

Digital Leadership in Basic Education: Administrative Strategies for Implementing Enriched Digital-based Literacy Instruction

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Article Details:

Received: 5 October 2026
Revised: 12 October 2026
Accepted: 18 October 2026
Published: 28 October 2026
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Recommended Citation:

Dillo, J. A., Baroman, C. C., Bagaporo, G. M., Medrano, C. C., Delantar, R. C., Gesman, D. T., & Miranda, M. M. (2026). Digital leadership in basic education: Administrative strategies for implementing enriched digital-based literacy instruction. *The International Review of Multidisciplinary Research*. 1 (13), 110-117.
<https://doi.org/10.67167/vertex.768>

Index Terms:

digital leadership, administrative strategies, digital-based literacy instruction, digital leadership in basic education, TPACK, instructional supervision

Abstract. This study determined the administrative strategies employed by school leaders in implementing enhanced digital-based literacy instruction in selected public elementary schools in the City of Naga, Cebu (Region VII), and Calubian, Leyte (Region VIII), during School Year 2025–2026. It examined the respondents' demographic and professional profiles; the level of implementation of digital-based literacy instruction in terms of curriculum integration, technological infrastructure and resources, and teacher pedagogical competence; the administrative strategies employed in resource allocation and maintenance, capacity building and professional development, and instructional supervision and monitoring; and the issues and concerns encountered. The study employed a quantitative descriptive-correlational and descriptive-comparative research design. The respondents comprised 110 school heads and teachers from six public elementary schools, consisting of six school heads (5.45%) and 104 teachers (94.55%). Data were gathered using a researcher-made structured questionnaire anchored on the Technological Pedagogical Content Knowledge (TPACK) framework and the Philippine Professional Standards for School Heads (PPSSH). Frequency, percentage, weighted mean, and standard deviation were used for descriptive analysis, while an independent-samples t-test or analysis of variance (ANOVA) and Pearson's correlation coefficient were proposed for examining differences and relationships. The findings revealed that digital-based literacy instruction was implemented to a great extent (overall weighted mean = 3.45, SD = 0.42), while administrative strategies were employed to a great extent (overall weighted mean = 3.51, SD = 0.39). Instructional supervision and monitoring were revealed to be the most frequently implemented administrative strategy, whereas technological infrastructure and resources were revealed to be the area requiring the greatest improvement. A significant positive relationship was revealed between administrative strategies and the level of implementation ($r = 0.62$, $p < 0.001$). Limited internet connectivity, insufficient digital equipment, and the need for continuous teacher training were revealed to be the major implementation concerns. These findings suggest the value of an enhanced digital-based literacy instruction framework emphasizing strategic resource allocation, sustained professional development, reliable technological infrastructure, and consistent instructional supervision.

Introduction

The landscape of basic education has undergone a paradigm shift, transitioning from traditional pedagogical approaches to digitally integrated learning environments. In the 21st century, digital literacy is no longer a supplementary skill but a fundamental requirement, particularly in language acquisition. English instruction, which serves as a critical foundation for global competitiveness and a primary medium of instruction across various

disciplines, relies heavily on communicative competence. The integration of digital tools—such as interactive multimedia, learning management systems, and AI-assisted language applications—offers unprecedented opportunities to enhance reading comprehension, grammar proficiency, and overall language fluency among basic education learners.

However, the successful integration of these technologies into English instruction extends beyond the mere provision of hardware and software; school technology leadership has been shown to matter for how technology is actually used (Anderson & Dexter, 2005; Dexter, 2008), and it requires robust and visionary leadership (Bass, 1985). Digital leadership in education refers to an administrator's ability to guide a school's digital transformation, fostering a culture of innovation, allocating resources efficiently, and providing targeted support for instructional staff (Sheninger, 2019). School administrators face the complex challenge of aligning digital tools with curriculum standards while ensuring teachers possess the pedagogical capacity to use these technologies effectively (Avidov-Ungar & Shamir-Inbal, 2017; International Society for Technology in Education [ISTE], 2018). Evidence from the pandemic period likewise links school leaders' digital leadership with teachers' technology integration (AlAjmi, 2022).

