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Article

Integrating Information and Communication Technology in Early Reading Instruction: Teachers' Experiences in Supporting the Reading Skills of Key Stage 1 Learners in Barlig District, Schools Division of Mountain Province

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Abstract

The integration of Information and Communication Technology (ICT) has transformed early literacy instruction by providing innovative and interactive learning experiences that support the development of foundational reading skills. In Key Stage 1, ICT offers opportunities for teachers to utilize digital resources, multimedia applications, and interactive learning platforms to improve learners' reading fluency, vocabulary, phonics, and comprehension. As the implementation of technology-enhanced instruction continues to expand, teachers play a critical role in selecting, adapting, and facilitating ICT-based learning experiences that address the diverse literacy needs of young learners. This study explored the experiences of Key Stage 1 teachers in integrating Information and Communication Technology in early reading instruction in Barlig District, Schools Division of Mountain Province. A qualitative phenomenological research design was employed involving ten Key Stage 1 teachers selected through purposive sampling. Data were gathered through semi-structured interviews, classroom observations, and document analysis and were analyzed using Braun and Clarke's six-phase thematic analysis. The findings revealed that teachers utilized multimedia presentations, educational applications, interactive reading activities, digital storytelling, and technology-assisted assessments to strengthen learners' reading skills. Participants also encountered challenges related to limited technological resources, unstable internet connectivity, inadequate digital devices, and varying levels of learners' digital readiness. Despite these challenges, teachers demonstrated adaptability, creativity, and strong professional commitment in integrating ICT to provide engaging and meaningful literacy instruction. The study highlights the importance of digital pedagogical competence, equitable access to technology, contextualized digital learning resources, and continuous professional development in strengthening ICT integration in early reading education. The findings provide valuable insights for teachers, school leaders, curriculum developers, and policymakers in enhancing technology-supported literacy instruction in elementary schools.

Keywords: *Information and Communication Technology, early reading instruction, reading skills, Key Stage 1, teachers' experiences, educational technology, phenomenology, qualitative research*

Introduction

Reading is a fundamental literacy skill that forms the foundation of learners' academic achievement and lifelong learning. During Key Stage 1, learners develop essential reading competencies such as phonemic awareness, phonics, vocabulary, fluency, and reading comprehension. These foundational skills enable children to access learning across all subject areas and establish the basis for higher-order literacy development. Consequently, teachers continuously seek instructional approaches that effectively engage learners while addressing their diverse reading needs.

The integration of Information and Communication Technology (ICT) has significantly transformed literacy instruction by providing interactive, learner-centered, and engaging educational experiences. Digital storybooks, multimedia presentations, educational applications, interactive reading games, audio-visual materials, and online literacy platforms offer learners multiple opportunities to strengthen reading skills through meaningful and enjoyable learning activities. ICT also enables teachers to present reading lessons using visual and auditory supports that enhance learners' comprehension, motivation, and active participation.

In the context of early reading instruction, teachers play a central role in ensuring that technology serves as a meaningful pedagogical tool rather than merely a technological resource. Effective ICT integration requires teachers to carefully select digital materials, facilitate learner interaction, provide guided reading experiences, monitor learner progress, and adapt instructional strategies to meet the developmental needs of beginning readers. Through thoughtful integration of technology, teachers create supportive learning environments where learners actively construct literacy skills while developing confidence and positive attitudes toward reading.

Despite the educational benefits of ICT integration, teachers continue to encounter implementation challenges. Limited access to digital devices, unstable internet connectivity, inadequate technological infrastructure, varying levels of learners' digital literacy, and insufficient professional training often influence the effective delivery of technology-enhanced reading instruction. These challenges require teachers to become resourceful and innovative by utilizing offline digital resources, contextualized instructional materials, collaborative learning approaches, and flexible teaching strategies that maximize available technological resources.

Although previous studies have examined the effectiveness of ICT in improving reading achievement, much of the existing literature has focused on quantitative outcomes. Relatively few qualitative investigations have explored teachers' lived experiences in integrating ICT into early reading instruction within Philippine public elementary schools. Understanding these experiences provides valuable insights into teachers' pedagogical practices, instructional decision-making, implementation challenges, and adaptive strategies in promoting literacy development through technology.

Therefore, this study explored the experiences of Key Stage 1 teachers in integrating Information and Communication Technology in early reading instruction to support the reading skills of learners in Barlig District, Schools Division of Mountain Province. The findings are expected to contribute to strengthening digital literacy instruction, enhancing teacher professional development, improving technology integration, and informing educational policies that promote equitable and effective ICT-supported reading instruction in elementary education.

Objectives of the Study

This study aimed to explore the experiences of Key Stage 1 teachers in integrating Information and Communication Technology (ICT) in early reading instruction to support the reading skills of learners in Barlig District, Schools Division of Mountain Province.

Specifically, it sought to:

1. describe the pedagogical practices employed by Key Stage 1 teachers in integrating ICT into early reading instruction;
2. explore the experiences of teachers in utilizing ICT to support the reading skills of Key Stage 1 learners;
3. identify the challenges encountered by teachers in integrating ICT into early reading instruction;
4. examine the strategies employed by teachers to address technological and instructional challenges while promoting literacy development; and
5. provide implications for strengthening ICT integration, teacher professional development, and technology-supported literacy instruction in elementary education.

