PANTAO
The International Journal of the Humanities and Social Sciences
Volume 4, Issue 3
ISSN 3028-0877 | doi 10.69651/2022PIJHSS

Teachers' perceptions and utilization of digital learning tools in elementary education: Insights from Santa Maria Schools District

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ABSTRACT

This study examined the utilization, perceptions, and challenges of digital tools in elementary education within Santa Maria Schools District. Using a mixed-methods design, data were collected from 40 purposively selected teacher-respondents through questionnaires, observations, and interviews. Findings revealed that while laptops, projectors, audio devices, and televisions were frequently used, newer platforms such as desktops, digital cameras, and Google Classroom were rarely or never adopted. Teachers strongly agreed that digital tools enhance student engagement, motivation, and classroom interaction, with an overall weighted mean of 4.70. However, significant barriers emerged, including outdated software, high maintenance costs, limited internet connectivity, and inadequate computer access. Concerns regarding student management and online safety also surfaced, emphasizing the need for robust policies and training. The study concludes that effective integration of technology requires not only infrastructure investment but also continuous professional development and appropriate support. These findings carry implications for sustainable and equitable digital learning.

Keywords: educational technology, digital learning tools, elementary education, teacher perceptions, technology integration, professional development

Date Submitted: June 24, 2025
Date Accepted: July 29, 2025
Date Published: August 12, 2025

INTRODUCTION

In today's educational landscape, the integration of digital tools has become indispensable in ensuring that learners acquire the necessary skills to thrive in a globalized world. This development reflects the Department of Education's continuing commitment to strengthen its computerization initiatives within the K–12 curriculum, with the ultimate goal of

DOI: http://doi.org/10.69651/PIJHSS0403414

Recommended citation:
Esmane, N. P. (2025). Teachers' perceptions and utilization of digital learning tools in elementary education: Insights from Santa Maria Schools District. *Pantao (The International Journal of the Humanities and Social Sciences)* 4 (3), 4454-4461. http://doi.org/10.69651/PIJHSS0403414

providing students with a strong foundation to succeed across various fields of specialization. For public schools, however, this shift carries greater significance, as these institutions often face challenges such as shortages of computers and limited access to modern instructional technologies. Despite these difficulties, schools continue to explore and adopt new strategies that incorporate technology into classroom instruction, recognizing education as the most effective means for students to acquire lifelong learning competencies and future career readiness. Many professionals even attribute their success to the opportunities afforded by early exposure to digital learning.

In line with these priorities, the Department of Education has institutionalized the Department of Education Computerization Program (DCP), which emphasizes the cultivation of technological proficiency grounded in knowledge, entrepreneurial skills, processes, and values (Mula & Bucar, 2023). The program is closely aligned with the objectives of the K–12 curriculum, as it prepares learners for real-world applications through contextualized and experiential approaches to teaching and learning. Such integration ensures that learners develop holistically by combining essential concepts, skills, and values. However, the success of these initiatives ultimately rests on the quality of instruction provided by schools. Teachers play a critical role in nurturing study habits, building competencies, and fostering meaningful learning experiences. Consistent with R.A. 10533, the Philippine state is mandated to create a functional basic education system that develops productive, responsible citizens equipped with essential knowledge for lifelong learning and future growth.

Despite significant progress, the integration of digital tools across Philippine schools remains uneven. The actual use and effectiveness of such tools often vary depending on resource availability, teachers' digital literacy, and the level of leadership support within schools (Espinosa & Caro, 2011). This disparity is particularly evident in rural and district schools, including those in Santa Maria, where limited infrastructure and resources hinder the full realization of the DCP's objectives. Such circumstances highlight the need to look beyond the presence of technology and instead investigate how teachers perceive and apply digital tools in their classroom practices.

Although research has consistently underscored the benefits of digital learning in improving student engagement, motivation, and achievement, limited studies have examined the perspectives of elementary school teachers in district-level contexts. Teachers' perceptions are crucial since they largely determine the adoption and integration of technology in instruction (Cope & Ward, 2002). Their insights and experiences not only shape classroom practices but also influence the sustainability of technology integration. Understanding the challenges they face and the strategies they employ can provide meaningful guidance to policymakers and administrators in designing responsive interventions that improve the use of digital tools in public schools.

Against this backdrop, the present study investigates the extent of implementation of digital tools in public elementary schools within the Santa Maria District. As the researcher is directly engaged in this educational community as a volunteer educator, the inquiry is grounded in firsthand experiences of the opportunities and challenges surrounding the integration of digital technologies. This study seeks to generate insights that may inform more effective, equitable, and sustainable strategies for advancing digital education in similar public-school settings.