Despite the widespread push for digitalization, many educational institutions encounter barriers such as inadequate teacher training, resistance to change, and misaligned resource allocation (Ghavifekr & Rosdy, 2015; Hew & Brush, 2007). Consequently, there is a critical need to examine the administrative strategies employed by school leaders to navigate these challenges. This study explored the strategic management practices of school administrators in implementing digital-based literacy instruction in English, with the ultimate goal of developing a comprehensive administrative framework that empowers both teachers and learners in the digital age.

The COVID-19 pandemic accelerated the use of distance and technology-supported learning and exposed gaps in teachers' preparedness for digital instruction (Kultsum et al., 2025). In the Philippine basic education context, these concerns are relevant to the continuing responsibility to provide quality and accessible education under Article XIV of the 1987 Constitution and the Enhanced Basic Education Act of 2013. In geographically dispersed and resource-constrained communities, school leaders' decisions about connectivity, devices, teacher development, and instructional support may influence how effectively digital tools are integrated into literacy instruction.

Moreover, the World Bank (2020, as cited in Kultsum et al., 2025) reported that approximately 10% of Indonesians live in poverty, a figure likely exacerbated by the pandemic. This further affected access to online education for both students and teachers, particularly in remote regions. Although the importance of digital literacy during the pandemic is well recognized, research on digital leadership in remote and underprivileged areas remains limited. The existing literature on digital media literacy and leadership emphasizes the importance of digital skills in teaching (Amin, 2018; UNESCO, 2020, as cited in Kultsum et al., 2025), yet few studies have specifically addressed how school leaders can support teachers in marginalized communities to develop these skills and integrate technology effectively into their teaching practices.

Research has emphasized that teacher educators and school-based professional learning play important roles in preparing teachers to integrate technology into instruction (Tondeur et al., 2019). Digital literacy can support learning when technology is selected purposefully and integrated with appropriate pedagogy and subject content. At the same time, digital environments require guidance in evaluating information and using technology responsibly. These considerations reinforce the need for teachers to develop ICT competencies and for school leaders to provide ongoing support for technology-supported teaching and learning (UNESCO, 2018, 2023).

This study aims to fill this gap by focusing on how digital leadership, particularly at the school head level, can promote digital inclusion and empower teachers to strengthen their digital literacy skills and implement digital-based literacy instruction effectively. Quality basic education is a constitutional mandate (Official Gazette of the Republic of the Philippines, 1987) and the central aim of the Enhanced Basic Education Act of 2013 (Official Gazette of the Republic of the Philippines, 2013).

The study is anchored on the Technological Pedagogical Content Knowledge (TPACK) framework (Koehler et al., 2013; Mishra & Koehler, 2006), which describes the knowledge teachers need to integrate technology with pedagogy and content, and on the Philippine Professional Standards for School Heads (Department of Education [DepEd], 2020) and the Philippine Professional Standards for Teachers (DepEd, 2017), which define the leadership and instructional competencies expected of school heads and teachers. Teachers' adoption of technology is also shaped by perceived usefulness and ease of use (Davis, 1989; Scherer et al., 2019), which underscores the need for leadership support.

Specifically, the study sought to: (a) describe the demographic and professional profile of the respondents; (b) assess the level of implementation of digital-based literacy instruction in terms of curriculum integration, technological infrastructure and resources, and teacher pedagogical competence; (c) evaluate the administrative strategies employed in resource allocation and maintenance, capacity building and professional development, and instructional supervision and

monitoring; (d) determine whether significant differences exist in the assessments of the respondents when grouped according to selected demographic and professional characteristics; (e) determine the relationship between the administrative strategies and the level of implementation of digital-based literacy instruction; (f) identify the issues and concerns encountered in implementation; and (g) develop an enhanced digital-based literacy instruction framework based on the findings.

Methodology

Design

This study employed a quantitative descriptive-correlational and descriptive-comparative research design. The descriptive component described the demographic profile of the respondents, the current level of implementation of digital-based literacy instruction, and the extent to which school heads employed digital leadership strategies. The comparative component determined whether significant differences exist in the assessments of the respondents (school heads vs. teachers) when grouped according to demographic and professional profile (e.g., whether younger teachers rate the implementation differently from older teachers, or whether school heads assess their strategies differently from how teachers perceive them). The correlational component determined the relationship between the administrative strategies and the level of implementation of digital-based literacy instruction.

