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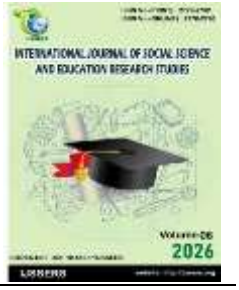

Digital Leadership of Public Elementary School Heads: Basis for the Development of Capability Building Program

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ABSTRACT

As technology evolves how schools work, school leaders must be able to lead in a digital world. This study was conducted to see how well school heads are managing digital tools and what problems and challenges they encounter. The goal was to use this information to create a capability training program that truly helps them improve. The researcher used mixed methods with a sequential explanatory design that combined quantitative and qualitative methods. The first stage used quantitative methods to gather the data through a survey, and the second used qualitative methods gathering detailed responses from the interviews. The results showed that school heads believe they are doing a very good job. They gave themselves high scores in areas like setting a digital vision (3.99), using technology (4.05), digital communication (4.04), managing resources (4.04), and staff training (4.01). Overall, they feel they are practicing digital leadership to a great extent. However, the study also found that school heads face real problems. These include the lack of knowledge and expertise in technology, falling behind on new trends, and facing resistance to change. They also deal with practical issues like poor internet and the challenge of teaching parents how to use digital tools. Based on these findings, the study suggests that schools may start a digital mentorship program or capability-building program instead of just conducting workshops. This program would provide effective mentoring and better materials and infrastructure to help school heads overcome the challenges experienced by the school heads.

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KEYWORDS: digital communication, digital leadership, digital vision, mixed methods research, professional development

I. INTRODUCTION

Digital leadership among public elementary school heads is a critical factor in advancing technology integration within education. It encompasses the ability to foster innovation, manage change, and strategically align digital initiatives with school goals to enhance both learning outcomes and organizational efficiency. Effective digital leaders inspire confidence, promote digital literacy, and cultivate collaboration, ensuring that students acquire essential 21st-century skills. In the Philippine context, policies such as the MATATAG framework and the Computerization Program highlight the government's commitment to quality education through technology.

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However, many school heads still require professional development to strengthen their digital leadership competencies.

In the Philippines, the Department of Education's (DepEd) MATATAG, known as the *Bansang Makabata, Batang Makabansa* framework, is consistent with the state's policy to establish, maintain, and support a complete, adequate, and integrated system of education relevant to the needs of the people. The DepEd is continuously taking appropriate steps to make education accessible to all and to accelerate delivery of basic education facilities and services. Thus, DepEd Order No. 16, s. 2023, known as the Revised Guidelines on the Implementation of the Department of Education Computerization Program (DCP), provides for the revised guidelines on the implementation of the DCP, which shall provide public schools and DepEd offices with appropriate, quality, and equitable technologies that would enhance the teaching, learning, governance, and operation processes, practices, programs, and policies to meet the challenges of the modern age.

Furthermore, the Philippine Professional Standards for School Heads and Supervisors (PPSS) and Orders 24 and 25 (Pegg et al., 2020), respectively, establish a global framework for improving professional standards for school heads and supervisors. The decentralization of school heads' roles has made their roles more complex, as stipulated in the Governance of Basic Education Act of 2001. School heads are now responsible for setting school missions, creating conducive learning environments, and overseeing teacher efficiency.

Research underscores the importance of transformational leadership in improving teachers' use of digital tools (Schmitz et al., 2023) and highlights the role of school heads in fostering continuous learning cultures (Karlin, 2022). Studies reveal competency gaps in ICT among teachers (Larawan et al., 2023), pointing to the need for targeted training and resources. Challenges such as budget constraints, resistance to change, and inequitable access to technology persist (Waari 2022; Rifel & Osias, 2024), limiting effective digital transformation. Despite these barriers, successful attributes of school heads include strategic resource allocation, stakeholder engagement, and ethical use of digital communication tools for community involvement (Diano & Calbi, 2024; Pagela, 2024).

Moreover, school heads who practice the Philippine Professional Standards for School Heads (PPSSH) Domain 2.2 competencies improve their school's organizational financial capacity and school performance (Digo et al., 2025). Proper budgeting and fund distribution processes are crucial elements that significantly improve the overall management of schools. Stakeholders' participation in financial decision-making improves resource management more than when a single person is in charge of the institution's financial decisions. Stakeholders' active participation in shaping financial planning and decisions enhances trust within the school's community. Further, continuing professional development in financial matters is paramount for school heads to overcome the challenges aligned with financial management.