Statement of the problem

This study aimed to identify the specific digital tools utilized by teachers, understand their views on the effectiveness of these tools, and explore the challenges and benefits associated with their use. By gathering insights directly from educators, this research aimed to provide a comprehensive understanding of how digital tools are shaping interactive learning in elementary classrooms within Santa Maria Schools District, Isabela, Philippines. Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of school assignment, teaching grade levels, age, gender, civil status, highest educational attainment, college program graduated, job title, number of years in teaching in the public school, latest performance rating, and level of training or seminars attended in ICT?
2. What is the frequency of use of digital tools as an aid in teaching in the public elementary schools in Santa Maria District?
3. What is the effect of using digital technology in teaching?
4. How extensive are the challenges encountered in using digital tools as an aid in interactive learning?

METHODOLOGY

The study utilized a mixed-methods research design in which both quantitative and qualitative approaches were combined to obtain comprehensive insights into the use of digital tools in teaching. The primary instrument for data collection was a structured questionnaire, which allowed the researcher to gather descriptive information from the respondents. This choice was anchored on the assertion of John W. Best, who emphasized that descriptive research is the method most appropriate for presenting current conditions and practices as they are. The use of a questionnaire provided a systematic means of capturing the frequency, perceived effects, and challenges of digital tool integration in teaching, while the inclusion of qualitative methods such as interviews and observations complemented and validated the quantitative data.

The study was conducted in three public secondary schools within the Santa Maria District: Santa Maria High School, Naganacan-Villabuena National High School, and Buenaventura G. Masigan National High School. These schools provided the setting where data were gathered from respondents, who were purposively selected public elementary school teachers. The purposive sampling technique ensured that the participants were those directly involved in classroom instruction and, therefore, had firsthand experience with the use of digital tools in their teaching practices.

To collect the necessary data, multiple instruments were employed. The main instrument was the questionnaire, which was divided into four sections addressing the demographic profile of respondents, frequency of use of digital tools, perceived effects of digital technology, and challenges encountered. Prior to its administration, a try-out of the questionnaire was conducted to ensure that the items were clearly phrased and well understood by potential respondents. After revisions based on the try-out, the finalized questionnaire was distributed. Responses were scored using a five-point Likert scale with distinct sets of descriptors depending on the variable

being measured. For frequency of use, the scale ranged from 5 (4.21–5.00, Always Used, AU), 4 (3.41–4.20, Often Used, OU), 3 (2.61–3.40, Sometimes Used, SU), 2 (1.81–2.60, Rarely Used, RU), to 1 (1.00–1.80, Never Used, NU). For measuring the impact of digital technology on teaching, the scale consisted of 5 (4.21–5.00, Strongly Agree, SA), 4 (3.41–4.20, Moderately Agree, MA), 3 (2.61–3.40, Slightly Agree, SA), 2 (1.81–2.60, Least Agree, LA), and 1 (1.00–1.80, Disagree, DA). The same scale was applied when assessing the challenges teachers encountered in using digital tools as an aid in interactive learning, ensuring uniformity and comparability across constructs.

In addition to the questionnaire, the researcher also employed observations and unstructured interviews to strengthen the validity of the data. Classroom observations allowed for a direct examination of how digital tools were actually utilized in instructional practices, while unstructured interviews were conducted during the retrieval of the questionnaires. These interviews provided respondents the opportunity to elaborate on their answers and share experiences not captured by the structured items, thereby adding depth and accuracy to the findings.

The data gathering procedure followed ethical and systematic steps. Permission to conduct the study was secured from the Schools District Supervisor, ensuring that the research complied with institutional guidelines. With the cooperation of school heads, the questionnaires were distributed to the teacher-respondents, and retrieval was managed personally by the researcher to guarantee completeness and reliability. Throughout the process, respondents were informed of the study's purpose, and their voluntary participation was respected, maintaining ethical standards of confidentiality and integrity.

The gathered data were collated, tabulated, and subjected to statistical analysis. Descriptive statistics served as the primary mode of analysis. Percentages were computed to describe the demographic characteristics of respondents, with the formula $P = F/N$, where P represents the percentage, F the frequency, and N the total number of respondents. The weighted mean was used to determine the overall perceptions of the teacher-respondents regarding the frequency, effects, and challenges of digital tool integration, with the formula $X = FX/X$, where X represents the weighted mean, F the frequency, and X the weight. Ranking was also employed to compare the relative importance of items, establishing whether one variable was rated higher, lower, or equal to another. These statistical treatments ensured that the findings were systematically processed, interpreted, and presented in a manner that reflected the realities of teachers' experiences in using digital technologies.

