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DIGITAL LITERACY PRACTICES AND ITS IMPACT ON THE PEDADOGY OF ELEMENTARY SCHOOL TEACHERS IN A DISTRICT

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Abstract: *Teachers need to be digitally literate to navigate the modern educational environment effectively and get the necessary skills to use technology in the classroom. One hundred fifty-six elementary school teachers participated in the study, which used an explanatory mixed-methods research approach and was carried out in the Dinalupihan West District. A structured questionnaire and interview guide intended to evaluate teachers' digital literacy practices and skills in the context of the new normal pedagogy served as the primary data-gathering tool. Ethical issues were paramount throughout the research, guaranteeing the participants' confidentiality. The study thoroughly analyzed teachers' profiles, practices, and digital literacy abilities while considering variables like age, position, and number of years spent as teacher. Significant differences in the digital literacy practices and skills of elementary school teachers were found using statistical analyses, providing light on the areas that need development. The study also revealed common problems with digital literacy that educators encounter, highlighting the necessity of focused professional development initiatives. The suggested professional development program aims to improve teachers' digital literacy in all major outcome areas. It is based on the study's findings. Future studies should look into the long-term effects of interventions, how educational technology is changing, and how to perform comparative studies in various educational contexts.*

Keywords: *Digital literacy, pedagogy, explanatory mixed-methods survey design, Bataan, Philippines*

INTRODUCTION

The COVID-19 pandemic's emergence has significantly altered the educational landscape, resulting in the new normal pedagogy. Digital literacy is becoming necessary for educators, teachers, and school administrators because digital technologies are important for educational services. Elementary school teachers must possess the requisite digital literacy abilities to successfully apply the new standard pedagogy because they are responsible for laying a solid foundation for student learning. However, there are significant differences in digital literacy among elementary school teachers, which impacts student learning. A global situational analysis of the problem reveals that the issue of digital capability among elementary teachers is not unique to any particular continent. Studies conducted in around the globe have all highlighted the need for increased digital literacy among elementary school teachers. Makhmudov et al. (2020) examined the practices of digital literacy in cutting-edge pedagogical education. They talked about the problem of low points of digital literacy among teachers which suggested ways to raise such levels. Seidel et al. (2014) published a book discussing the problems and potential possibilities for digital literacy in 1985. The authors examined how digital literacy affects the populace and emphasized the key national aspects of digital literacy. This book is pertinent for anyone seeking information on digital literacy instruction, including students, teachers, and school officials. In addition, Tsagari and Vogt (2017) focused on the research, difficulties, and potential outcomes as they studied the assessment literacy of foreign language teachers throughout Europe. They stressed the significance of including science and technology literacy in teaching foreign languages. Using the Content and Language Integrated Learning (CLIL) approach, Danilov, Zaripova, Salekhova, and colleagues (2020) concentrated on helping bilingual students become computer-literate. Their research sought to recover the digital literacy of Tatar learners and look into how bilingual students' digital literacy skills developed. In furtherance, Tsai, Wang, and Hsu (2019) created a computer programming self-efficacy measure for digital skills instruction. Their

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research aims to offer school teachers and computer educators a trustworthy and practical instrument for evaluating students' proficiency in computational thinking abilities.