Similarly, Moodle and Google Classroom are the most widely used LMSs by secondary schools in the Philippines (Borabo et al., 2024). Secondary schools utilized LMS primarily to create and deliver learning content; moreover, for assessment, monitoring, feedback, and establishing interaction and communication between students and teachers. The utilization of LMS significantly improves teachers' performance and students' academic achievement during distance learning. It also addresses the gaps and skepticism towards online learning. The paper recommends that secondary schools maximize the use of LMS to improve instruction. The DepEd shall institutionalize the use of LMS in public secondary schools, especially during the disruption of regular classes. It shall also provide training and capacity building in the use of LMS so that teachers and learners will be able to use LMS effectively. Lastly, developers shall continue to enhance the features of LMS to cater to the needs of teachers, learners, and school administrators

Consequently, the study of Foster et al. (2024) showed a significant improvement from the intermediate to the advanced level after using e-books on Canvas as the learning management system for upskilling their skills. Statistical analysis of the data also showed that the use of e-books resulted in an improvement in the digital skills of school heads. The paired samples t-test resulted in a calculated t-statistic of 3.781 with a corresponding p-value of 0.003, which falls below the conventional alpha level of 0.05, leading to the rejection of the null hypothesis that there is no difference in the mean score. Based on these findings, the study concludes that using e-books contributed to an increase in the level of digital skills of secondary school heads. In addition, this indicates that using e-books via Canvas as a learning management system has been proven effective because there was an increase in the mean scores, resulting in a significant improvement in the digital skills of school heads. Hence, this study calls for school heads to constantly strengthen the use of e-books and upgrade their digital skills at work using the e-books developed in this study

This study focuses on assessing the digital leadership skills of public elementary school heads in Sorsogon, particularly in the Gubat District. It emphasizes their pivotal role in guiding schools through digital transformation amid connectivity and resource challenges. Findings aim to inform stakeholders, enhance teacher support in digital tool utilization, and contribute to the development of professional programs and ICT-related policies. Ultimately, strengthening digital leadership among school heads is essential for fostering innovative, resilient, and equitable educational environments in the Philippines.

The study aims to assess the digital leadership of school heads by assessing their practices and challenges in their workplace to inform the design of a capability-building program. Specifically, this study aims to determine the level of digital leadership among school heads across the following domains: digital vision, integration of technology, digital communication, resource allocation, and professional development; identify the challenges encountered by school heads in exercising digital leadership; and design a capability program based on the integration of key findings on the level and challenges in school heads' digital leadership.

II. METHODOLOGY

Research Design

This research used mixed methods with a sequential explanatory design that combined quantitative and qualitative methods. The first stage used quantitative methods, and the second used qualitative methods. The implementation of the sequential explanatory design starts with the collection and analysis of quantitative data, followed by the collection and

analysis of qualitative data that are built based on the initial results of quantitative data (Creswell, 2018). Moreover, as outlined by Creswel, it is a two-phase design starting with quantitative data collection/analysis followed by qualitative, where qualitative results explain, refine, or follow up on initial quantitative trends. It is ideal for exploring unexpected results or deepening understanding using interviews or focus groups.

Source of Data

The study involved 30 elementary school heads in the Gubat District, purposively selected as key informants due to their active roles in digital leadership. The respondents included 15 principals, 10 head teachers, and five teachers-in-charge. For the qualitative phase, 12 school heads (nine principals and three head teachers) were chosen based on availability and involvement, providing deeper insights into the quantitative results. Additionally, eight participants evaluated the two-day webinar intervention facilitated by a DepEd Masbate education program specialist, offering feedback on its relevance, effectiveness, and applicability. Their participation enriched the study's analysis of digital leadership practices in the district.

Research Ethics

The researcher strictly adhered to ethical standards in conducting the study. Permission was obtained from school officials, and participation was voluntary with informed consent. Respondents were assured of anonymity, confidentiality, fairness, and protection from potential harm. At the outset, participants were informed of the study's aims, objectives, methods, possible risks, and benefits and were reminded of their right to withdraw at any time. Data collected were used solely for research purposes, ensuring that participants' decisions were free from coercion.

Research Instrument

Data were collected through a researcher-made questionnaire and interviews. The questionnaire, based on DepEd's National Competency-Based Standards for School Heads (2010), assessed digital leadership in five areas: vision, technology integration, communication, resource allocation, and professional development, while interviews explored challenges in administrative application. Validation included a pilot test, expert review, and reliability testing, with Cronbach's alpha values (0.89–0.98) confirming excellent reliability. Twelve school heads were interviewed, and a webinar intervention was evaluated using DepEd's Modular Training Evaluation Framework, DepEd Memorandum No. 1589, s. 2024, focusing on relevance, facilitator effectiveness, and content quality.