By employing a rigorous methodology that included purposive sampling, validated instruments, multiple methods of data gathering, ethical considerations, and appropriate statistical treatments, the study was able to present a reliable and comprehensive account of the integration of digital tools in the public elementary schools of the Santa Maria District.

RESULTS AND DISCUSSION

Respondents' profile

The study involved 40 teacher-respondents from various schools in the Santa Maria Schools District, ensuring diverse representation across contexts. The highest proportion of

respondents (10% each) came from Divisoria ES, San Antonio-Lingaling ES, San Isidro East PS, and Balagan PS (Annex), while the lowest came from Poblacion 03 PS (2.5%). This distribution reflects balanced participation, though with stronger representation from certain schools where digital tools may be more emphasized.

In terms of grade level, the majority of respondents were teaching upper elementary classes, with Grade 5 and Grade 6 teachers each comprising 22.5%. Grade 4 followed with 17.5%, while the lower grades (1–3) had smaller proportions, the least being Grade 1 (10%). This indicates greater engagement with digital tools at higher grade levels, where curricular demands are more complex.

Age distribution revealed that the largest groups of respondents were aged 36–40 and 41–45 (20% each), suggesting strong mid-career representation. Teachers aged 51–55 (15%) and 46–50 (12.5%) also had notable participation, while the youngest group (21–25) accounted for only 5%. This mix captures both seasoned insights and younger, tech-savvy perspectives.

The majority of respondents were female (80%) and married (85%), consistent with national trends in the elementary teaching workforce. In terms of education, most held a bachelor's degree (77.5%), while 22.5% had completed a master's degree, contributing varied academic preparation.

By position, Teacher I (40%) had the highest representation, followed by Teacher III (25%), Teacher II (20%), and Master Teacher I (15%), reflecting a range of professional experiences. Service length varied, with the largest group (30%) having 1–5 years, while others spanned up to 30 years.

Performance ratings were high, with 82.5% rated Outstanding and 17.5% Very Satisfactory. Seminar participation was most frequent at the district (45%) and division (30%) levels, with fewer engagements at regional (20%) and national (5%) levels.

Overall, the respondents' profile shows a diverse yet high-performing teaching force, offering rich perspectives on digital learning tools.

Perceived level of utilization of digital tools in teaching within the Santa Maria Schools District

The overall average weighted mean of 3.14 indicates that digital tools are only "Sometimes Used" in classroom instruction. Among the tools, laptops rank highest (WM=4.95), followed by projectors (4.58), audio/speakers (4.48), and televisions (4.45), all categorized as "Always Used." These results highlight their central role in lesson preparation, presentations, and multimedia instruction.

In contrast, mobile phones (2.95) are "Sometimes Used," likely for selective activities such as research or communication. Meanwhile, desktops (1.28), digital cameras (1.43), and Google Classroom (1.00) are "Never Used," suggesting limited availability, accessibility, or teacher familiarity.

Overall, the findings reveal uneven integration of digital tools, with reliance on traditional hardware but minimal use of newer or more interactive platforms. This underscores the need for capacity-building and support to expand technology adoption in teaching.

Effect of using digital technology in teaching

The results reveal a strong consensus among teachers in the Santa Maria Schools District on the positive impact of digital technology in teaching, with an overall weighted mean of 4.70, interpreted as "Strongly Agree." All ten items assessed were rated highly, reflecting teachers' recognition of the significant benefits technology brings to instruction and student learning.

The highest-rated statement (WM=4.95) emphasizes the accessibility of instructional materials online, showing that teachers greatly value the ease of retrieving resources to support lessons and enhance instructional quality. Closely following are the benefits of digital tools in encouraging pupils to learn better (WM=4.90) and fostering greater student interest in lessons (WM=4.90). These findings highlight how technology increases engagement and motivation in the classroom. Teachers also strongly agreed that digital tools aid motivation across subjects (WM=4.88) and allow more effective demonstrations of tasks (WM=4.60), which improve student comprehension through visual and interactive methods.

