted in other Philippine divisions and international settings cannot establish the situation in Santo Tomas District. Local evidence is needed to determine school heads' digital leadership competence, assess the extent of technology integration in school management, and examine the relationship between these variables. Addressing these concerns may help identify professional development needs and guide decisions about digital resources and administrative practices.

This study aimed to examine the relationship between digital leadership competence and technology integration in public elementary schools in Santo Tomas District, Schools Division of Isabela. Specifically, it sought to determine the level of digital leadership competence of elementary school heads, assess the extent of technology integration in school management, and examine the relationship between the two variables. The findings were intended to guide the development of a digital leadership capacity-building program for elementary school heads.

METHODOLOGY

The study employed a descriptive-correlational research design to examine digital leadership competence and technology integration in school management in Santo Tomas District, Schools Division of Isabela, Philippines. The descriptive component assessed the two variables, while the correlational component examined their relationship.

The sample consisted of 15 public elementary school heads and 75 elementary school teachers. Total enumeration was used for the school heads, while five teachers from each participating school were selected through random sampling. School heads provided information about their digital leadership competence, while teachers provided additional information about technology integration in school management.

Data were gathered through a structured questionnaire. The instrument assessed digital leadership competence in terms of digital literacy and technological proficiency, digital communication and collaboration, technology-supported decision-making, digital security and responsible technology use, and leadership in digital transformation. It also examined technology integration in digital recordkeeping, electronic communication and reporting, digital planning and resource management, monitoring and evaluation, and administrative decision-making.

The questionnaire was designed to align with the objectives of the study. It was reviewed by experts in educational management, educational technology, and research methodology. A pilot test was conducted to assess its reliability using Cronbach's alpha. The final report provided the actual validation procedures, pilot-test results, and reliability coefficients.

Permission was obtained from the appropriate education authorities and school officials before data collection. The purpose of the study was explained to the respondents, and informed consent was secured. Participation was voluntary, and confidentiality was maintained. Completed questionnaires were checked for completeness, coded, and prepared for analysis.

Frequency and percentage were used to summarize relevant respondent characteristics, where applicable. Mean and standard deviation were used to describe digital leadership competence and technology integration according to the scoring system established for the questionnaire. Pearson's product-moment correlation was used to examine the relationship between the two variables, with the significance level set at .05.

Because the 75 teachers were grouped within 15 schools, their responses were not treated as 75 independent school-level observations. The relationship between school-head competence and school-level technology integration required appropriately matched or aggregated data. The correlation used 15 paired school-level observations. The analysis examined association rather than causation.

RESULTS AND DISCUSSION

Digital Leadership Competence of Elementary School Heads

The results showed an overall mean of 3.72 (SD = 0.41), indicating a high level of digital leadership competence on a four-point scale. Digital communication and collaboration received the highest mean (M = 3.91, SD = 0.36), followed by digital literacy and technological proficiency (M = 3.82, SD = 0.39). Digital security and responsible technology use obtained a mean of 3.74 (SD = 0.42). Lower ratings were recorded for digital transformation leadership (M = 3.62, SD = 0.44) and technology-supported decision-making (M = 3.51, SD = 0.47).

The result suggests that school heads were more confident in using digital tools for routine communication than in applying technology to strategic management. Communicating through online platforms and preparing electronic reports are familiar tasks. Using digital data to identify school needs, evaluate programs, and guide resource allocation requires more advanced analytical and leadership skills.

The difference between the highest and lowest means was 0.40 points. This suggests a gap between routine digital communication and technology-supported decision-making.

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Professional development should therefore include data analysis, digital planning, and technology-supported decision-making rather than focusing only on basic computer skills.

The results are consistent with the broader concern raised by Asriadi and Andriani (2026), who found that research on digital leadership has often focused on readiness and digital literacy, with less attention to strategic leadership and organizational outcomes. School heads need to understand not only how to operate digital tools but also how to use them to support planning, monitoring, and administrative decisions.

UNESCO (2023) also emphasized that technology does not automatically improve educational outcomes. Its value depends on how schools use it and whether personnel have the skills and support needed. School heads may benefit from training in data interpretation, cybersecurity, and digital planning.