Data Collection

Prior to the study, approval was obtained from Gubat District supervisors, with communication facilitated via messenger and email. The validated questionnaire was uploaded to Google Drive and distributed to 39 school heads, yielding 30 completed responses (88%) within three weeks. Data were tabulated and analyzed using frequencies and weighted means. Findings on digital vision, technology integration, communication, resource allocation, and leadership challenges informed the design of a two-day webinar training program for school heads. The training, attended by 30 participants, was evaluated for relevance and effectiveness, further strengthening the study's analysis of digital leadership practices in the district.

Data Analysis

The data obtained from the structured questionnaires were analyzed through frequency counts and weighted means, with leadership levels interpreted via a five-point (1932) scale: 4.50-5.00 (Very Proficient), 3.50-4.49 (Proficient), 2.50-3.49 (Moderately Proficient), 1.50-2.49 (Less Proficient), and 1.00-1.49 (Least Proficient). Twelve informants were interviewed, and data were thematically analyzed using Braun and Clarke's six-phase process. The webinar intervention was also evaluated using a DepEd (2020)-adapted scale: 1 (Least Satisfactory), 2 (Less Satisfactory), 3 (Moderately Satisfactory), 4 (Satisfactory), and 5 (Very Satisfactory). This integration of methods ensured reliable results and deeper contextual insights, leading to practical recommendations.

III. RESULTS

Digital Leadership of Elementary School Heads

This portion encompasses the meaning, implications, and support studies of the digital leadership of the elementary school heads in terms of establishing a digital vision, integration of technology, digital communication, resource allocation, and professional development.

Table 1. Establishing a Digital Vision

Indicators	Weighted Mean	Interpretation
1. Develops and communicates a comprehensive vision for integrating digital technologies into the school's educational framework.	3.77	Proficient
2. Ensures that digital vision aligns with the broader educational objectives and policies of the institution.	3.80	Proficient

3.	Involves teachers, students, parents, and the community in the development and refinement of the digital vision.	3.97	Proficient
4.	Formulates actionable plans and policies to implement the digital vision effectively.	3.83	Proficient
5.	Allocates necessary resources, including budget and infrastructure, to support the digital vision.	3.73	Proficient
6.	Provides training and development opportunities for staff to align with the digital vision.	4.03	Proficient
7.	Establishes mechanisms to assess the progress and impact of the digital vision.	4.17	Proficient
8.	Demonstrates openness to revising the digital vision based on feedback and changing technological landscapes.	4.13	Proficient
9.	Integrates ethical guidelines and considerations into the digital vision, ensuring responsible use of technology.)	4.30	Proficient
10.	Plans for the long-term sustainability of the digital vision, considering future technological advancements and needs.	4.20	Proficient
	Overall Weighted Mean	**3.99**	Proficient

Table 1 overall mean for establishing a digital vision was 3.99, with the highest indicator being the integration of ethical guidelines and considerations (4.30). This was followed by long-term sustainability planning (4.20) and mechanisms for assessing progress and impact (4.17). Meanwhile, the lowest results were developing and communicating a comprehensive vision (3.77) and allocating necessary resources such as budget and infrastructure (3.73).

Table 2. Integration of Technology

	Indicators	**Weighted Mean**	**Interpretation**
1.	Develops and communicates a clear vision for integrating technology into the school's educational practices, ensuring alignment with broader educational goals.	4.07	Proficient
2.	Demonstrates proficiency in using digital tools and platforms and promoting a culture of continuous learning among staff to enhance technological skills.	4.20	Proficient
3.	Manages budget and resources to support the acquisition, maintenance, and upgrade of technological infrastructure and tools.	4.27	Proficient
4.	Provides ongoing professional development opportunities for educators to enhance their digital competencies and pedagogical approaches.	4.03	Proficient
5.	Utilizes data analytics to inform decisions related to technology implementation, assessing the impact on student learning outcomes, and making necessary adjustments.	3.98	Proficient
6.	Ensures equitable access to digital resources for all students and staff addressing disparities in technology access and usage.	3.93	Proficient
7.	Promotes the use of digital communication tools enhancing engagement and information sharing to facilitate collaboration among educators, students, and parents.	3.98	Proficient
8.	Implements policies and practices to safeguard the digital environment, protecting students and staff from cyber threats, and ensuring data privacy.	4.07	Proficient
9.	Encourages innovative uses of technology in teaching and learning and adapting to emerging technological trends to stay ahead in the digital landscape.	4.13	Proficient

10. Engages with the broader community, including parents and local organizations, to support and advocate for the integration of technology in education.	3.90	Proficient
Overall Weighted Mean	**4.05**	Proficient

Table 2 reveals that the overall mean for integrating technology is 4.05, with the highest indicator being the management of budget and resources (4.27). This is followed by proficiency in using digital tools and platforms (4.20) and promoting continuous learning and innovation in teaching and learning (4.13). Meanwhile, ensuring equitable access to digital resources scored 3.93. The lowest result was engagement with the broader community to support technology integration, which had a weighted mean of 3.90.

