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Challenges and Needs of Public Elementary School Teachers in the Utilization of ICT in Instruction

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ABSTRACT

Information and Communications Technology (ICT) refers to the use of computing and telecommunication technologies, systems, and tools to facilitate the creation, collection, processing, transmission, and storage of information. In education, ICT plays a vital role in enhancing teaching and learning by enabling personalized instruction that caters to the diverse needs of students (Rouse, 2024; Hogan, 2024). Recognizing this, the Philippine Department of Education (DepEd) has prioritized ICT integration in public schools through initiatives like the ICT4E Strategic Plan (DepEd Order No. 78, s. 2010). The study aimed to explore the challenges and needs of elementary school teachers in utilizing Information and Communications Technology (ICT) for instruction. The research utilized a Narrative Inquiry design to understand the obstacles teachers face in ICT integration and their requirements for effective use. Data were collected through a Participant's Interview Guide (IIG), which helped capture insights into the issues and support needs of the teachers.

Key challenges identified by the participants included unstable internet connections, power outages, insufficient ICT resources, lack of proper training, and limited technical skills. Teachers also faced difficulties in using complex ICT tools such as Canva, Microsoft Excel, PowerPoint, and Microsoft 365 applications. The lack of essential equipment, such as computers and projectors, further hindered effective ICT integration in the classroom. To address these challenges, teachers resorted to backup strategies like downloading materials for offline use and collaborating with colleagues.

The study revealed a significant need for updated ICT resources, reliable internet connectivity, and ongoing technical support. Teachers expressed the importance of organized workshops, mentorship programs, and clear, easy-to-follow manuals for troubleshooting common ICT issues. To address these needs, the study proposes an ICT Teacher Development Plan utilizing the School Learning Action Cell (SLAC) framework. This plan focuses on improving teachers' confidence, ICT proficiency, and teaching methods through structured professional development and sustained support.

The study concludes by calling for better ICT infrastructure, continuous training programs, and institutional support to empower teachers in utilizing technology effectively. Recommendations for school heads include prioritizing ICT resource allocation, establishing technical support teams, and promoting professional development initiatives. Future research should explore the long-term effects of ICT integration on student outcomes and examine the role of emerging technologies in education.

Keywords*:* Digital tools, Digital literacy, Educational technology, Elementary school teachers ICT challenges, ICT integration, Information and Communications Technology (ICT), Instructional technology, SLAC framework, Localized development plan, Teacher training

I.Introduction

Information and Communications Technology (ICT) is using computing and telecommunication technologies, systems, and tools to facilitate information creation, collection, processing, transmission, and storage. It encompasses various technologies, including servers, laptops, software applications, and wired and wireless communication tools (Rouse, 2024). In education, ICT has proven to be a transformative tool, enhancing teaching and learning by enabling personalized learning and adapting content to meet the diverse needs of students. By tailoring instruction to address individual strengths and weaknesses, ICT fosters engagement and improves learning outcomes (Hogan, 2024).

The Philippine Department of Education (DepEd) has prioritized ICT integration in public schools. Through initiatives such as the ICT4E (Information and Communication Technology for Education) Strategic Plan, outlined in DepEd Order No. 78, s. 2010, DepEd aims to equip schools and teachers with the necessary resources, infrastructure, and training to utilize ICT effectively in instruction. This aligns with the nation's goal of preparing students for the digital economy by fostering digital literacy, critical thinking, and problem-solving skills from an early age.

However, significant issues and unmet needs persist despite these efforts, particularly in public elementary schools. One major issue is the lack of sufficient technological infrastructure and resources. Many schools, especially in rural areas, face limited access to Functional devices, stable internet connections, and up-to-date software. This digital divide poses a significant barrier to ICT integration, making it difficult for teachers to incorporate

technology consistently into their teaching practices. Additionally, teachers often encounter challenges related to technology operations and concepts due to inadequate training and limited confidence in using digital tools effectively (Nettey et al., 2024).

The impact of ICT utilization in instruction is emphasized in the study of Mercado (2020), which found that elementary school teachers in rural areas often lack access to ICT resources and formal training, which limits their ability to integrate digital tools into their lessons. While teachers demonstrate a strong willingness to learn, barriers such as insufficient infrastructure and poor internet connectivity hinder progress. Similarly, Torres and Rodriguez (2021) revealed that even teachers in urban areas with better access to technology struggle with advanced ICT skills, particularly in educational tools like learning management systems and multimedia creation. While these teachers may have basic digital literacy, they often lack the expertise to utilize more sophisticated tools for modern teaching practices effectively. This gap hinders their ability to fully integrate technology into instruction, limiting their capacity to design engaging and interactive learning experiences. These findings underscore the need for targeted training and localized ICT support.

Further compounding the issue is the reluctance of some teachers to incorporate ICT into their lessons. Research indicates that this reluctance often stems from a lack of confidence in their ability to use ICT effectively (Ye et al., 2022). Teachers' belief in their ability to succeed with technology or ICT self-efficacy is critical in motivating them to integrate digital tools into their instruction (Hatlevik and Hatlevik, 2018).