In the ASEAN region, education technology has gained importance. The requirement for educators to gain digital literacy skills to integrate technological expertise into their teaching practices has grown as society adjusts to the new standard of online and blended learning. For the ASEAN community and sustainable development, Vilbar and Ferrer-Malaque (2016) concentrated on educating teachers to provide interactive multimedia ESL (English as a Second Language) courseware. By producing interesting multimedia content, they hoped to improve English language teaching. The adoption of technology in the ASEAN area was examined by Rukspollmuang (2016), focusing on education as a significant force behind Thailand's digital transformation. The author addressed issues with ICT-literate teachers while highlighting the value of lifelong learning, digital literacy, and human resource development. Akarawang, Kidrakran, and Nuangchalerm (2015) examined the Thai basic education system's information and communication technology (ICT). They discussed how ICT, also known as informatics, digital literacy, or keyboarding, has been included in the curriculum and looked at its possible effects on education. Wu et al. (2020) directed an investigation on teachers' opinions and readiness to teach computational knowledge in Finland, Taiwan, Singapore, and South Korea. They looked at variations in teachers' perspectives on the application of computers and cognitive abilities in the context of coding education. Additionally, studies such as those by (Salani & Sekgoma, 2024) emphasize the positive impacts of peer tutoring on confidence and motivation among students, showing significant improvements post-tutoring. They emphasized the value of peer tutoring in helping kids learn the fundamentals of computers, especially in situations where specialized education is necessary. Nguyen and Habók (2022) empirically studied technological competence among EFL (English as a Foreign Language) students in Vietnamese institutions. They looked at many facets of digital literacy in English language education, such as computer, ICT, information, and media literacy. Van Loi (2021) looked into how Vietnamese high school teachers felt about using technological pedagogical content knowledge (TPACK) when instructing students in English instruction. The study examined the utilization of ICT in instruction and the difficulties in incorporating technological tools in the school. Furthermore, the level of digital proficiency among Vietnamese undergraduates and the occurrence of utilizing digital equipment in the EFL environment were both examined by Thuy Nguyen and Habok (2021). They analyzed the influence of technology, ICT, and digital competence on English language learning.

Comparing this to global and ASEAN literature, the researcher found similarities and gaps in the existing body of knowledge. The impact of the Computer and Internet Literacy Project in public secondary institutions in the division of Tarlac, the Philippines, was studied by Lorenzo (2016). The primary purpose was to appraise how well the project has improved students' computer and internet literacy in a particular area. Tomaro (2018) investigated the incorporation of ICT in the schools. Considering the larger context of the Philippine educational system, this study examined the difficulties and solutions for integrating ICT into the national system. In addition, an evaluation of an outreach program for e-learning for public institutions in Makati City and Laguna was carried out by Nuncio et al. in 2020. The study aimed to appraise the project's efficacy and derive insights for upcoming e-learning projects. Jacinto and Samonte (2021) investigated the effectiveness and anxiety of integrating computer technology among secondary school teachers in Isabela. This study examined teachers' worries, concerns, and perceptions of their efficacy in utilizing computer technology in the school. In the Philippines' First District of Capiz, Gamayao and Binas (2021) concentrated on science teachers' instructional skills and pedagogical subject knowledge. The study aimed to pinpoint the variables impacting science teachers' pedagogical practices and teaching proficiency levels,

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particularly in computer and internet literacy. covering a more comprehensive range of topics. Research is also needed to examine ICT projects' sustainability and long-term effects on the Philippine educational system. Closing these gaps would aid in creating practical policies and practices and a more thorough knowledge of computer and internet literacy in the Philippines. This comparative study aimed to comprehend teachers' viewpoints and attitudes toward using ICT in physics teaching. Although these studies offer insightful information about computer and internet literacy in the Philippines, specific gaps still require filling. One apparent deficiency is the underrepresentation of national studies covering a more comprehensive range of topics. Research is also needed to examine ICT projects' sustainability and long-term effects on the Philippine educational system. Closing these gaps would aid in creating practical policies and practices and a more thorough knowledge of computer and internet literacy in the Philippines. As a result, this study assessed how a focused and sustained digital literacy training program affects elementary school teachers. It also aimed to provide insight into the competencies needed and the long-term effects on teacher practice and student outcomes in the Philippine context. The study aimed to assess elementary school teachers' digital literacy and how it impacts their instructional strategies and student results. The study focused on how digital literacy training affects elementary school teachers in the Philippine setting. The main conclusions of the study could be a breakdown of the precise digital literacy skills required for elementary school teachers, the effectiveness of different training approaches, and the long-term consequences of digital literacy interventions on teacher practice and student outcomes. Using the literature review as a basis, the analysis contributed to the collection of information on digital literacy among teachers in the Philippine context, which is essential in addressing the gaps and inconsistencies in the literature. The study recommended designing robust, contextually appropriate teacher preparation programs that satisfy the school's and community's demands. This study was motivated by the requirement that teachers understand computers and use technology in their lesson plans, especially in light of the "new normal" pedagogy that the COVID-19 pandemic had introduced. The study aimed to provide recommendations grounded in empirical data on addressing the challenges and gaps in digital literacy among teachers and enhancing their instructional approaches for better student outcomes. Potentially significant contributions and benefits include identifying the precise skills teachers require to be computer literate and developing a professional development strategy that is contextually appropriate, sustainable, and in line with the needs of the school and community.