Table 3. Digital Communication

Indicators	Weighted Mean	Interpretation
1. Employs platforms like email, LMS, social media, WhatsApp, Zoom, and Slack to facilitate communication among staff, students, and parents.	4.13	Proficient
2. Disseminates information promptly and clearly, fostering trust and clarity within the school community.	4.20	Proficient
3. Assesses the effectiveness of communication strategies and makes necessary adjustments to improve outcomes.	4.27	Proficient
4. Encourages the use of digital tools that support collaborative work among educators and students, enhancing teamwork and shared learning experiences.	3.97	Proficient
5. Provides training and resources to staff and students to enhance their digital communication skills, ensuring effective use of digital platforms.	3.90	Proficient
6. Establishes channels for receiving feedback from stakeholders, allowing for continuous improvement in communication practices.	3.67	Proficient
7. Demonstrates the ability to manage communication effectively during crises, ensuring that all parties are informed and supported.	4.10	Proficient
8. Adapts communication methods to accommodate diverse needs and ensures that all members of the school community can access information.	4.03	Proficient
9. Integrates various digital communication technologies into daily operations to enhance efficiency and reach.	4.03	Proficient
10. Advocates for the development and implementation of policies that support effective digital communication within the educational setting.	4.07	Proficient
Overall Weighted Mean	**4.04**	Proficient

Table 3 shows that the overall mean for digital communication is 4.04, with the highest indicator being the assessment of communication strategies at 4.27. This is followed by the dissemination of information clearly and promptly (4.20) and the use of platforms like email, LMS, and social media to facilitate communication (4.13). The lowest results were providing training and resources to enhance digital communication skills (3.90) and establishing feedback channels from stakeholders (3.67).

Table 4. Resource Allocation

Indicators	Weighted Mean	Interpretation
1. Develops and implements a budget that prioritizes investments in digital infrastructure, tools, and training to support the school's digital vision.	4.13	Proficient
2. Sees to it that digital resources are allocated fairly across all departments and student groups, addressing disparities and promoting inclusive access.	4.20	Proficient
3. Solicits grants, donations, and partnerships with external organizations to supplement the school's digital resources and capabilities.	4.27	Proficient
4. Maintains clear and accountable financial records for all digital expenditures, promoting trust among stakeholders and ensuring compliance with regulations.	3.97	Proficient
5. Allocates funds for continuous professional development programs that equip educators and staff with the necessary digital skills and knowledge.	3.90	Proficient
6. Implements strategies for the long-term maintenance and upgrading of digital tools and infrastructure to ensure their continued effectiveness.	3.67	Proficient
7. Utilizes data analytics to inform decisions on resource distribution, ensuring that investments align with identified needs and priorities.	4.10	Proficient
8. Involves teachers, students, and parents in discussions about resource needs and priorities, promoting a collaborative approach to budgeting.	4.03	Proficient
9. Assesses the impact of digital resources on teaching and learning outcomes, making adjustments as necessary to optimize effectiveness.	4.03	Proficient
10. Participates with local and national policymakers to advocate for increased funding and supportive policies for digital education initiatives.	4.07	Proficient
Overall Weighted Mean	**4.04**	Proficient

Table 4 shows that the overall mean for resource allocation is 4.04, with the highest indicator being soliciting grants, donations, and partnerships at 4.27. This is followed by fair allocation of digital resources across departments and student groups (4.20) and developing a budget that prioritizes digital infrastructure and training (4.13). Meanwhile, allocating funds for continuous professional development programs scored 3.90. The lowest result was the implementation of strategies for long-term maintenance and upgrading of digital tools and infrastructure, which had a weighted mean of 3.67.