The Philippine Professional Standards for Teachers (PPST), specifically Domain 1: Content Knowledge and Pedagogy, emphasizes effective instruction utilization of Information and Communication Technology (ICT). According to the PPST, teachers are expected to use ICT positively to facilitate teaching and learning. This includes creating a learning-focused environment, efficiently managing learner behavior in physical and virtual spaces and utilizing a range of resources to provide intellectually challenging and stimulating activities. Teachers are encouraged to integrate ICT tools and resources to enhance their teaching practices, making lessons more engaging and accessible to students. The goal is to transform traditional education delivery methods by leveraging technology to support and improve student learning outcomes. Additionally, the PPST highlights the importance of using ICT responsibly, ethically, and appropriately to achieve and reinforce learning. (Llego, 2017)

Integrating ICT into education is essential for creating a modern and engaging learning environment. It improves teacher-student interactions, makes learning more flexible and engaging, and supports innovative ways to gain knowledge. However, challenges like limited resources and infrastructure, especially in rural areas, make its implementation difficult.

This study aims to understand elementary school teachers' specific challenges and needs in using ICT integration. Based on the researcher's interview conducted in November 2024 with 20 public elementary school teachers, 7 reported that they cannot use ICT tools, and 6 shared that they only have basic knowledge. This indicates that over half of the teachers lack the necessary skills or confidence to integrate technology into their teaching effectively. In addition, the district lacks a structured, district-wide program to address these pressing needs. ICT coordinators also expressed the difficulty of supporting fellow teachers due to lacking formal training or capacity-building programs, highlighting a systemic gap in support and development.

To address these challenges, a localized ICT teacher development program is proposed. This initiative aims to equip elementary school teachers with the necessary skills, knowledge, and confidence to effectively integrate ICT into classroom instruction. The integration of ICT in teaching and learning is expected to enhance student engagement, boost motivation, foster digital literacy, and provide access to a wide range of learning resources that support deeper understanding and creativity. By empowering teachers through comprehensive training and targeted support, technology can become a meaningful and effective tool for instruction, ultimately enriching the overall educational experience. The program will include hands-on workshops, peer mentoring, and continuous technical support to ensure sustained growth and application. With consistent implementation, this initiative can help close the digital divide and promote inclusive, future-ready education.

Statement of the Problem

This study aims to identify the issues and needs of elementary school teachers in using ICT in instruction.

Specifically, it answers the following questions:

1.What are the challenges encountered of the elementary school teachers in the utilization of ICT in instruction?

2.What are the needs of elementary school teachers in the utilization of ICT in instruction?

3.Based on the findings of the study, what localized teacher’s ICT development program on ICT can be proposed to address the Challenges and needs of elementary school teachers in the utilization of ICT in instruction?

Conceptual Framework

The study was grounded in the National ICT Competency Standards for Teachers (Department of Information and Communications Technology Standards) and the Philippine Professional Standards for Teachers (DepEd PPST), both of which served as essential benchmarks for evaluating the issues and needs of elementary teachers in the utilization of ICT for instruction.

The DepEd PPST complemented the DICT Standards by focusing on broader domains of teacher development that aligned with using ICT for instruction. The Philippine Professional Standards for Teachers (DepEd PPST), established under DepEd Order No. 42, s. 2017 outlined a comprehensive framework for teacher quality and professional growth.

The content knowledge and pedagogy domain aligned with the pedagogical integration aspect of the DICT Standards. It encouraged teachers to utilize technology to enhance their subject-specific teaching strategies, ensuring that lessons were engaging and effective in achieving learning objectives. The learning environment domain of the PPST emphasized the creation of inclusive, student-centered classrooms where technology played a role in catering to diverse learning needs, particularly in differentiated instruction and support for students with special needs. The curriculum and planning domain highlighted the importance of integrating ICT in lesson design to enhance instructional delivery, ensure alignment with learning competencies, and create engaging, meaningful student learning experiences. The professional growth and development domain also resonated with the DICT's focus on continuous professional development by encouraging teachers to pursue lifelong learning, collaborate with peers, and engage in ICT-related training (DepEd, 2017).

The DICT Standards identified four major domains critical to ICT competency: technology operations and concepts, social and ethical use, pedagogical integration, and professional development. Technology operations and concepts are focused on equipping teachers with foundational digital literacy skills. This included operating computers and other ICT tools, navigating various digital platforms, and troubleshooting fundamental technical issues. This foundational knowledge enabled teachers to use technology efficiently and confidently in instruction.

The second domain, social and ethical use, emphasizes responsible digital citizenship among teachers and students. This included adhering to online safety principles, protecting data privacy, respecting intellectual property rights, and promoting ethical behavior in digital interactions. For teachers, this domain was essential in guiding students on how to use technology responsibly and safely. The prevalence of misinformation, cyberbullying, and unauthorized content usage highlighted the need for teachers to instill digital ethics in students.

The third domain, pedagogical integration, involves using ICT to enhance instructional strategies and learning outcomes. Teachers needed to seamlessly integrate technology into their teaching practices, such as using digital tools for lesson planning, creating multimedia content, conducting virtual classes, or employing adaptive learning software to meet individual student needs.

The fourth domain, professional development, underscored the importance of lifelong learning and teacher collaboration. In a rapidly evolving technological landscape, continuous training is essential for teachers to stay updated with the latest advancements and best practices in ICT integration. Professional development activities, such as workshops, peer mentoring, and participation in ICT-related communities of practice, enabled teachers to refine their skills and adapt to the dynamic needs of learners (DICT, 2012).

The DICT Standards and DepEd PPST were lenses for evaluating public elementary teachers' current issues and needs in using ICT for instruction. In addition, the standards and frameworks provide a holistic approach to addressing the problems and needs of teachers in utilizing ICT in instruction, ensuring that teachers are well-equipped to enhance the educational experience and improve student outcomes.