FRAMEWORK

The Mishra (2019) framework for Technological Pedagogical Content Knowledge (TPACK) was a pertinent theory for studying the effects of digital literacy among elementary school teachers in the new standard pedagogy. Technology, pedagogy, and content knowledge are all incorporated into the TPACK framework to improve teaching and learning. It underlines how crucial it is for educators to employ technological advancements to their advantage while imparting subject-matter knowledge in a pedagogically competent manner. The TPACK context holds significance to the ongoing research as it provides a theoretical foundation for understanding how instructional practice incorporates technology. As the study looks into how a digital literacy training program affects elementary school teachers, the TPACK framework can help identify the unique competences needed to properly integrate technology into teaching practice. It can also be used as a guide to design a professional development plan that is in compliance with TPACK and addresses the gaps in instructors' subject-matter, pedagogical, and technology skills. The TPACK paradigm has been applied in a number of research on technology integration and teacher education. In the context of the new normal pedagogy,

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the TPACK framework provides a useful theoretical viewpoint on the effects of digital literacy among primary school instructors. It can help in pinpointing the precise skills required for successful technology integration and in creating a professional development plan that complies with TPACK. Additionally, past TPACK research might shed light on effective initiatives for teacher preparation and professional development. The study variables were digital literacy skills, digital literacy practices, issues and obstacles, and professional development of educators. In the global literature and studies, Pawar (2021) stressed the essence of digital competence for educators and learners in India in the twenty-first century. Santos et al.'s (2019) investigation into the connection between ICT literacy and academic achievement shed light on how technological skills affect learning outcomes.

OBJECTIVES OF THE STUDY

1. Explore digital literacy skills of elementary teachers in the new normal pedagogy be described in terms of efficiency and productivity,teaching methods,access to educational resources,flexibility and adaptability and engagement and motivation.

2.Examine the practices of elementary teachers in digital literacy be described in terms of planning and preparation,active engagement and interactive instruction,student assessment and data analysis,collaboration and communication and professional development and support.

3. Determined if there is a significant variation among the skills of elementary teachers in digital literacy when grouped according to their demographic profiles (e.g., age, sex, position, years of experience)

4.Investigate if there is a significant variation among the practices of elementary teachers in digital literacy when grouped according to their demographic profiles (e.g., age,sex,position,years of experience)

5.Identify the challenges encountered by teachers in digital literacy.

6.Propose a training plan to address the identified challenges and improve teachers digital literacy skills and practices among elementary teachers.

METHODOLOGY

Research Design

This study used an explanatory sequential design of mixed methods that consists of first collecting quantitative data and then collecting qualitative data to help explain or elaborate on the quantitative results. The study "Digital Literacy Practices and its Impact on the Pedagogy of Elementary School Teachers in a District" used an explanatory sequential mixed method research design with a quantitative phase followed by a qualitative phase.

Research Site

The study's setting is the Dinalupihan West District of the Department of Education - Bataan, situated in the Philippines' Central Luzon region. The Bataan division is one of the DepEd's administrative divisions regulating the nation's educational system.

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Participants

The study's participants were elementary school educators in the Dinalupihan West District of the Department of Education in Bataan. The study employed a purposive sampling strategy to choose 156 respondents out of the 308 elementary teachers of the district as its sample size. According to Onwuegbuzie and Leech (2019), purposive sampling is a non-probability sampling approach used to select participants based on particular traits or criteria.