Review of Related Literature

Information and Communication Technology (ICT) has become an essential component of contemporary education, providing teachers with innovative instructional approaches that promote learner engagement, collaboration, and meaningful learning. In early literacy education, ICT supports the development of foundational reading skills by offering interactive learning experiences that strengthen phonemic awareness, phonics, vocabulary, reading fluency, and comprehension. Digital technologies such as multimedia presentations, electronic storybooks, educational applications, interactive games, and audio-visual resources provide young learners with multiple opportunities to engage actively in reading while accommodating diverse learning styles and developmental needs.

Research has consistently shown that integrating ICT into reading instruction enhances learner motivation, participation, and reading confidence. Multimedia-supported instruction enables learners to visualize concepts, hear correct pronunciation, receive immediate feedback, and practice reading through interactive activities. Digital storytelling, guided reading applications, and technology-assisted literacy programs have been found to encourage learners to become active participants in the reading process while improving comprehension and vocabulary acquisition. These instructional approaches also promote learner autonomy by allowing children to revisit lessons and practice reading skills at their own pace.

Teachers play a pivotal role in ensuring the effective integration of ICT in early reading instruction. Beyond operating digital technologies, teachers serve as instructional designers, facilitators, and literacy coaches who carefully select appropriate digital resources, contextualize learning materials, monitor learner progress, and create supportive literacy environments. Effective ICT integration requires teachers to combine pedagogical expertise with technological competence to ensure that technology enhances rather than replaces meaningful reading instruction.

The successful implementation of ICT-supported reading instruction also depends on adequate technological infrastructure, professional development, and school support. Studies have emphasized that access to digital devices, reliable internet connectivity, contextualized instructional materials, and continuous teacher training significantly influence teachers' confidence and

effectiveness in integrating technology into literacy instruction. School leadership and collaborative professional learning communities likewise contribute to strengthening teachers' digital pedagogical competence.

Despite its educational potential, ICT integration in early reading instruction continues to present challenges. Limited technological resources, inconsistent internet access, insufficient digital devices, varying learner readiness, and limited opportunities for professional development frequently affect classroom implementation, particularly in geographically isolated and disadvantaged areas. Consequently, teachers demonstrate adaptability by utilizing offline digital resources, locally developed instructional materials, blended instructional approaches, and collaborative learning strategies to ensure that technology remains accessible and meaningful for young learners.

Although numerous studies have examined the effectiveness of ICT in literacy education, relatively few qualitative investigations have explored the lived experiences of Key Stage 1 teachers integrating technology into early reading instruction in Philippine public elementary schools. This study addresses this gap by examining teachers' pedagogical practices, classroom experiences, implementation challenges, and adaptive strategies in supporting the reading skills of Key Stage 1 learners through ICT integration in Barlig District, Schools Division of Mountain Province.

Theoretical Framework

This study is anchored on the Technological Pedagogical Content Knowledge (TPACK) Framework by Mishra and Koehler (2006), Mayer's Cognitive Theory of Multimedia Learning (2009), Social Constructivism by Lev Vygotsky, and Scarborough's Reading Rope Theory (2001). These theories provide the conceptual foundation for understanding Key Stage 1 teachers' experiences in integrating Information and Communication Technology (ICT) into early reading instruction.

The Technological Pedagogical Content Knowledge (TPACK) Framework (Mishra & Koehler, 2006) emphasizes that effective technology integration requires teachers to combine technological knowledge, pedagogical knowledge, and content knowledge. In early reading instruction, teachers are expected to select appropriate digital tools, design meaningful literacy activities, and implement instructional strategies that address learners' developmental needs. ICT integration becomes effective when technology complements sound pedagogy and literacy content, enabling learners to engage actively in reading while achieving intended learning outcomes.

Mayer's Cognitive Theory of Multimedia Learning (2009) explains that learners understand information more effectively when verbal explanations are combined with relevant visual representations. Young learners develop reading skills more efficiently when multimedia resources such as digital storybooks, animated texts, interactive reading applications, audio recordings, and educational videos present literacy concepts through multiple sensory channels. The theory highlights that meaningful learning occurs when learners actively process and integrate visual and verbal information, making multimedia-supported instruction particularly valuable in developing foundational reading competencies.

Social Constructivism (Vygotsky, 1978) posits that learning develops through social interaction, collaboration, and guided participation. In ICT-supported reading instruction, teachers facilitate discussions, guided reading sessions, collaborative digital activities, and peer interaction that help learners construct meaning from texts. Through scaffolding and continuous guidance, teachers enable beginning readers to develop confidence, comprehension, and independent reading skills while engaging with digital learning resources.