A Localized ICT Teachers' Development Program was proposed based on the SLAC framework. The program aimed to provide tailored training and support for elementary school teachers, focusing on helping them become confident and competent in using ICT tools. This program utilized the Learning Action Cell (LAC) framework, a collaborative approach approved by the Department of Education. Teachers participated in structured learning sessions, peer mentoring, and activities to build their skills. The aim was to improve teaching quality and ensure equal access to technology and skills.

Scope and Limitations of the Study

The study aimed to determine the challenges and needs of public elementary school teachers in the utilization of ICT in instruction in one of the districts in the Division of Quezon. The researcher utilized a qualitative research method, specifically a narrative inquiry approach, which was well-suited for exploring the experiences and perspectives of elementary school teachers regarding ICT utilization in instruction. This approach allowed for an in-depth understanding of the contextual challenges and needs of the teachers, providing a platform to design a localized ICT teachers' development program specifically tailored to address these challenges.

The participants for this study comprised twenty public elementary school teachers within the chosen district. Using purposive sampling, participants were selected based on their relevant insights into the challenges and needs of using ICT in instruction. The study aimed to capture diverse perspectives from the 20 public elementary teachers to provide a comprehensive understanding of their challenges and needs in ICT utilization.

The research locale was one district in the Division of Quezon, consisting of twelve (12) elementary schools. This district was chosen because of its relevance to the study, including its diverse teaching contexts and specific challenges related to ICT utilization. Many schools in this district lacked adequate technological infrastructure, such as internet access and functional digital tools, making it an ideal setting to investigate the study’s objectives.

The primary method for data gathering was the Participants' Interview Guide (IIG), which allowed the researcher to collect data directly from the participants. The interviews were conducted face-to-face, depending on the participant's availability, and focused on exploring the challenges and needs of elementary school teachers in utilizing ICT for classroom instruction. Out of 20 participants, 15 were interviewed face-to-face, while 1 was interviewed online due to scheduling and availability constraints. After the interviews, the researcher transcribed the recordings for accuracy and analyzed the data thematically to identify common patterns and insights. The findings were then organized into key themes to guide the development of

a localized ICT program tailored to address the identified challenges and needs. The study was conducted from January to March 2025 for thorough preparation and organization. Indicate how the interview was done and what was done after the interview.

By identifying these specific Challenges and needs, the study aimed to inform the development of a localized ICT program that addressed these challenges, ultimately enhancing ICT integration and improving the quality of teaching and learning in the selected district.

Definition of Terms

The following terms were defined operationally so the readers could better understand the study.

Challenges. These are difficulties, obstacles, or barriers public elementary school teachers face in effectively utilizing ICT for instruction. These challenges may include technical issues, lack of training, limited access to resources, or resistance to adopting new technologies, which hinder the effective integration of ICT in the classroom.

ICT (Information and Communication Technology). Refer to the use of digital tools and resources, such as computers, internet connectivity, educational software, and multimedia platforms, to support and enhance the teaching and learning process in the classroom. It encompasses hardware and software technologies enabling teachers to deliver lessons, engage students, and manage educational content effectively.

Instruction. Refers to the methods, strategies, and processes elementary school teachers use to deliver lessons and facilitate student learning. It encompasses the planning, implementation, and evaluation of teaching activities, which may include using ICT tools to enhance educational experiences.

Localized ICT Development Program. This is the output of the study, designed to address the challenges and needs of elementary school teachers in utilizing ICT in instruction. This program aims to enhance their competence and confidence in using technology effectively, thereby improving the district's teaching quality. It includes targeted training sessions, practical applications, and continuous support to ensure sustained development. The program also encourages collaboration among teachers to share best practices and innovative strategies. Ultimately, it seeks to create a culture of technology integration that supports both teacher growth and student achievement.

Needs. Encompass access to reliable internet connections and modern digital devices that facilitate interactive learning. Teachers must also be provided with user-friendly educational software that supports a variety of learning styles and subject areas. Regular training sessions and workshops are necessary to keep educators updated on emerging technologies and best practices. Time allocation within their schedules for planning and experimenting with ICT tools is another critical requirement. Moreover, fostering a collaborative environment where teachers can share experiences and strategies can significantly enhance the effective integration of technology in classrooms.

Utilization. Refers to the way elementary school teachers apply and integrate ICT tools in their instructional practices. This includes the selection of appropriate digital resources, platforms, and applications to support lesson delivery and student engagement. Effective utilization also involves adapting teaching strategies to maximize the benefits of technology in enhancing learning outcomes.

II. Methodology

Research Design

The study employed a qualitative research design, specifically a narrative inquiry approach, to explore the challenges and needs of elementary school teachers in utilizing ICT for instruction. Narrative inquiry is a research methodology that focuses on understanding individuals' experiences through the stories they tell, emphasizing how people interpret and make sense of their lived experiences (Schaefer & Clandinin, 2019). This approach allowed for an in-depth exploration of the participants' personal stories and experiences regarding using ICT in their teaching practice. Through interviews, this method gathered rich, descriptive data that captured the teachers lived experiences, highlighting their challenges and their needs in utilizing ICT for instruction.

The narrative inquiry approach focused on understanding the teachers' perspectives and the contextual factors influencing their ICT utilization. The study uncovered the reasons, causes, and experiences that shaped the teachers' ability to integrate ICT into their instruction by examining individual narratives. This approach emphasized the importance of teachers' personal experiences and the stories they shared to offer meaningful insights and recommendations for improving ICT integration in the classroom. Through narrative inquiry, the study identified the challenges teachers encounter and the underlying factors affecting their technology use in education.