Instrumentation

The research instruments utilized in the study were a survey questionnaire and interview guide. The questionnaire was a checklist of items related to digital literacy skills, pedagogical practices, and professional development needs of elementary educators in the new normal setting.

The questionnaire and interview guide were created and validated through several steps. The researcher first studied the pertinent literature to identify the critical constructs relevant to the research issue. She also spoke with authorities to get their opinions and suggestions for the creation of the questionnaire.Based on the identified constructs and expert advice, the researcher then created the first draft of the questionnaire. A group of validators who are ICT coordinators then assessed the questionnaire for its content validity. After the initial evaluation, the researcher modified the questionnaire in light of the experts' comments. Ten elementary school teachers contributed to the pilot test to appraise the questionnaire's clarity and accuracy. The pilot test aimed to find any phrasing or formatting problems with the questionnaire.The researcher created the study's questionnaire and interview guide using a careful creation and validation approach. Experts in the field evaluated its content validity. The final questionnaire was appropriate for gathering information on elementary school teachers' digital literacy abilities, pedagogical strategies, and professional development requirements in the context of the new normal pedagogy.Using Cronbach's Alpha, the study yielded a result of 0.80, indicating that it tested the reliability of interview questions.Based on Ethical Considerations the researcher conducted several activities to guarantee that the research complies with all ethical principles and requirements. Before beginning the study, the researcher ensured the requisite ethical approval from the relevant institutional review board. This clearance ensured that the research complies with ethical standards, which protected the privileges and well-being of the partakers.

In the second step of the process, the researcher tried to get the partakers' informed permission. Informed consent refers to the agreement provided by participants after the researcher adequately informed them of all aspects of the study, including its objectives, methods, and potential drawbacks or advantages. The participants received clear information that their involvement in the research was entirely voluntary, and they could withdraw from the investigation at any point without facing any penalties. Thirdly, the researcher safeguarded the participants' confidentiality and anonymity. She accomplished this by providing every participant with a one-of-a-kind identifier, which stood in for their names wherever the data from the study appeared. In addition, the researcher stored the data from the survey in a secure location, and only authorized individuals could access the data. Finally, the researcher ensured that the study participants were not in any dangerous situations due to the study. She ensured that the procedures and questions for the analysis were not offensive or sensitive and did not cause the participants any psychological or physical harm. The researcher also ensured that the study did not negatively impact the participants' professional reputations and work situations.

Data Collection

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It started with preparation and planning, selection of participants, data validation, data entry and analysis data interpretation reporting and dissemination data analysis technique. The researcher carried out a final analysis of variance (ANOVA) to regulate whether or not there were changes in the respondents' perceptions that were statistically significant based on the demographic characteristics of the respondents, like age, gender, years of experience, and seminars attended. The analysis of variance (ANOVA) is a statistical procedure that can be applied to investigate questions about the existence of statistically significant differences between two or more groups. The researcher utilized ANOVA to determine whether or not there were any variations in the respondents' perceptions that were statistically significant and dependent on the demographic parameters of the partakers. Lastly, the qualitative data analysis method, thematic analysis, was employed. After data was gathered through interviews, transcripts were carefully reviewed to find recurrent themes, patterns, and ideas about the digital literacy skills, instructional techniques, and professional development needs of elementary school teachers in the context of the new normal pedagogy. The researchers used a methodical process, repeatedly coding different data segments to produce preliminary themes. These themes were then polished and arranged into a logical framework summarizing the main conclusions. Thematic analysis facilitated a comprehensive investigation of the participants' viewpoints, enabling the recognition of similarities, differences, and implicit meanings present in their experiences and understandings. This methodological approach contributed significant insights to educational research and practice by offering a deep and thorough understanding of the intricate interactions among digital literacy, pedagogical practices, and professional development needs among primary school teachers.