Table 5. Professional Development

Indicators	Weighted Mean	Interpretation
1. Demonstrates proficiency in digital leadership, encompassing skills in guiding digital transformation, promoting a digital culture, and integrating technology into school governance.	4.00	Proficient
2. Uses educational technologies for teaching, learning, and administrative tasks.	4.10	Proficient
3. Adapts in the workplace which is crucial for to navigate the challenges of the digital age.	4.03	Proficient

4.	Demonstrate visionary leadership, decision-making, and supportive leadership for effective digital leadership.	3.93	Proficient
5.	Engages in instructional e-supervision to support teachers in integrating technology into their teaching practices.	3.90	Proficient
6.	Involves and guides the school community in adopting and utilizing digital tools.	4.07	Proficient
7.	Promotes a positive digital culture within the school encourages the effective use of technology.	3.97	Proficient
8.	Participates in professional development programs to stay updated with digital trends and enhance their leadership skills.	4.10	Proficient
9.	Implements effective digital policies and practices.	3.93	Proficient
10.	Adopts a distributed leadership model that allows school heads to share leadership responsibilities, developing collaboration and collective decision-making.	4.07	Proficient
	Overall Weighted Mean	**4.01**	Proficient

Table 5 shows that the overall mean for professional development is 4.01, with the highest indicators being the use of educational technologies and participation in professional development programs, both rated at 4.10. These are followed by involving the school community in adopting digital tools and adopting a distributed leadership model, each with a weighted mean of 4.07. The lowest result was engaging in instructional e-supervision to support teachers in integrating technology, which had a weighted mean of 3.90.

Challenges Along Digital Leadership of School Heads

The study highlights that school heads face significant challenges in digital leadership, including limited technology expertise, resistance to new trends, insufficient training, inadequate resources, poor infrastructure, and weak internet connectivity, all of which hinder effective technology integration.

Table 6. Challenges Encountered by the School Heads on Digital Leadership

Key Themes	Sub Themes	Evidence
Need for trainings and seminars	Limited technology expertise	"We have to undergo trainings and seminars to become abreast in using digital tools and technologies". Support from the school maybe solicited for this purpose. "I know how to use a computer, but I don't know the new trends like AI or or any other apps. "We need an expert to sit down with us and show us how these can actually work in our specific office."
	Lack of knowledge on new trends	"I know how to use a computer, but I don't know the new trends like AI or any other apps. "We need an expert to sit down with us and show us how these can actually work in our specific office."
Lack of Adaptation Skills for New Digital Technologies	Resistance to adapt new technologies	"I'm old enough for and about to retire; I don't need this anymore". "I will just ask my co teacher to teach me how to use digital tools and technologies. "I want to use the new data management system provided by the district, but I still need to master the basics before I can direct my teachers on how to use it."

	Readiness in using digital tools	"My readiness is not enough because I never had formal computer education.
Lack of Technology Resources	Lack of funds to procure technology tools	"We really need money to procure technology tools in our school operations, like computers, printers, laptops, etc.
	Inadequate digital infrastructure	"There is a lack of mobile towers in our area.
	Poor internet connectivity	"We usually experience poor internet connectivity, causing delays in our online transactions."

Capability-Building Program for School Heads

A capability-building program was designed to strengthen the digital leadership of elementary school heads after identifying levels and challenges in vision-setting, technology integration, communication, resource allocation, and professional development. The program provided contextualized training to align digital tools with pedagogical goals, manage infrastructure, and support teachers in adopting technology for improved learning outcomes. Its objectives included enhancing digital literacy, ICT management, safety, and e-governance skills, while promoting innovation, inclusivity, and digital citizenship. A two-day webinar, *"Empowering 21st Century School Leaders: A Digital Leadership Training for Elementary Schools,"* was conducted with sessions on digital vision, community engagement, communication strategies, resource allocation, and instructional e-supervision. This initiative aimed to equip school heads with practical skills to lead technology-enhanced learning environments and build resilient, future-ready schools.

Attendance and participation were high, with a 97% completion rate. Moreover, the capability-building webinar was assessed by eight school heads using a checklist across five parameters: relevance, facilitator, content, instructional quality, and technical quality. Results showed consistently high ratings, with mean scores from 4.84 to 4.97, all described as very satisfactory. Participants found the topics relevant and applicable, praised the facilitator's mastery and clarity, and valued the well-organized, practical content. Instructional and technical quality were likewise rated excellent, confirming the webinar's effectiveness in strengthening digital leadership competencies. The evaluation of the capability-building program for school heads showed consistently high ratings across all aspects, with overall scores ranging from 4.84 to 4.97, all interpreted as "Very Satisfactory."

DISCUSSION

Elementary School Heads as Digital Leaders in the 21st Century

This section discusses the meaning, implications, and support studies of the digital leadership of the elementary school heads in terms of establishing a school vision, integration of technology, digital communication, resource allocation, and professional development. The weighted mean was utilized in analyzing the data.