The study's findings were a foundation for developing a Localized Teacher’s development program to address the identified issues and improve classroom ICT integration.

Research Locale

The research was conducted in one of the districts in the Division of Quezon, which included 12 public elementary schools. This district was selected because it provided a clear picture of teachers' challenges in utilizing ICT for instruction. Many of the schools in this area lacked the necessary infrastructure, lacked training of the teachers on ICT, had no internet connection, and even operated without electricity. The limitations significantly hindered teachers' ability to incorporate technology effectively into their teaching practices. Furthermore, there was a lack of ICT training for teachers, and many classrooms had no internet access. Only four televisions were available for use across the entire school, further restricting the use of ICT.

Moreover, based on the interview (2024) results, the district lacked a comprehensive program to address the teachers' issues and needs in using ICT. Without proper training or support, teachers struggled to utilize ICT tools, which could have otherwise enhanced the learning experience for students.

Research Participants

This study aims to understand the specific challenges and needs that elementary school teachers face in the utilization of ICT integration in instruction. The participants of this study were selected elementary school teachers from 12 public elementary schools in one district in the Division of Quezon. The participants were chosen through purposive sampling, which involved selecting individuals best suited to provide valuable information about the research objectives. This approach ensured that the teachers included in the study were directly engaged in utilizing ICT for instruction and had firsthand experience with the challenges and needs being investigated. Teachers were selected based on specific criteria, such as having a minimum of ten years of teaching experience in elementary education, being willing to participate in the study, demonstrating a minimum level of involvement or expertise in ICT integration in the classroom, and lacking ICT training. By including participants with these criteria, the study aims to gather meaningful and detailed data to address the issues and needs elementary school teachers face in utilizing ICT for instruction.

Based on the researcher's interview conducted in November 2024 with 20 public elementary school teachers, 7 reported that they cannot use ICT tools, and 6 shared that they only have basic knowledge. This indicates that over half of the teachers lack the necessary skills or confidence to integrate technology into their teaching effectively. In addition, the district lacks a structured, district-wide program to address these pressing needs. One ICT coordinator also expressed the difficulty of supporting fellow teachers due to lacking formal training or capacity-building programs, highlighting a systemic gap in support and development.

To tackle the challenges elementary teachers face in ICT integration, a specialized ICT development program is proposed. The program aims to build teachers' competencies and confidence in utilizing ICT effectively in their classrooms. This initiative focuses on improving student engagement, fostering digital literacy, and providing access to a broader range of educational resources. Through comprehensive training and continuous support, the program seeks to ensure that ICT becomes an impactful tool in enhancing teaching and learning, ultimately contributing to a more dynamic and effective educational environment.

Research Instrument

The researcher employed a Participant's Interview Guide to gather qualitative data. This instrument consisted of carefully structured questions designed to identify the challenges and needs of elementary school teachers in utilizing ICT for instruction. The instrument was validated by four validators: three ICT officers and one school principal, all with relevant expertise in ICT integration and instructional supervision. It was also approved by the oral examination committee, ensuring its content validity and appropriateness for the study. The interview guide was divided into two major parts. Part I focused on identifying teachers' challenges in utilizing ICT in instruction. In contrast, Part II explored their specific needs related to ICT integration.

The interviews were conducted face-to-face to ensure flexibility and accessibility for participants. Face-to-face interviews provided an opportunity for in-depth discussions, allowing the researcher to observe non-verbal cues and clarify responses in real-time. One interview was conducted online for participants who faced scheduling or logistical challenges. This approach enabled teachers to answer questions conveniently, ensuring inclusivity and comprehensive data collection.

By combining these methods, the researcher captured detailed insights into the participants' experiences, thus providing a solid foundation for addressing the identified challenges and needs in ICT utilization.

Data Gathering Procedures

The data-gathering procedure followed a structured and systematic approach to ensure clarity and organization. The researcher began by securing a letter of request for endorsement addressed to the Schools Division Superintendent in the Division of Quezon. This letter requested permission to conduct the study and administer the research instrument. The request bore the signatures of the research adviser and the dean of the Graduate School of Sacred Heart College to ensure formal endorsement. After this, the researcher sought validation of the questionnaire to ensure its reliability and appropriateness for the study.

Upon receiving the necessary permissions, the researcher identified and selected participants using purposive sampling. This method ensured that participants with relevant experience and exposure to ICT utilization in instruction were included in the study. Before collecting data, participants were provided with a detailed overview of the study. Informed consent was obtained from each participant to ensure they fully understood the study's purpose and the confidentiality of their responses.

During data collection, the Participant's Interview Guide served as the primary method for gathering information about the issues and needs of elementary school teachers in utilizing ICT in instruction. The interviews lasted 20-30 minutes and were conducted over three weeks. With the interviewees' consent, the interviews were recorded and noted to capture their insights and experiences accurately. Participants were also assured of the confidentiality of the information they provided, reinforcing the ethical integrity of the study.

This structured and ethical approach aimed to collect reliable and meaningful data that contributed to addressing the identified issues and needs of the teachers in the utilization of ICT in instruction.

Data Analysis

Research data analysis involves a series of systematic steps to convert raw data into meaningful insights. The process began with data collection, gathering relevant information through surveys, interviews, or other methods (Creswell, 2018).

The data collected from the interview guide was processed to answer the issues and needs of elementary teachers in using ICT in instruction. The interviews were audio-recording with permission from the interviewees, and then the recordings were transcribed verbatim. The researcher took some notes to assist in accuracy and transcription. Still, note-taking was limited to allowing the researcher to focus on the interviewees and their responses to the prompts.