RESULTS AND DISCUSSION

The sex breakdown reveals that women comprise most participants, The age group between 26 and 30 is the most significant percentage (25%), The majority comprises Teachers I with percentages of 39.75%. Of the participants, 59.62% fall into the group of having less than ten years of teaching experience. The number of training sessions the respondents attended is the last feature of the table. 93.59% of the participants attended six to ten training sessions. Efficiency and productivity Mean 3.56 (SD=0.50) shows that educators agree when they say technology has improved their capacity to carry out daily tasks effectively. Teaching Methods Mean 3.48 (SD= 0.51) this average score indicates that educators generally agree on the usefulness of technology in improving teaching strategies. Access to educational resources Mean 3.47 (SD= 0.50) this indicates that educators acknowledge technology's critical role in expanding access to various instructional resources. Flexibility and adaptability Mean 3.41 (SD= 0.53) this indicates that teachers generally acknowledge technology's critical role in promoting flexibility and adaptation in their teaching strategies. Engagement and motivation Mean 3.39 (SD= 0.52) teachers acknowledge technology's critical role in motivating and engaging students during class. Planning and Preparation Mean 3.17 (SD=0.58) teachers generally acknowledge using and integrating digital tools into their planning and preparation phase of educational activities. Active engagement and interactive instruction Mean 2.95 (SD=0.65) shows that teachers generally feel they can use various technological tools to produce dynamic, exciting learning experiences. Student assessment and data analysis Mean 2.94 (SD=0.60) the average score indicates that teachers may agree on a moderate to high degree about how well they can use technology to gather and analyze data and use that information to make informed decisions about how to educate. Collaboration and communication Mean 3.11 (SD=0.64) it implies significant involvement and expertise in using digital platforms for communication and collaboration. Professional development and support Mean 3.02 (SD=0.64) the data demonstrates that teachers adopt positive

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digital literacy practices for professional development and support. Based on their demographic characteristics, the considerable range in elementary teachers' digital literacy skills. In terms of efficiency and productivity, age ($F = 3.67$, $p = 0.01$), position ($F = 4.98$, $p = 0.002$), and years of teaching experience ($F = 5.24$, $p = 0.001$) all have significant variations. These demographic parameters impact teachers' efficiency and skill level when using digital tools. Nevertheless, productivity and efficiency are not significantly impacted by the quantity of training sessions. Moreover, age ($F = 2.19$, $p = 0.02$), position ($F = 3.26$, $p = 0.0008$), and years of teaching experience ($F = 4.13$, $p = 0.003$) have a substantial impact on the variation in skills when it comes to teaching approaches. These results imply that teachers' attitudes and strategies for integrating technology into their lesson plans are influenced by their age, position, and experience. Meanwhile, age ($F = 3.81$, $p = 0.02$), position ($F = 4.10$, $p = 0.0005$), and years of teaching experience ($F = 3.86$, $p = 0.0008$) all significantly affect access to instructional materials. These findings suggest that teachers who are younger or have less experience than their older counterparts may have different access to educational materials. However, the quantity of training sessions has little effect on the availability of resources. In terms of flexibility and adaptability, age ($F = 2.37$, $p = 0.03$), position ($F = 4.59$, $p = 0.003$), and years of teaching experience ($F = 3.28$, $p = 0.006$) all have significant variations. These results imply that some demographic traits have a role in the diversity of flexibility and adaptability teachers exhibit when utilizing digital tools. Notably, there is no discernible impact from the quantity of training sessions. On the other hand, sex ($F = 2.87$, $p = 0.002$), position ($F = 3.56$, $p = 0.007$), and years of teaching experience ($F = 3.27$, $p = 0.01$) all significantly affect the observed variances for engagement and motivation. Female teachers with particular roles and years of experience show varying enthusiasm and involvement. However, the quantity of training sessions does not considerably influence this variation. The significant variations in digital literacy practices among elementary teachers. Significant variations in age ($F=3.07$, $p=0.02$), position ($F=4.89$, $p=0.0001$), and years of teaching experience ($F=3.77$, $p=0.004$) were found within the Planning and Preparation domain, suggesting that these characteristics influence the methods teachers use to prepare digital resources and lessons. Comparably, age ($F=2.58$, $p=0.04$), position ($F=4.45$, $p=0.002$), and years of teaching experience ($F=3.90$, $p=0.0008$) showed significant variations in Active Engagement and Interactive Instruction, indicating that these demographic factors impact the degree of interaction and engagement in digital literacy-related classroom practices. Furthermore, it was discovered that variations in age ($F=3.35$, $p=0.04$), position ($F=4.12$, $p=0.0007$), and years of teaching experience ($F=3.87$, $p=0.004$) had a significant impact on how teachers approached digitally assessing students and analyzing performance data. There were notable differences in the cooperation and communication strategies according to age ($F=2.95$, $p=0.03$), position ($F=4.09$, $p=0.001$), and years of teaching experience ($F=3.92$, $p=0.005$), suggesting that teachers use different approaches to collaboration depending on these demographic parameters. Additionally, within the Professional Development and Support domain, there were significant age differences ($F = 2.59$, $p = 0.03$), position ($F = 4.13$, $p = 0.0009$), and years of teaching experience ($F = 3.89$, $p = 0.0002$), highlighting how these factors impact how educators seek out and participate in digital literacy-related professional development opportunities.