Technology Integration in School Management

Technology integration obtained an overall mean of 3.58 (SD = 0.45), indicating a high extent of integration under the four-point interpretation scale. Electronic communication and reporting ranked highest (M = 3.86, SD = 0.38), followed by digital recordkeeping and data management (M = 3.74, SD = 0.42). Digital planning and resource management received a mean of 3.49 (SD = 0.46), while monitoring and evaluation obtained a mean of 3.43 (SD = 0.48). Technology-supported administrative decision-making received the lowest mean (M = 3.38, SD = 0.51).

The result indicates that digital tools were used more extensively for routine administrative activities than for strategic planning and evaluation. Electronic reports and digital records can reduce paperwork and make information easier to retrieve. However, their value is limited when the information is not systematically analyzed and used to guide decisions.

The difference between the highest and lowest means was 0.48 points. This suggests that the use of technology for communication and reporting was more established than its use for administrative decision-making. School heads should encourage personnel to use digital records when monitoring school performance, allocating resources, and evaluating improvement initiatives.

Kaya-Kasikci et al. (2023) found that leadership helped establish the organizational conditions needed for technology integration. Their findings support the importance of trust, enabling structures, and teachers' confidence in using digital tools. Technology integration in school management also requires clear procedures, staff preparation, reliable connectivity, and technical assistance.

The findings should also be considered in light of AlAjmi's (2022) research in Kuwait. That study found that principals' digital leadership positively influenced teachers' technology integration. Although its focus was on instructional use, it supports the view that leadership can influence how technology is adopted. The administrative use of technology, however, requires its own measures and should not be treated as equivalent to classroom integration.

Relationship between Digital Leadership Competence and Technology Integration

The reported correlation analysis showed a positive relationship between digital leadership competence and technology integration in school management, r = .62, p = .014, based on 15 school-level observations. The coefficient indicates a moderate-to-strong positive

association. Schools with higher digital leadership competence scores tended to have higher technology integration scores.

The coefficient of determination was $r^2 = .384$, suggesting that approximately 38.4% of the variation in the paired school-level scores was statistically shared. This figure does not establish that digital leadership competence caused technology integration. It describes the strength of the linear association between the two variables.

The result suggests that school heads' digital competence may be related to how technology is adopted and used in administrative work. Leaders who understand digital tools may be better prepared to guide personnel, establish procedures, and promote the use of information in decision-making. However, school heads' competence is only one possible influence. Schools may differ in equipment, internet connectivity, technical support, teachers' readiness, and workload. These conditions may affect the extent to which digital tools are used.

AlAjmi (2022) reported a positive influence of principals' digital leadership on teachers' technology integration in public elementary schools in Kuwait. Kaya-Kasikci et al. (2023) found that leadership contributed to technology integration through organizational conditions rather than operating only as a direct influence. These findings suggest that digital leadership may be related to technology use through several pathways, including the support and structures available to school personnel.

Philippine studies by Maala and Lagos (2022), Alayan (2022), Cejas and Guhao (2023), and Subingsubing and Guhao (2025) also demonstrate the relevance of examining technological leadership alongside personnel competence and organizational conditions. However, their findings cannot be assumed to establish the relationship between digital leadership and administrative technology integration in Santo Tomas District.

Implications for a Digital Leadership Capacity-Building Program

The findings point to possible areas for professional development, particularly digital planning, data analysis, monitoring, and technology-supported decision-making. A capacity-building program could include practical exercises in preparing digital monitoring reports, analyzing school performance data, managing electronic records, and applying data to school improvement planning.

Training should also address cybersecurity and responsible data management. School heads and teachers need clear procedures for handling school records and protecting confidential information. Peer mentoring and school-based demonstrations could help personnel apply new skills to their daily responsibilities.

The findings of Maala and Lagos (2022) support the use of training programs to address school heads' and teachers' technological development needs. The broader literature reviewed by Asriadi and Andriani (2026) and Nagel et al. (2026) also points to the importance of examining digital leadership as part of school organization and management. Training should therefore address both technical skills and the strategic use of technology in school administration.

The proposed program should be evaluated through measurable indicators, such as changes in digital competence, consistency in administrative technology use, and the use of data in planning. A follow-up evaluation would help determine whether training addresses the needs identified in the study.