The answers of the interviewees were transcribed, analyzed, and interpreted. Thematic analysis through coding was employed to categorize and identify data patterns systematically. Coding was used to organize the informants' responses, allowing a clearer understanding of recurring themes and key issues related to ICT utilization in instruction.

The researcher first familiarized with the data by reading the transcripts multiple times to conduct the coding process. Initial codes were manually assigned to specific responses based on recurring words, phrases, or ideas. The codes were clustered into categories that reflected common patterns or themes. The final categories were refined and aligned with the research questions to ensure clarity and relevance. This method helped draw significant insights and build a logical framework for interpreting the findings.

Specialist Informants

The researcher sought the help of three experts, each specializing in a different field, to serve as specialist informants for the study. These experts offered diverse perspectives and contributed to validating the emerging themes and the study's findings. They reviewed the thematic categories to ensure they accurately represented the data and were aligned with the research objectives. Their expertise ensured the accuracy, reliability, and depth of the analysis.

IV. Results and Discussion

The results of this study served as a basis for developing a teacher's development program on ICT to address the issues and needs of elementary school teachers in the utilization of ICT in instruction.

1.Challenges Encountered the Elementary School Teachers in the utilization of ICT in instruction.

Unstable internet and frequent power interruptions are significant barriers to ICT integration in instruction. The issues disrupt lessons, limit access to digital materials, and hinder interactive, technology-based learning. As a result, the effectiveness of ICT in enhancing student engagement and instructional delivery is significantly reduced.

The lack of essential ICT equipment and resources such as computers, projectors, and internet access hinder effective instruction. Limited or unequal access, especially in rural areas, reduces opportunities for digital learning, affecting student engagement and teaching quality.

Public elementary school teachers struggle to utilize ICT in instruction due to limited ICT literacy and technical skills. A lack of foundational knowledge in using digital tools hinders their ability to effectively integrate technology into teaching, limiting the potential of ICT to enhance learning and classroom engagement.

Public elementary school teachers recognize the benefits of ICT in instruction but face challenges due to limited training and lack of confidence. The absence of proper ICT training and insufficient resources hinders their ability to integrate technology effectively into teaching. As a result, ICT use is often limited to administrative tasks rather than enhancing interactive and student-centered learning.

Teachers struggle with ICT applications like Excel, PowerPoint, Canva, and Office 365 due to their complexity and lack of training. This underscores the need for focused professional development to enhance digital skills and support effective ICT integration in instruction.

Some elementary school teachers do not use ICT tools due to a lack of confidence, knowledge, and familiarity with technology. This non-use stems from limited ICT skills and training, highlighting the need for capacity-building initiatives to encourage ICT integration in classroom instruction.

Balancing traditional teaching methods with the use of technology presents a significant challenge, particularly for older teachers. The shift from conventional to digital approaches requires adaptation, which can be difficult for those accustomed to traditional methods.

When faced with technical issues such as unstable internet or power interruptions, teachers rely on backup and alternative strategies to ensure lesson continuity. These include downloading materials for offline use, using traditional teaching methods like chalk and board, and having contingency plans to address ICT-related disruptions.

Teachers often rely on their co-teachers for assistance when facing technical difficulties with ICT tools. Issues such as sound malfunctions, connectivity problems, and unfamiliarity with software features are commonly resolved through peer support, highlighting the importance of collaboration and knowledge-sharing among colleagues.

Maintaining student engagement is challenging when ICT tools and resources are unavailable, as they limit access to interactive and attractive learning materials. Teachers note that lessons become less engaging without electricity and internet access, and students may lose interest, especially given their exposure to digital gadgets outside the classroom.

ICT limitations, such as power outages and unstable internet connections, significantly disrupt lessons that rely on technology. Teachers report that these disruptions hinder lesson execution, limit the use of teaching resources, and cause technical issues, such as malfunctioning audio, affecting instruction flow.

1.Needs of Elementary School Teachers in the Utilization of ICT in Instruction

The a need for professional development among elementary teachers in four main areas: improving proficiency in Microsoft and educational tools such as Canva for effective lesson planning and presentations; strengthening digital literacy through skills like video editing, graphic design, and ICT management; engaging in hands-on training, mentoring, and workshops to enhance ICT integration; and aligning ICT tools with instructional objectives to support and enrich teaching strategies. Consistent training and support are crucial for maximizing the use of ICT in classroom instruction.

Public elementary teachers need updated ICT tools, stable internet, and regular maintenance support to integrate technology into teaching effectively. They also require step-by-step manuals, guides, and troubleshooting assistance to use ICT tools and address technical issues confidently.

Teachers highlighted the need for peer collaboration and access to interactive ICT tools to enhance instruction. Sharing best practices and mentoring boost confidence and skills, while reliable internet, laptops, and educational apps support engaging, tech-integrated teaching.

2. The ICT Teacher Development Plan, utilizing the SLAC framework, addresses challenges such as inadequate ICT skills, lack of training, and difficulties with technical troubleshooting. It provides comprehensive training in digital literacy, interactive teaching strategies, and the use of ICT for assessments, delivered through a collaborative and teacher-driven approach. The plan unfolds in four key stages: professional development, ICT integration in teaching, digital assessment methods, and sustained support. Essential components include institutional backing, teacher collaboration, and access to digital tools.