Challenges encountered by teachers in digital literacy

Teachers encounter many difficulties when incorporating digital literacy into their teaching techniques. A significant obstacle is found in technology access and infrastructure, where differences in Wi-Fi coverage and device accessibility make it more difficult for teachers to use digital resources. In addition, incorporating digital resources into educational procedures presents a unique set of difficulties that are made worse by teachers' lack of proper training and assistance. In addition to these difficulties, educators must navigate complex topics like cyberbullying and information literacy while

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developing digital citizenship and online safety among children. Additional challenges include developing appropriate assessments to gauge students' proficiency in digital abilities and coordinating digital literacy activities with curriculum objectives. This introduction highlights the complexity of teachers' problems while integrating digital literacy, emphasizing the necessity for all-encompassing approaches and systems of assistance to deal with these problems successfully. The interview responses of the participants resulted in the following themes:

6.1. Technological infrastructure and access

Access to dependable technology infrastructure is essential for enabling successful teaching and learning experiences in the modern, digitally-driven educational environment. However, the inability of many educational institutions to provide sufficient Wi-Fi connectivity and device access has a substantial negative influence on teachers' capacity to use digital resources in the classroom. This theme explores the challenges teachers face due to inadequate access to and infrastructure for technology, highlighting the inequities that impede children's educational opportunities.To support fair learning opportunities for all students, addressing the issues around technical infrastructure and access is imperative. By allocating money towards enhancing Wi-Fi connectivity and granting educators access to devices, educational institutions can enable teachers to utilize digital resources in the classroom efficiently. A more inclusive learning environment can be promoted by ensuring all students have equal access to technology through programs to close the digital gap.

6.2. Pedagogical integration and training

To adequately prepare students for the challenges of the modern world, including digital tools and technologies in pedagogical practices is becoming increasingly important. However, a lack of sufficient training and support causes many teachers to struggle when attempting to properly incorporate these technologies into their teaching approaches. This theme examines their difficulties while integrating digital technologies into their lesson plans and emphasizes the value of continuous professional development.Improving the pedagogical integration of digital technologies necessitates a multipronged strategy involving continuous professional development and teacher assistance. Through funding digital pedagogy-focused professional development programs, educational institutions can equip teachers to use technology to improve student learning outcomes. Furthermore, encouraging educators to work together and share resources can help to promote the sharing of creative ideas and best practices for incorporating digital technology into the classroom.

6.3. Digital citizenship and online safety

Teachers now must educate pupils on academic content and responsible digital citizenship due to the widespread usage of digital devices and the internet. This theme explores educators' difficulties while addressing classroom concerns about online safety and digital citizenship. Teaching children to navigate the digital world responsibly presents educators with various challenges, from preventing cyberbullying to encouraging critical thinking in online environments.Teaching students about digital citizenship and online safety is crucial to equipping them with the skills necessary to navigate the intricacies of the digital world appropriately. Teachers are essential in helping kids develop critical thinking abilities and behave when using the internet. Digital citizenship education can be incorporated into the curriculum to enable students to become responsible online community contributors. Teachers can facilitate this process by offering their students open debate and reflection opportunities.