Table 1. The findings on establishing a digital vision reveal that elementary school heads demonstrate a proficient level of digital leadership; the overall mean is 3.99, excelling in integrating ethical guidelines (4.30), planning for long-term sustainability (4.20), and establishing assessment mechanisms (4.17), which underscores their strong commitment to ethical, reflective, and future-oriented leadership. However, lower scores in resource allocation (3.73) and alignment with institutional policies (3.77) highlight systemic challenges in funding and structural support that may hinder full implementation of digital strategies. These results imply that while school heads are prepared to lead digital transformation with openness to feedback and continuous professional development, sustained capacity-building and stronger policy alignment are essential for long-term success. This is consistent with Soriano (2021), who noted that public elementary school heads face infrastructure and funding constraints, while Perez and Ramos (2020) emphasized the importance of refining digital visions through feedback and technological adaptation, and the Department of Education (2020) reinforced the integration of digital vision in school planning through its Basic Education Learning Continuity Plan.

Table 2. The study found that elementary school heads demonstrated a proficient level of digital leadership, with the strongest performance in managing budgets and technological resources, underscoring their capacity to sustain the infrastructure needed for digital transformation. This suggests that school leaders are effectively aligning technology integration with educational goals, professional development, and cybersecurity, reflecting readiness for long-term digital strategies. Literature supports these findings: Reyes and Prado (2020) emphasized that infrastructure management, professional development, and data-driven practices are vital components of digital leadership, which aligns with the high-performing indicators in this study. However, the relatively lower rating in community engagement echoes Soriano's (2021) observation

that while Filipino school heads embrace digital tools, stakeholder collaboration remains a challenge, highlighting the need to strengthen partnerships with parents and local organizations to sustain equitable technology initiatives.

Table 3. The study reveals that elementary school heads exhibit a proficient level of digital communication leadership, with the highest performance in assessing and adjusting communication strategies, underscoring their reflective and data-informed approach to fostering collaboration and trust. This implies that school leaders are adept at using digital platforms to disseminate timely information and manage both routine and crisis communication, though the relatively lower score in establishing feedback channels highlights a need to strengthen two-way communication for inclusivity and responsiveness. Velasco and Domingo (2021) similarly found that while digital platforms enhance stakeholder engagement, feedback mechanisms are critical to ensuring inclusivity, while McLeod and Shareski (2020) emphasized that varied communication platforms build stronger school cultures and stakeholder trust. Avidov-Ungar et al. (2020) further support these findings, noting that training in digital communication tools enhances administrative efficiency and instructional support, reinforcing the importance of professional development and inclusive communication policies in sustaining effective digital leadership.

Table 4. The study shows that elementary school heads demonstrate a proficient level of digital leadership in resource allocation, with the highest performance in soliciting grants, donations, and partnerships, reflecting proactive strategies to supplement digital resources. This indicates strong financial planning and equitable distribution of digital tools across departments, though the relatively lower score in long-term maintenance strategies suggests sustainability planning needs further attention. Soriano (2021) corroborates these findings, noting that while school heads actively pursue external funding, infrastructure sustainability remains a challenge, while Reyes and Prado (2020) emphasize that effective budgeting for digital tools and training is essential for successful technology integration. The Department of Education (2020) further reinforces this by mandating digital transformation strategies in the Basic Education Learning Continuity Plan, underscoring the need for broader policy and financial support to sustain digital initiatives.

Table 5. The study highlights that elementary school heads demonstrate a proficient level of digital leadership in professional development, with strong engagement in educational technologies, continuous learning programs, and distributed leadership practices that foster collaboration and inclusivity. This implies that school leaders are evolving into transformational digital leaders who not only integrate technology into administrative and instructional processes but also cultivate a positive digital culture within their institutions. Harris and Jones (2019) support this by emphasizing the importance of distributed leadership in building collective capacity and inclusive school cultures, while Reyes and Prado (2020) note that although principals excel in promoting digital culture and professional learning, gaps remain in aligning digital leadership with instructional supervision frameworks. These findings underscore the need for institutionalized digital leadership frameworks and targeted development programs to strengthen instructional supervision and policy formulation in digital contexts.

Challenges Encountered in Digital Leadership

Limited Technology Expertise.

The school heads revealed that they still need to undergo trainings and seminars for them to enhance their technology and digital skills. They wanted to seek support from the school administration to give them necessary support and opportunities to better their skills as far as honing their abilities, knowledge, and skills related to digitization. In their cases, there may not be sufficient professional development opportunities available for school heads to develop their technology skills, which may hinder their ability to lead technology initiatives effectively.