Conclusions

The following conclusions were formulated based on the results of the study:

1. Public Elementary school teachers face challenges in ICT integration due to unstable internet, power interruptions, lack of equipment, limited digital skills, and insufficient training. These issues disrupt lessons, reduce student engagement, and force reliance on traditional methods and peer support. Despite recognizing ICT's benefits, teachers struggle with its practical use, highlighting the need for reliable infrastructure and targeted professional development.
2. The teachers need continuous professional development, updated ICT tools, and reliable technical support to integrate technology into instruction effectively. This includes training in digital tools like Microsoft and Canva, hands-on workshops, mentoring, and access to manuals and troubleshooting guides. Teachers also emphasize the importance of peer collaboration and interactive ICT resources to enhance teaching strategies, build confidence, and create engaging, student-centered learning experiences.
3. Based on the SLAC framework, the Teacher's Development Plan in ICT is a comprehensive approach to addressing the challenges teachers face in integrating technology into instruction. By focusing on structured training, collaborative learning, and ongoing support, the plan aims to enhance teachers' ICT proficiency and confidence. Monitoring and evaluation ensure progress is tracked, and the sustainability plan guarantees continuous professional growth. Ultimately, this development plan will empower teachers to use ICT effectively, leading to improved teaching practices and student outcomes.

Recommendations

Based on the findings and conclusions made, the following recommendations are at this moment offered:

For Public Elementary Teachers

- Participate in regular ICT training to improve digital literacy and technical skills, especially in tools like Canva, Excel, PowerPoint, and Microsoft 365.
- Promote peer collaboration and mentorship, allowing experienced teachers to share ICT knowledge with less experienced colleagues to create a supportive learning environment.
- Prioritize continuous professional development by encouraging teachers to attend workshops on new technologies, enhancing teaching practices and student outcomes.

For the School Heads

- Prioritize providing adequate ICT resources and infrastructure, including reliable internet access, computers, projectors, and other essential tools to support effective ICT integration in teaching.
- Allocate sufficient budget for continuous ICT training programs and provide teachers with updated learning technologies.

- Establishing a technical support team within the school to address ICT-related issues promptly is crucial to ensure that teachers can focus on instruction without interruptions. Furthermore,
- Utilize the Teacher's Development Program for ICT, based on the SLAC framework, to enhance teachers' ICT skills through structured training, capacity-building initiatives, and continuous professional development.

For the Future Researchers

- The long-term integration of ICT in education enhances student learning outcomes by promoting engagement, personalized learning, and improved digital literacy. It also strengthens teacher performance through access to innovative instructional tools, ongoing professional development, and data-driven teaching strategies.
- Teachers in rural or under-resourced areas often face challenges such as limited access to technology, insufficient teaching materials, and inadequate professional development opportunities. Despite these barriers, many overcome them through community support, creative use of available resources, and participation in remote training or peer collaboration networks.
- Further research into the use of AI and machine learning in the classroom can help educators personalize learning experiences, adapting to individual students' needs and improving engagement. These technologies have the potential to automate administrative tasks, provide real-time feedback, and foster more interactive, data-driven teaching strategies.

References

Akmad, A. P., & Abatayo, A. V. L. (2024*). Caught in the slow lane: Effects of unstable internet connectivity on accessing academic resources and collaborative learning.* Journal of Interdisciplinary Perspectives, 2(9), 278–286. https://www.jippublication.com/caught-in-the-slow-lane-effects-of-unstable-internet-connectivity-on-accessing-academic-resources-and-collaborative-learning

Alcantara, J. & Bautista, L. (2020). *Enhancing teacher competencies through ICT integration*. Philippine Journal of Education and Technology, 35(2), 45-58.

Alipio, R., & Cruz, J. (2021). *The Role of DICT Domains in Enhancing Teacher ICT Competency in Philippine Education*. Journal of Educational Technology and Innovation, 10(2), 87-95.

Ali, G., & Younas, A. (2021). *Effective Utilization of ICT in Education: A Review of the Literature*. Journal of Educational Technology & Society, 24(3), 15-28. Retrieved from ET&S Journal.

Alkassabi, O., & Kumar, R. (2019). *Barriers and needs of teachers in integrating ICT in education in the United Arab Emirates*. Journal of Educational Technology & Society, 22(1), 90-105.

Atienza K (2024). *Digi-Ed 2028 Program Launch." Department of Education, Philippines.* BUSINESSWORLD ONLINEps://www.bworldonline.com/the-nation/2024/01/25/571335/sara-unveils-depeds-digitalization-program.

Bećirović, S. (2023). *Challenges and barriers for effective integration of technologies into teaching and learning.* In Digital Pedagogy (pp. 123–133). Springer. https://doi.org/10.1007/978-981-99-0444-0_10

Cabantac, J. P., Dantes, A. A. C., Gabito, S. M., Onila, C. J. M., & Padilla, D. J. P. (2024). Challenges of traditional teachers in facing digital technology at Bestlink College of the Philippines. Ascendens Asia Singapore – Bestlink College of the Philippines Journal of Multidisciplinary Research, 3(2). https://ojs.aaresearchindex.com/index.php/aasgbcpjmra/article/view/13587

Catanaoan, H. (2017). *Information And Communication Technology (ICT) Competencies Of Selected District II Public Elementary School Teachers In The City Of General Trias: Basis For ICT Development Program For Teachers.* https://www.academia.edu/35838649/INFORMATION_AND_COMMUNICATION_T ECHNOLOGY_ICT_COMPETENCIES_OF_SELECTED_DISTRICT _II PUBLIC_E LEMENTARY _SCHOOL_ TEACHERS_IN_THE_CITY_OF_GENERAL_TRIAS_BA SIS_FOR_ICT_DEVELOPMENT_ PROGRAM_FOR_TEACHERS