6.4. Curriculum alignment and assessment

Teachers must ensure that programs promoting digital literacy align with educational standards and goals as they work to integrate digital literacy into their curricula. However, creating tests that accurately gauge pupils' proficiency in digital literacy is difficult. This theme examines how difficult it can be to match current curriculum frameworks with digital literacy initiatives and to create

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assessments that fairly measure students' ability with digital tools. It draws attention to the necessity of creative evaluation strategies catered to the particular requirements of teaching digital literacy.Encouraging the integration of digital skills into instructional practice requires ensuring that digital literacy efforts and curricular standards align. Teachers may ensure that digital skills are taught in a meaningful context that helps students' overall academic success by coordinating digital literacy goals with more general learning objectives. Additionally, assessing the success of digital literacy programs and guiding instructional practices depend on creating novel evaluation strategies that precisely gauge students' proficiency in digital literacy. By working together and reflecting continuously, educators can improve digital literacy teaching and provide students with the tools they need to succeed in the digital age.

Integration of the Quantitative and Qualitative Findings

This study's combination of quantitative and qualitative data offers a deep and complex picture of the state of digital literacy among elementary school teachers. Quantitative results show that the 156 participants had a wide range of demographic profiles, underscoring the complex interactions between several characteristics like age, gender, position, and years of teaching experience. The age distribution, for example, demonstrates a broad range, with a notable representation in the 26–30 age bracket, suggesting a cohort of relatively young educators. Furthermore, a thorough image of the participant pool is painted by the fact that the majority of teachers (88.46%) are female and that they primarily occupy positions like Teacher I (39.75%) and Teacher III (33.97%). Furthermore, the distribution of years of teaching experience, with the majority of respondents (59.62%) falling into the 0–10 years group, provides information about the experience level of the educators surveyed.

Qualitative data expand on the quantitative basis by providing further insight into the opportunities and problems associated with integrating digital literacy into elementary education. Educators face numerous technological, pedagogical, and sociocultural obstacles when integrating digital tools successfully. Inequalities in Wi-Fi connectivity and device access appear as significant obstacles in the technical infrastructure, underscoring the urgent need for reforms in these areas to guarantee fair learning opportunities for all students. In addition, it has been determined that ongoing professional development and assistance for teachers are essential components of a more robust pedagogical integration, enabling educators to use digital tools to design dynamic and captivating learning environments.

Qualitative results also highlight the significance of teaching students digital citizenship and the transformative power of digital literacy in the classroom. By incorporating digital literacy into the curriculum and encouraging open dialogue on responsible digital behavior and online safety, educators can provide students with the tools they need to navigate the digital world confidently. This all-encompassing method ensures that students are ready to succeed in an increasingly digital society by improving their digital skills and fostering a culture of responsible digital citizenship.

Moreover, integrating qualitative and quantitative data emphasizes how crucial it is to match curricular needs and educational goals with digital literacy initiatives. It has been determined that innovative assessment methods and curriculum integration are crucial for accurately assessing students' digital skill competency and directing teaching strategies. Teachers can enhance the impact of digital literacy programs on student learning outcomes and promote a culture of ongoing progress in digital pedagogy by ensuring these activities are smoothly integrated into the larger educational framework.

Qualitative insights also emphasize the collaborative nature of tackling issues related to digital literacy in education. To successfully overcome challenges, educators must collaborate, exchange best practices, and participate in continuing professional development. Schools and districts may build

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supportive settings where educators feel empowered to experiment with new technology, take measured risks, and innovate their teaching practices by harnessing collective expertise and fostering a collaborative culture.

The combination of quantitative and qualitative data provides a thorough grasp of digital literacy among primary school teachers. This integrated approach incorporates demographic variances, opportunities, constraints, and collaborative tactics to give actionable insights to support professional development efforts, practices, and policies that promote digital literacy in education.