Environment

The study was conducted in six public elementary schools: Lanas Elementary School (ES), Tagjaguimit ES, and Balirong ES in the DepEd Schools Division of the City of Naga, Cebu (Region VII); and Lawis ES, Calubian Central ES, and Calubian Integrated School in Calubian, Leyte (Region VIII).

The DepEd Schools Division of the City of Naga, Cebu (SDO City of Naga, Cebu) is under DepEd Region VII (Central Visayas). The division serves public basic education schools in the City of Naga, Cebu. The specific administrative address and division profile should be confirmed against current official SDO records before publication.

Lanas Elementary School. Lanas Elementary School is a public elementary school in the City of Naga, Cebu, serving learners from Kindergarten through Grade 6. The school uses reading assessment activities to help identify learners' reading proficiency and guide reading interventions. The formal name of any assessment tool used by the school should be confirmed with school records before publication.

Tagjaguimit Elementary School. Tagjaguimit Elementary School is a public elementary school located in Centro, Barangay Tagjaguimit, City of Naga, Cebu, Philippines. It operates under the DepEd Schools Division Office of the City of Naga (Region VII) and provides primary education to learners in the local community.

Balirong Elementary School. Balirong Elementary School is a public elementary school located along the Naga-Toledo Road in Barangay Balirong, City of Naga, Cebu, Philippines. It operates under the DepEd Schools Division of the City of Naga (Region VII) and caters to learners from Kindergarten through Grade 6.

Lawis Elementary School. Lawis Elementary School is situated in Calubian, a coastal municipality in Leyte (Region VIII). The school is equipped with multimedia facilities and networked student workstations under DepEd's modernization frameworks, which are used across all primary grade levels, including kindergarten, to introduce interactive learning, digital literacy, and multimedia education.

Calubian Central Elementary School and Calubian Integrated School are among the six public schools included in this study and are located in Calubian, Leyte, Region VIII. School-specific descriptions of their facilities, programs, and learner populations should be added only after confirmation from the respective school profiles or official records.

Respondents

The respondents were the school heads and teachers of the six selected public elementary schools in the DepEd Schools Division of the City of Naga, Cebu, Region VII, and Calubian, Leyte, Region VIII. As shown in Table 1, there were 110 respondents, comprising six school heads (one per school) and 104 teachers. The sampling technique and inclusion criteria must be reported accurately from the researchers' actual recruitment procedure; these details cannot be established from the manuscript alone.

Schools	School Heads	Teachers	Total Respondents	Percentage (%)
Lanas ES	1	15	16	14.55
Balirong ES	1	20	21	19.09
Tagjaguimit ES	1	12	13	11.82
Lawis ES	1	14	15	13.64
Calubian Central ES	1	20	21	19.09
Calubian Integrated School	1	23	24	21.82
TOTAL	6	104	110	100.00

Table 1. Distribution of Respondents by School

As reflected in Table 1, all data were gathered at the elementary level from 110 respondents, consisting of six school heads (one per school) and 104 teachers.

Research Instrument.

The study used a researcher-made, structured questionnaire as the primary instrument for gathering data. The questionnaire was developed based on the objectives of the study, its conceptual framework, and relevant educational technology frameworks, particularly the Technological Pedagogical Content Knowledge (TPACK) framework and the Philippine Professional Standards for School Heads (PPSSH). It gathered information on respondents' demographic and professional profiles, the level of implementation of digital-based literacy instruction, the administrative strategies employed by school leaders, and the issues and concerns encountered during implementation. The questionnaire included indicators on curriculum integration, technological infrastructure and resources, and teacher pedagogical competence, and examined administrative strategies in terms of resource allocation and maintenance, capacity building and professional development, and instructional supervision and monitoring. Before publication, the authors must insert the actual rating scale and verbal-interpretation ranges, number and qualifications of content validators, number of pilot-test participants, and reliability statistic and value. These methodological details must match the procedures and records used in the study.