This is an implication that there is a need to provide specialized training for school leaders in technology management, and digital leadership can help them feel more confident in utilizing technology effectively. Online courses, workshops, or mentorship programs focused on digital leadership could bridge this kind of gap.

Lack of Knowledge on New Trends.

Seeking assistance from experts was solicited by the school heads to teach them how to integrate their technology skills along their digital leadership in their workplaces. The school heads are asking for immediate assistance to help them adopt the modern technologies and their application. To address this issue, the school may employ or establish a partnership with technology integration specialists who will work directly with school heads and staff. These specialists can provide guidance, conduct training sessions, and offer practical advice on integrating technology, which may enhance digital leadership skills. School heads with higher technology expertise can mentor those with less experience. This peer-to-peer support system can be less intimidating and more effective in building their skills gradually.

Resistance to adapting new technologies.

Some of the school heads have the negative attitudes that come to the point that they are refusing to adopt new technology trends. Some school leaders may resist integrating technology into their schools due to unfamiliarity or fear of trouble. They may prefer traditional methods that they have embraced for years and may not see the value in adopting new tools or processes. This may suggest that encouraging school heads to develop a clear vision for digital learning within their school and having a clear direction may help them prioritize

the technology that aligns with the school's goals and may make it easier to implement technology initiatives.

Readiness in using digital tools.

School heads may lack strong foundational skills in technology, making it challenging to direct educational technologies and improve administrative performance. They may need a strong understanding of digital tools and platforms, including educational technology, data management systems, communication tools, and other platforms that are easy to adopt. The finding is also highlighted by (Wijayanti, 2024). According to him, elementary school heads play a crucial role in utilizing digital communication tools for effective, inclusive, and ethical use of technology. This is essential for school operations, instructional leadership, and community engagement. Tools like emails, school websites, social media platforms, learning management systems, and video conferencing have redefined how leaders share information, collaborate, and foster relationships with other stakeholders especially the parents. Effective digital communication is critical for building trust, transparency, and engagement within a diverse school community.

Poor internet connectivity.

School heads face poor internet connectivity, causing delays in online transactions during peak usage times. Network congestion and poor infrastructure may have contributed to this issue. Rural or remote areas may lack sufficient mobile towers for high-speed internet services, resulting in slow or no internet access. Mountainous or heavily forested areas also face signal interference, making consistent internet connectivity difficult. This may imply that exploring technologies can provide a solution for areas with poor internet access. Local communities can set up networks for affordable or free internet access. Educational platforms and tools can allow offline learning, ensuring students can continue learning even without an internet connection. Schools can collaborate with local governments to establish community Wi-Fi networks, and school leaders may advocate for better internet infrastructure in underserved areas by working with local governments or nonprofit organizations.

Lack of funds to procure technology tools.

School heads face budgetary challenges, limiting access to technology resources and limiting the implementation of modern teaching techniques like online or blended learning due to insufficient funds. This may suggest that there may be a need to seek external funding, form partnerships, and prioritize low-cost tools in which schools can gradually improve their technological infrastructure and to make sure that students may have access to the digital resources they need for success. Another is that collaboration with the community and utilizing free internet connectivity may also provide additional avenues for enhancing educational technology without requiring too much spending.

Inadequate Digital Infrastructure.

This may mean that as school leaders speak about inadequate digital infrastructure, they aren't just talking about a lack of computers; they are talking about the ecosystem required to make technology work. For schools with very low budgets, this infrastructure gap becomes a physical wall that stops any digital progress. Further, school heads face a significant challenge in implementing and sustaining technology-based education due to insufficient digital infrastructure, especially for schools provided with a very low budget. This may indicate that insufficient infrastructure may hinder integration of technology into lessons and student engagement. With this in view, there is a need for school leaders to keep managing budgets, secure funding, and oversee technological infrastructure maintenance and upgrading.

Difficult to encourage and educate parents on digital literacy.

Many parents only see the bad side of the internet: inappropriate content and children getting addicted to games. There may be a fear that technology will replace their authority. They may think that if the child knows more about the digital world than the parent, the parent feels they can no longer guide or protect them. This may indicate that parents may feel intimidated or overwhelmed by the rapid pace of technological change due to factors such as lack of exposure and multiple responsibilities such as house chores and other home concerns. They may have viewed technology as a distraction or risk and affected their children's comfort, making them less open to digital literacy education. Others may have a basic understanding of devices or be beginners, which may create a dire need to address the issue. Consequently, another implication is that concerns about online safety, privacy, or exposure to inappropriate content may also hinder parents' willingness to delve into digital tools.