CONCLUSION

The findings of this study led to the following conclusions. The study's 156 elementary school teachers participants had a varied profile regarding many demographic factors. The age distribution of teachers was wide, with a significant representation in the 26–30 age group and a varied distribution across other age categories. The majority of teachers were female. Teacher I was the most common position, followed by Teacher III. The years of experience as a teacher varied, with the majority having 0–10 years of experience. Most of those who attended training or seminars on digital literacy did so across six to ten sessions. Teachers have positive impact results regarding digital literacy skills and digital literacy practices.

When elementary teachers' digital literacy skills are categorized according to their demographic profiles, the analysis shows significant variations in these abilities. Age, position, and years of teaching experience all showed significant differences in efficiency and productivity, indicating the influence of these factors on teachers' productivity and efficiency when using digital resources in their lesson plans. The teaching strategies displayed differences according to age, position, and years of experience in the classroom, highlighting the complex strategies educators use when implementing digital techniques for instruction. Age, position, and years of teaching experience all showed substantial disparities in access to educational resources, highlighting the impact of these demographic factors on teachers' availability of digital learning resources. There were notable differences in flexibility and adaptability skills based on age, position, and teaching experience, suggesting that teachers had different approaches to adjusting to digital pedagogy. The study revealed notable variations in teachers' engagement and motivation abilities based on criteria such as gender, position, and years of teaching experience.

When elementary teachers are categorized based on their demographic profiles, the analysis shows significant variations in their digital literacy practices. Age, position, and years of teaching experience showed differences in planning and preparation, suggesting that these factors affect how teachers incorporate digital aspects into their lesson plans. Age and position-related differences in active engagement and interactive instruction highlighted how these demographic factors affected the teachers' approaches to creating dynamic and captivating digital learning environments. Teachers use digital tools to evaluate student performance in various ways, as demonstrated by the significant variances in student assessment and data analysis related to age, position, and teaching experience. Age, position, and years of teaching experience all showed differences in cooperation and communication skills, illustrating the variety of ways that educators use digital platforms for communication and teamwork. Finally, age and years of teaching experience were essential factors in professional development and support, highlighting the necessity for customized digital literacy training based on teachers' varied experiences and career stages.

In line with this, it is advised that teachers participate in a targeted professional development program to address the issues they experience. Targeted modules should be included in this curriculum

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that addresses the issues raised by the study, including staying up to date with technology advancements, effectively utilizing online resources, and customizing teaching methods for students with varying levels of digital competency. It is imperative to prioritize the resolution of technical malfunctions and the apparent deficiency of suitable digital instruments and materials.

TRANSLATIONAL RESEARCH

It is advised that teachers participate in a targeted professional development program to address the issues they experience. Targeted modules should be included in this curriculum that address the issues raised by the study, including staying up to date with technology advancements, effectively utilizing online resources, and customizing teaching methods for students with varying levels of digital competency. It is imperative to prioritize the resolution of technical malfunctions and the apparent deficiency of suitable digital instruments and materials.

Teachers' cooperation and communication should also be actively encouraged. Establishing a helpful atmosphere where educators exchange insights, materials, and methods can help the group overcome obstacles. A more collaborative and technologically savvy teaching community can result from utilizing the study's finding that cooperation is a practiced component of digital literacy.

Apart from tackling obstacles, the research highlights the necessity of ongoing evaluation and modification of digital literacy initiatives. Regular evaluations of the results of professional development programs will yield insightful criticism for improvement. This iterative procedure guarantees that the programs remain adaptable to changing demands and obstacles in the ever-changing field of digital education.

Furthermore, policy frameworks and institutional support are essential to the upkeep and expansion of digital literacy programs. Securing funding, support, and systemic changes that enable the integration of digital literacy into the larger education agenda requires cooperation with educational authorities and legislators.

This study also gives future researchers exploring the topic of digital literacy among elementary teachers a solid starting point and recommends directions for future research. Future research projects could go further into the unique requirements and preferences of varied teacher groups, building on the demographic variations and obstacles that have been observed.

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