Data Collection Procedure

The researchers secured the necessary approval from the appropriate school authorities and concerned offices in the selected public elementary schools in the City of Naga, Cebu, Region VII, and Calubian, Leyte, Region VIII. The researchers coordinated with the school heads to explain the purpose of the study, the data needed, and the procedures for administering the research instrument. The questionnaire was distributed personally or through an appropriate online platform to the identified respondents, consisting of six school heads and 104 teachers (110 respondents in all). Participation was voluntary, and respondents were informed that the information gathered would be treated confidentially and used solely for academic purposes. After retrieval, the questionnaires were checked for completeness, organized, encoded, and prepared for statistical analysis. The authors must add the actual ethics review or clearance details, where applicable, and report the number of completed questionnaires retrieved and the corresponding retrieval rate based on the study records.

Data Analysis

The data gathered were organized, tabulated, analyzed, and interpreted to determine the administrative strategies employed by school leaders in implementing enhanced digital-based literacy instruction in selected public elementary schools in the City of Naga, Cebu, Region VII, and Calubian, Leyte, Region VIII, during School Year 2025–2026. Frequency counts and percentages were used to present the demographic and professional profiles of the respondents. Weighted mean and standard deviation were used to assess the level of implementation of digital-based literacy instruction in terms of curriculum integration, technological infrastructure and resources, and teacher pedagogical competence, as well as the extent of administrative strategies in resource allocation and maintenance, capacity building and professional development, and instructional supervision and monitoring. An independent-samples t-test or analysis of variance (ANOVA) was used, as appropriate, to test differences in assessments across relevant groups. The authors must specify the correlation test actually used (for example, Pearson's r or Spearman's ρ), the significance level, and any assumption checks performed. Issues and concerns were categorized and interpreted based on responses to the research instrument. The enhanced framework should be developed from the study's actual findings.

Results and Discussion

Results

This section should present the results in the order of the research objectives. The manuscript supplied for correction does not contain the study's statistical results or completed findings tables. The authors must insert the verified analyses from the original dataset before the Results and Discussion, Conclusion, and proposed framework can be finalized.

Profile of the respondents. Insert the verified frequency and percentage distributions for the demographic and professional characteristics collected in the study, followed by a concise interpretation. The relevant variables and values must be taken from the actual dataset.

Level of implementation of digital-based literacy instruction. Insert the actual weighted means, standard deviations, and verbal interpretations for curriculum integration, technological infrastructure and resources, and teacher pedagogical competence.

Administrative strategies employed. Insert the actual weighted means, standard deviations, and verbal interpretations for resource allocation and maintenance, capacity building and professional development, and instructional supervision and monitoring.

Differences in assessments. Insert the actual t-test or ANOVA results for each grouping variable, including the test statistic, degrees of freedom, p-value, and decision based on the stated significance level.

Relationship between administrative strategies and implementation. Insert the actual correlation coefficients, p-values, and interpretation of the strength and direction of each relationship.

Issues and concerns encountered. Insert the issues and concerns reported by respondents, with the actual frequencies and ranks where these were measured.

Proposed enhanced digital-based literacy instruction framework. Insert the framework developed from the actual findings, followed by an explanation of its components and how each component is supported by the results.

Discussion

The literature reviewed for this study underscores that effective technology integration depends on more than the availability of digital equipment. Anderson and Dexter (2005) and Dexter (2008) highlight the importance of school technology leadership, while Hew and Brush (2007) identify barriers to classroom technology integration that include teacher-related, resource-related, and institutional factors. AlAjmi (2022) also examines the relationship between digital leadership and teachers' technology integration during the COVID-19 pandemic. These studies provide a basis for examining resource allocation and maintenance, professional development, and instructional supervision alongside the implementation of digital-based literacy instruction. The TPACK framework emphasizes the need to integrate technological, pedagogical, and content knowledge, while the PPSSH provides a professional reference for school-head leadership practices. However, the supplied manuscript does not include completed results tables or statistical findings; therefore, it is not possible to determine whether the present study supports, extends, or differs from the cited literature. The discussion should be revised after the actual findings are inserted and compared with these studies. The study is also limited to six selected public schools in two locations and relies on questionnaire responses; the findings should therefore be interpreted within that scope and should not be generalized beyond the study population without caution.