Chigona, A., & Chigona, W. (2021). *The Digital Divide in South African Schools*. Journal of Education and Information Technologies, 26(1), 53-70. https://link.springer.com/article/10.1007/10639-020-10454-6

Department of Education (2010). *Guidelines on the Implementation of the DepEd Computerization Program* (DCP) DO 78, s. 2010. https://www.deped.gov.ph/2010/06/10/do-78-s-2010-guidelines-on-the-implementation-of-the-deped-computerization-program-dcp/

Department of Education (2021). *DepEd, DICT Team Up to Roll Out Public Education Network*. https://www.deped.gov.ph/2021/04/19/deped-dict-team-up-to-roll-out-public-education-network/

Department of Education (2022). *DepEd highlights Digital Rise Program as Key Player in Addressing Challenges in Education Quality*. https://www.deped.gov.ph/2022/05/10/deped-highlights-digital-rise-program-as-key-player-in-addressing-challenges-in-education-quality/

Department of Education (2023). *Revised Guidelines on the Implementation of the Department of Education Computerization Program*, DO_s2023_016. https://www.deped.gov.ph/2023/07/19/july-18-2023-do-016-s-2023-revised-guidelines-on-the-implementation-of-the-department-of-education-computerization-program/

DepEd (2023). https://www.deped.gov.ph/wp-content/uploads/DO_s2023_016.pdf

Francisco, K. (2021). *Electricity supply interruptions in the Philippines: Characteristics, trends, causes. Philippine Institute for Development Studies*. https://pids.gov.ph/details/news/press-releases/climate-proof-to-cut-power-outages-in-typhoon-prone-ph-pids-study

Garcia, I. (2016). *Teachers' information and communication technology competences: A structural approach.* https://www.sciencedirect.com/science/article/abs/pii/S0360131516301129

Gonzales, R., & Santos, L. (2022). *Teacher confidence and ICT integration in education*. International Journal of Digital Learning, 5(1), 45-50.

Hatlevik, I. K. R., and Hatlevik, O. E. (2018). *Examining the relationship between teachers' ICT self-efficacy for educational purposes, collegial collaboration, lack of facilitation, and the use of ICT in teaching practice*. Front. Psychol. 9, 1-8. doi: 10.3389/fpsyg.2018.00935

Hennessy, S., Harrison, D., & Wamakote, L. (2020). *Teacher Factors Influencing ICT Integration in Education*. Computers & Education, 70, 1-14. https://doi.org/10.1016/j.compedu.2013.07.017

Hogan, K. (2024). *Use of Technology in the Classroom to Enhance Teaching and Learning*. eSchool News Education Innovations, Insights and Resources. https://www.eschoolnews.com/digital- learning/2024/09/26/use-of-technology-in-the-classroom-to-enhance-teaching-and-learning/

Huang, R., Spector, J. M., & Yang, J. (2021). *The needs of teachers in using ICT: A review of empirical studies from Taiwan*. Journal of Educational Technology Development and Exchange, 14(1), 23-35.

Koroh, Y., Yamin, M., & Rosalina, E. (2023). *Teachers' challenges and perspectives on using online applications for online learning at SMP Santa Maria Banjarmasin*. Journal of English Language Education, 5(2), 45-58. https://www.jele.or.id/index.php/jele/article/view/578

Kumar, D., & Sharma, A. (2021). *Social and Ethical Concerns in ICT Adoption in Education*. International Journal of Education and Development using Information and Communication Technology, 17(1), 77-90. https://jedict.dec.uwi.edu/viewarticle.php?id=3023

Lacson, J. (2020). *Challenges in ICT integration in rural schools: A study on the issues faced by Filipino teachers*. Philippine Journal of Education, 45(2), 137-142.

Lapada, A., et al. (2020). *Pedagogical Challenges in ICT Integration for Teacher*s. International Journal of Instructional Technology, 27(1), 55-67.

Larawan, J. et al. (2023), *School Heads' and Teachers' Competencies in the Utilization of Information and Communication Technology (ICT) in Public Elementary Schools in the Division of Palawan, Philippines*. Psychology and Education: A Multidisciplinary Journal, Volume: 11, pp. 927-939. https://scimatic.org/storage/journals/11/pdfs/1761.pdf

Llego, M. (2017). *Philippine Professional Standards for Teachers* (PPST). https://www.teacherph.com/philippine-professional-standards-for-teachers/

Lambunao, R. M. (2024). *Enhancing ICT competency among public elementary teachers: A case study in Manolo Fortich II District, Bukidnon.* International Journal of Research and Innovation in Social Science, 8(1), 112-125. https://rsisinternational.org/journals/ijriss/articles/enhancing-ict-competency-among-public-elementary-teachers-a-case-study-in-manolo-fortich-ii-district-bukidnon

Mendoza, V. (2023). *ICT Issues Affecting Teaching Quality in Rural Schools in the Philippines*. Journal of Educational Development, 29(1), 80-89.

Mercado, A. (2020). *Digital Readiness and Barriers to ICT Integration Among Elementary Teachers in Rural Philippine Schools*. Journal of Education and Development Studies, 12(3), 23-40.