These results imply that while leaders are committed to digital transformation, gaps in professional development, infrastructure, and stakeholder engagement limit their capacity to sustain initiatives, particularly in public schools with constrained budgets. Soriano (2021) similarly reported that Filipino school heads struggle with sustainability and infrastructure maintenance despite proactive efforts in digital adoption, while Reyes and Prado (2020) emphasized that adequate training and resource allocation are critical for successful technology integration. Velasco and Domingo (2021) further noted that stakeholder engagement, especially with parents and communities, is essential to build trust and inclusivity in digital learning, underscoring the need for comprehensive training, external partnerships, and policy support to overcome these barriers.

Capability-Building Program for School Heads

A needs-based capability-building program was designed to address gaps in training, technology use, resources, and stakeholder engagement, focusing on digital vision, integration, communication, resource management, and collaborative leadership. Delivered virtually through modules and workshops, it included a two-day webinar attended by eight school heads. Sessions covered digital vision, resource management, communication, and e-supervision. Participants valued the relevance and interactivity, with several initiating school-based digital projects.

The overall "very satisfactory" ratings (4.84–4.97) suggest that the program successfully bridged the gap between theory and practice. The high score in relevance validates the findings of Richardson et al. (2021), who noted that administrators are most engaged when training provides "immediate utility" tools they can use the next day in their office. Since the ratings were high, the participant suggestion to expand multimedia use and interactive examples mirrors the Cognitive Load Theory (Mayer, 2014). For digital leadership training to be truly effective, the delivery method must model the very technology integration it preaches. The most telling metric of success was not the 97% completion rate, but the fact that participants initiated school-based digital projects post-webinar. This transition from "passive learner" to "active innovator" is what Fullan (2014) describes as "systemic change." When school heads move from attending a webinar to leading a project, the capability-building has successfully shifted from a training event to a culture shift.

According to Sheninger (2019), digital leadership is about establishing a shared vision for using technology to enhance school outcomes. Your program's focus on "vision-setting" directly addresses the requirement for school heads to move beyond being mere managers of hardware to being "architects of learning." Research by Dexter (2018) emphasizes that professional development for school leaders must be contextualized. By identifying specific gaps in "e-supervision" and "resource allocation" before implementation, your program avoided the "one-size-fits-all" trap that often leads to low engagement in ICT training. The inclusion of e-supervision is a sophisticated touch. Gurr (2015) argues that successful school leaders in the digital age must leverage technology to monitor and support teaching practices remotely and synchronously. This ensures that "technology integration" isn't just a buzzword but a measurable pedagogical shift. Effective digital leadership requires balancing the "bits and bytes" with the budget. Kester (2020) highlights that school heads often struggle with "resource orchestration"—the ability to align limited financial resources with infrastructure needs. Your program's sessions on resource allocation directly mitigate this common administrative hurdle.

Participants affirmed the strong relevance of the webinar content, which effectively connected digital leadership theory with practical applications. The facilitator was highly rated for competence and engagement, though support materials could be further enhanced. Content quality was praised for being well-structured and relevant, with minor suggestions for more interactive and context-specific examples. Instructional quality was effective and purposeful, though multimedia use could be expanded for greater engagement. Technical quality was also strong, with clear audio and accessible materials, though visuals and screen displays could be refined. Overall, the program was deemed highly impactful in equipping school heads with essential digital leadership skills.

IV. CONCLUSION

Based on the findings, it was concluded that the school heads are proficient in digital vision, integration of technology, digital communication, resource allocation, and professional development. The most encountered challenges by the school heads in applying their digital leadership are along the lines of trainings and seminars, adaptation to new digital technologies, technology resources, stakeholder engagement, and internet connectivity, maybe given necessary actions. The designed intervention may be adopted and implemented. The participants are very much satisfied with the designed intervention. The recommendations were that school authorities may make courses of action for the school heads to reach the highest level of proficiency along all the parameters of digital leadership, especially conducting trainings and seminars. Allocation of adequate funds and resources shall be made available to address the challenges met by the school heads. The intervention may be adopted and implemented upon review and approval of the school authorities of the Department of Education. The effectiveness of the intervention may be considered by the school administration to have further evaluation and validation. Researchers may conduct another study using the findings of the present one.

V. DISCLOSURE

This study, titled *"Digital Leadership of Public Elementary School Heads,"* was conducted independently by the authors. The authors declare no financial interests, personal relationships, or other potential conflicts of interest that could have influenced the research, authorship, or publication of this work.

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