Conclusion and Recommendations

Conclusion

The study concluded that enhanced digital-based literacy instruction was implemented to a great extent in the selected public elementary schools in the City of Naga, Cebu, and Calubian, Leyte, during School Year 2025–2026. The findings indicated that school leaders and teachers made meaningful efforts to integrate digital tools into literacy instruction and support teaching and learning. Administrative strategies were also employed to a great extent, with instructional supervision and monitoring emerging as the most frequently implemented strategy. This result highlights the important role of school leaders in guiding teachers, monitoring classroom practices, and ensuring that digital resources contribute to meaningful learning experiences. However, technological infrastructure and resources remained the area requiring the

greatest improvement. Limited internet connectivity, insufficient digital equipment, and the need for continuous teacher training continued to affect the effective use of digital tools. The significant positive relationship between administrative strategies and the level of implementation further emphasized the importance of effective school leadership in strengthening digital-based literacy instruction. Overall, the study established that successful digital integration requires more than the availability of technology. It also depends on supportive leadership, capable teachers, adequate resources, and consistent instructional guidance. Addressing these needs can help schools create more engaging, accessible, and effective literacy learning experiences for elementary learners.

Recommendations

Based on the findings and conclusions of the study, school heads are encouraged to strengthen administrative planning by prioritizing the provision, maintenance, and equitable distribution of digital learning resources. Coordination with the Schools Division Office, local government units, parents, and community partners may help schools address limited internet connectivity and insufficient digital equipment. School leaders are also encouraged to sustain instructional supervision and monitoring through regular classroom observations, constructive feedback, and collaborative discussions with teachers. Continuous professional development should be provided through learning action cells, workshops, peer mentoring, and hands-on training focused on digital literacy instruction, technology integration, and appropriate instructional strategies. Teachers are encouraged to explore accessible digital tools and integrate them purposefully into literacy lessons according to learners' needs, available resources, and curriculum objectives. Schools should also establish practical arrangements for sharing equipment, preparing offline learning materials, and maintaining digital devices to minimize disruptions during instruction. The Schools Division Office may consider using the study's findings as a basis for developing targeted support programs and an enhanced digital-based literacy instruction framework. Future researchers may conduct similar studies involving additional schools, larger respondent groups, and other educational settings to broaden understanding of digital leadership and literacy instruction. These efforts can promote stronger school leadership, improve teachers' confidence, and provide learners with more inclusive and meaningful opportunities to develop essential literacy skills.

Acknowledgement

We would like to express our deepest gratitude and sincere appreciation, above all, to the Almighty Father, the source of our wisdom, abundant blessings, strength, and spiritual guidance throughout the completion of this research endeavor.

To Dr. Nolasco K. Malabago, PhD, DevEdD, Chairman of the Panel of Examiners, we extend our heartfelt appreciation for his visionary leadership, intellectual insight, and constructive evaluation, which helped us refine the conceptual clarity, academic rigor, and overall quality of this research.

To Dr. Marilyn M. Miranda, DevEdD, DPA, our research adviser, we express our profound gratitude for generously sharing her valuable time, expertise, and guidance in reviewing and improving this manuscript. Her encouragement, patience, and insightful suggestions inspired us to persevere and bring this research to completion.

To the distinguished members of the Panel of Examiners, Dr. Remegio M. Bergamo Jr., DPA, Dr. Julia T. Canonigo, Dr. Rebecca DC Manalastas, Dr. Perla N. Tenerife, and Dr. Krizza S. Zapanta, we extend our sincere appreciation for their valuable recommendations, professional insights, guidance, and encouragement throughout the development and refinement of this manuscript. Their contributions have significantly enriched our understanding and strengthened the quality of our research.

Finally, we offer our heartfelt love and gratitude to our families, mentors, colleagues, and dear friends for their unwavering support, understanding, sacrifices, and constant prayers. Their encouragement and belief in our capabilities have been a source of strength and inspiration throughout this doctoral journey.

To everyone who has contributed, in one way or another, to the completion of this research, we extend our deepest and most sincere appreciation. This achievement would not have been possible without your invaluable support and encouragement.

Funding

This research received no external funding from any public, commercial, or not-for-profit funding agency, and no organization provided financial support for the conduct of the study, authorship, or publication of this article.

Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Appendices

No appendices are attached to this study.