Mijares, B. (2020). *Teachers' Information and Communication Technology Competencies: The Basis for a Competency-based Training Plan*. American Journal of Education and Technology. https://journals.e-palli.com/home/index.php/ajet/article/view/762

Munje, P. N., & Jita, T. (2020). *The impact of ICT underutilization on learners' performance in South African primary schools*. Journal Name, Volume(Issue), page range. https://doi.org/xxxxxxx

Nettey, J. et al (2024). *Analyzing the challenges basic school teachers face in integrating Information and Communication Technology into teaching and learning activities in a developing country*. Information & Communications Technology in Education. https://www.tandfonline.com/doi/full/10.1080/2331186X.2024.2364544?utm_source=chatgpt.com

Ocampo and Lucasan (2019). *Key Issues in Instruction, Teacher Professional Development, and ICT in Basic Education*. University of the Philippines Center for Integrative and Development Studies (UP CIDS), p. 112. https://cids.up.edu.ph/wp-content/uploads/2022/02/Key-Issues-in-Instruction-Teacher-Professional-Development-and-ICT-in-Basic-Education-2019.pdf

Olita, A. and Orong, M. (2023). *Challenges Experienced by Teachers in the Utilization of Information and Communication Technology in the Classroom*. United International Journal for Research & Technology, Volume 4, Issue 6. https://uijrt.com/paper/challenges-experienced-teachers-utilization-of-information-communication-technology-classroom.

Pedroso, M. A. B., & Dela Cruz, R. S. (2023). *Unlocking the power of Canva: Students' views on using the all-in-one tool for creativity and collaboration*. International Journal of Emerging Technologies in Learning (iJET), 18(1), 123–137. https://doi.org/10.3991/ijet.v18i01.37277

Philstar (2021). *Philippine Distance Learning Survey: Challenges in distance learning.* https://interaksyon.philstar.com/politics-issues/2021/06/03/193126/new-poll-says-unstable-internet-remain-top-challenge-in-distance-learning/

Pouezevara, S., et al. (2020). *ICT Challenges in Education: Issues and Solutions*. International Journal of Education Technology, 35(4), 512-523.

Reyes, M. (2021). *Barriers to effective ICT utilization in public schools: A case study of teachers' experiences.* Philippine Educational Review, 54(3), 201-209.

Rouse, M. (2024). *Information and Communication Technology (ICT)National ICT Competency Standards for Teachers, Commission on Information and Communications Technology*. https://www.slideshare.net/slideshow/national-ict-competency-standards-for-teachers/10749445

Salsabila, U. and Purwaningrum D. (2021). *Problems in the Utilization of Educational Technology in Remote Schools*. Interdisciplinary Social Studies 1(3):313-322. https://www.researchgate.net/publication/361855849_Problems_in_the_Utilization_of_Educational_ Technology _in_Remote_Schools

Sagun, J. S., Peralta, L. P., & Edea, M. A. (2019). *Challenges Encountered by Elementary Teachers Using ICT Tools for Learning and Instruction in Selected Public Schools of Padre Burgos District, Padre Burgos, Quezon Province.* Ascendens Asia Journal of Multidisciplinary Research Abstracts, 3(2C). https://ojs.aaresearchindex.com/index.php/AAJMRA/article/view/5905

Schaefer, L., & Clandinin, D. J. (2019*). Narrative inquiry in education: A primer*. Sage Publications.

Sollano, H. (2024). *Issues and Concerns Encountered by Elementary Teachers in Teaching Information Communication Technology in Schools in Zone 2 of Infanta District.* natian International Journal for Multidisciplinary Research, Volume 2 No 2. https://works.hcommons.org/records/dwyfm-afs72

Syahdan, S., Herlinawati, H., Syaifullah, S., & Syafitri, D. T. (2023). *Challenges and strategies of teachers in integrating Canva in English classroom teaching. ELT-Lectura: Studies and Perspectives in English Language Teaching,* 10(1), 11–20. https://doi.org/10.31849/elt-lectura.v10i1.12115

Timotheou, S. et al (2023). *Impacts of Digital Technologies on Education and Factors Influencing Schools' Digital Capacity and Transformation: A Literature Review*. Education and Information Technologies, v28 n6 p6695-6726 Jun 2023. https://eric.ed.gov/?id=EJ1378444

Tondeur, J., Van Braak, J., & Ertmer, P. A. (2017). *Understanding the relationship between teachers' pedagogical beliefs and ICT use in education*. Computers & Education, 69, 45-56.

Torres, L., & Rodriguez, F. 2021). *ICT Competency Levels Among Public School Teachers in Urban Areas of the Philippines: A comparative analysis*. Philippine Journal of Teacher Education, 7(1), 12-25.

Villanueva, R. (2021). *Pedagogical approaches in ICT-based education: A case study in the Philippines*. Southeast Asian Educational Review, 12(1), 67-79.

Wanjala, A. S. (2022). *Policy and infrastructure challenges influencing ICT implementation in universities: A literature review. Discover Education*, 1(19). https://doi.org/10.1007/s44217-022-00019-6

Winarni, W et al. (2018), *The Impact of Thematic Learning Integrated ICT in Tabot Bengkulu as Cultural Ceremony toward Social Interaction Knowledge in Elementary School*. Asian J. Educ. Train., vol. 4, no. 2, pp. 70-74, 2018.

Ye, L., Kuang, M., and Liu, S. (2022). *ICT Self-Efficacy, Organizational Support, Attitudes, and the Use of Blended Learning: An Exploratory Study Based on English Teachers in Basic Education.* Front. Psychol. 13, 1-11. doi: 10.3389/fpsyg.2022.941535