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CONCLUSION

The study examined digital leadership competence and technology integration in public elementary school management in Santo Tomas District, Schools Division of Isabela. The reported results indicated high digital leadership competence and a great extent of technology integration. School heads scored higher in digital communication and collaboration than in technology-supported decision-making. Technology was more commonly used for communication, reporting, and recordkeeping than for administrative decision-making and monitoring.

The correlation showed a positive relationship between digital leadership competence and technology integration. This suggests that schools with stronger digital leadership competence may also report more extensive technology use in management. However, the association does not establish causation, and the small number of school-level observations limits the precision of the estimate.

A digital leadership capacity-building program is recommended to address digital planning, data analysis, records management, cybersecurity, and technology-supported decision-making. Training should be accompanied by reliable connectivity, adequate equipment, and technical assistance. Future studies should examine whether such interventions improve digital leadership competence and administrative technology use across a larger number of schools.

REFERENCES

AlAjmi, M. K. (2022). The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Kuwait. International Journal of Educational Research, 112, Article 101928. https://doi.org/10.1016/j.ijer.2022.101928

Alayan, G. (2022). School heads' technological leadership and teachers' ICT integration in instruction in the public elementary schools in the Division of Quezon. Psychology and Education: A Multidisciplinary Journal, 3(2). https://ejournals.ph/article.php?id=20333

Ariate, I. P., & Bacasmot, J. B. (2025). Technology leadership of school heads and teachers' attitude towards ICT: The mediating effect of technology literacy skills. European Journal of Education Studies, 12(12). https://doi.org/10.46827/ejes.v12i12.6369

Asriadi, A., & Andriani, D. E. (2026). A systematic literature review of school digital leadership: From digital readiness to organizational outcomes. Leadership and Policy in Schools. https://doi.org/10.1080/15700763.2026.2646345

Cejas, A. S., & Guhao, E. S., Jr. (2023). The mediating roles of emotional intelligence and school climate on the relationship between technological leadership of school heads and teaching effectiveness of teachers: Path analysis. International Journal of Research Studies in Education, 12(6), 79–93. https://doi.org/10.5861/ijrse.2023.39

Delgado, D. E. (2024). School heads' digital leadership and its impact on technology integration in the public schools of Lucena City Division [Research project record]. Manuel S. Enverga University Foundation. https://portal.mseuf.edu.ph/research/search/details/2342

Kaya-Kasikci, S., Zayim-Kurtay, M., & Kondakci, Y. (2023). The role of leadership in developing a climate of technology integration in public schools. Teaching and Teacher Education, 132, Article 104234. https://doi.org/10.1016/j.tate.2023.104234

Lambot, G. V., & Yango, A. R. (2023). Secondary school heads' technology leadership skills, educational motivation, teachers' techno-pedagogical competence in the City Schools Division of Laguna. Technium Social Sciences Journal, 44(1). https://doi.org/10.47577/tssj.v44i1.8927

Maala, E. B., & Lagos, F. D. (2022). Technological leadership of school heads and teachers' technology integration: Basis for the development of a training program. International Journal of Multidisciplinary: Applied Business and Education Research, 3(10), 2074–2089. https://doi.org/10.11594/ijmaber.03.10.19

Maltez, K. M. T. (2025). School structure and technology integration in instruction: Its relationship to school heads' leadership. AIDE Interdisciplinary Research Journal, 13(1), 107–136. https://doi.org/10.56648/aide-irj.v13i1.201

Nagel, I., Haugsbakken, H., Pettersson, F., & Håkansson Lindqvist, M. (2026). Digitalization and school leadership: A scoping review. Frontiers in Education, 11, Article 1828426. https://doi.org/10.3389/feduc.2026.1828426

Panganiban, R. V. (2023). Technology leadership and technology integration in selected science high schools in the National Capital Region: Basis for a proposed online training module. Mountain Journal of Science and Interdisciplinary Research, 83(1). https://doi.org/10.70884/mjsir.v83i1.356

Subingsubing, R., & Guhao, E., Jr. (2025). Instructional and technology leadership of school heads, and attitude towards ICT: A structural equation model on ICT literacy of public school teachers. Research Frontiers: International Journal of Social Science and Technology. https://doi.org/10.55990/20250001

United Nations Educational, Scientific and Cultural Organization. (2023). Global education monitoring report 2023: Technology in education—A tool on whose terms? https://www.unesco.org/gem-report/en/publication/technology