Other notable impacts include reinforcing learning through interactive media (WM=4.58) and promoting meaningful classroom interaction (WM=4.58). Even the lowest-rated item, gaining pupils' attention (WM=4.35), still achieved a "Strongly Agree" rating, confirming its importance in sustaining focus.

On the whole, the findings affirm that digital technology is regarded as a highly valuable tool in enhancing instruction, motivation, and engagement across subjects.

Extent of challenges encountered in using digital tools as aid in interactive learning

The findings reveal that teachers in the Santa Maria Schools District strongly agree that several school facility-related challenges hinder the effective use of digital tools in interactive learning, with an overall weighted mean of 4.59 ("Strongly Agree").

The highest-ranked challenge is the high cost of new technology (WM=4.90), reflecting significant financial constraints in acquiring updated tools. Closely following is the issue of obsolete software (WM=4.88), which teachers view as a major hindrance to keeping technology relevant and functional. Repair and maintenance concerns (WM=4.83) further highlight the difficulty schools face in sustaining equipment for continuous use.

Connectivity issues also play a key role, with unreliable internet (WM=4.80) ranked fourth, limiting the functionality of many tools. Infrastructure problems, such as a limited number of computers, absence of computer labs, and outdated hardware (all WM=4.78), are also strongly agreed upon as significant challenges. Additionally, insufficient funding for procurement (WM=4.55) further restricts technological upgrades.

On the other hand, power interruptions and classroom size (WM=3.80 each) were rated lower, only "Moderately Agreed," suggesting they are less pressing compared to financial, infrastructural, and technological concerns.

Overall, the results emphasize that outdated facilities, high costs, and poor connectivity are the most pressing barriers, underscoring the urgent need for investment, modernization, and improved technological infrastructure to support digital learning.

CONCLUSION

The study concludes that digital tools are widely adopted in the Santa Maria Schools District and are perceived by teachers as highly effective in enhancing engagement, interactivity, and overall learning outcomes. This positive reception demonstrates the readiness of educators to embrace technology as a central component of instruction and highlights the potential of digital tools to modernize teaching strategies. However, the study also makes clear that such readiness will only translate into long-term benefits if accompanied by sustained institutional support, sufficient infrastructure, and equitable access to resources. Without these, the potential of digital learning risks being curtailed.

Despite evident progress in adoption, persistent limitations remain, particularly in infrastructure and resource availability. Outdated software, costly maintenance, inadequate internet connectivity, and limited computer access continue to challenge schools in the district. These shortcomings restrict the full potential of technology integration and create inequities across institutions. The findings suggest that unless substantial investments are made in digital infrastructure and equitable distribution of resources, digital learning may inadvertently widen educational gaps rather than bridge them. Addressing these disparities is therefore essential to ensuring that all students benefit equally from advancements in digital education.

The study further underscores the importance of addressing teachers' concerns related to student management and online safety. While technology has proven to foster interactive learning, it simultaneously exposes students to risks of misuse and unsafe digital behavior. Teachers expressed the need for stronger policies that ensure responsible and ethical use of technology in classrooms. In this regard, comprehensive safety protocols, training in digital citizenship education, and effective classroom management strategies must be institutionalized. Such measures are critical in creating safe, ethical, and effective learning environments that maximize the benefits of digital tools while minimizing associated risks.

Equally significant are the findings on the importance of professional development and technical support. Teachers emphasized the need for continuous, targeted training to remain proficient with evolving technologies. Institutionalizing professional development programs and ensuring access to prompt technical assistance will not only enhance teachers' competence but also strengthen their confidence in effectively integrating digital tools into instruction. Dedicated support systems, such as IT personnel and accessible helpdesks, are necessary to address immediate challenges faced by educators, ensuring that disruptions in teaching are minimized.

The study also reveals that challenges differ across levels of teacher experience, suggesting that uniform interventions may not yield optimal results. Novice teachers often require greater access to resources and structured guidance, while more experienced teachers may need support in adapting to technological innovations. Tailored interventions that account for these differences are essential to ensure that all teachers—regardless of experience level—are adequately supported in integrating technology into their practice.

Overall, the implications of the study emphasize the need for balanced investments in infrastructure, online safety, and continuous professional development to establish a sustainable and equitable digital learning environment. By addressing these interconnected dimensions, educational institutions within the Santa Maria Schools District can ensure that digital tools are

not only adopted but are also effectively integrated into teaching and learning. Such an approach will enable schools to maximize the transformative potential of digital technology, bridging gaps in access, strengthening teacher capacity, and ultimately improving the quality of education for all learners.

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