Scarborough's Reading Rope Theory (2001) explains that proficient reading develops through the integration of word recognition and language comprehension. Word recognition involves phonological awareness, decoding, and sight recognition, while language comprehension includes vocabulary, background knowledge, language structures, verbal reasoning, and literacy knowledge. ICT-based instructional resources support these interconnected components by providing interactive opportunities for phonics practice, vocabulary development, oral reading, listening comprehension, and meaningful text engagement. The theory reinforces the importance of integrating technology into literacy instruction to strengthen multiple strands of reading development simultaneously.

Collectively, these theories explain how technology integration, multimedia learning, collaborative instruction, and systematic literacy development contribute to effective early reading instruction. They provide the theoretical basis for examining teachers' pedagogical practices, classroom experiences, implementation challenges, and adaptive strategies in integrating ICT to support the reading skills of Key Stage 1 learners.

Methodology

This study employed a qualitative phenomenological research design to explore the experiences of Key Stage 1 teachers in integrating Information and Communication Technology (ICT) into early reading instruction to support learners' reading skills in Barlig District, Schools Division of Mountain Province. The phenomenological approach was selected because it seeks to understand participants' lived experiences, perceptions, and instructional practices in authentic educational settings.

The study was conducted in selected public elementary schools in Barlig District, Schools Division of Mountain Province. The participants consisted of ten (10) Key Stage 1 teachers handling Kindergarten, Grade 1, Grade 2, and Grade 3 classes who had direct experience integrating ICT into reading instruction. Participants were selected through purposive sampling based on their teaching assignments, experience in early literacy instruction, and active use of ICT-supported teaching strategies.

Data were gathered using a researcher-developed semi-structured interview guide, complemented by classroom observations and document analysis. Relevant documents, including lesson plans, Daily Lesson Logs (DLLs), ICT-integrated learning materials, reading intervention plans, learners' reading progress records, digital instructional resources, and assessment reports, were examined to triangulate the interview data. Approval to conduct the study was obtained from the Schools Division Office and the respective school heads before data collection. Written informed consent was secured from all participants, and interviews were audio-recorded with permission, transcribed verbatim, and validated through member checking.

The collected data were analyzed using Braun and Clarke's (2006) six-phase thematic analysis, which involved familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. This systematic process facilitated the identification of recurring themes describing teachers' pedagogical practices, implementation experiences, challenges, and adaptive strategies in integrating ICT into early reading instruction.

To ensure the trustworthiness of the findings, the study adopted the criteria of credibility, transferability, dependability, and confirmability. Credibility was established through member checking, prolonged engagement, and triangulation of interview, observation, and document analysis

data. Dependability and confirmability were strengthened through peer debriefing and maintaining an audit trail, while transferability was supported through rich descriptions of the research setting, participants, and instructional context.

Ethical principles were strictly observed throughout the conduct of the study. Permission to conduct the research was obtained from the appropriate educational authorities before data gathering commenced. Participation was voluntary, and all participants signed informed consent forms after being informed of the study's objectives, procedures, benefits, and possible risks. Confidentiality and anonymity were maintained through the use of pseudonyms, and all collected information was securely stored and used exclusively for academic and research purposes.

Findings and Discussion

Theme 1: Enriching Early Reading Instruction through Meaningful ICT Integration

The findings revealed that Key Stage 1 teachers integrated Information and Communication Technology (ICT) as a meaningful instructional resource to enrich early reading instruction. Participants explained that multimedia presentations, digital storybooks, educational videos, interactive reading applications, and audio-assisted reading activities enabled learners to better understand reading concepts while increasing classroom participation. Teachers emphasized that ICT transformed reading lessons into more engaging and learner-centered experiences, allowing beginning readers to develop phonemic awareness, vocabulary, fluency, and comprehension through interactive and multisensory learning.

Participant 2 shared:

"Using digital storybooks and interactive reading activities makes the lesson more enjoyable. My learners become more attentive because they can both see and hear the story while following the printed words."

Participant 7 stated:

"Educational videos help learners understand pronunciation, vocabulary, and story sequences more easily. They become more interested in reading because the lessons are interactive and enjoyable."

These responses demonstrate that ICT integration strengthens literacy instruction by providing learners with multiple opportunities to interact with reading materials through visual, auditory, and interactive experiences. Teachers observed that multimedia-supported instruction increased learners' engagement, motivation, and confidence while improving foundational reading skills. These findings support Mayer's Cognitive Theory of Multimedia Learning, which explains that meaningful learning occurs when verbal information is reinforced through relevant visual representations. The findings also align with Scarborough's Reading Rope Theory, emphasizing that technology-supported instruction strengthens both word recognition and language comprehension, which are essential components of skilled reading.

Theme 2: Supporting Diverse Reading Needs through Technology-Enhanced Differentiated Instruction

The participants emphasized that ICT enabled them to differentiate reading instruction according to learners' individual literacy needs. Teachers utilized digital reading applications, recorded stories, interactive phonics activities, online games, and multimedia resources to provide individualized

learning experiences for struggling and advanced readers. They explained that technology allowed learners to practice reading at their own pace while receiving immediate feedback and repeated opportunities for skill development.

Participant 4 explained:

"Every learner has different reading abilities. ICT allows me to provide different activities that match each learner's reading level, making instruction more responsive to their needs."

Participant 9 remarked:

"Some learners need more repetition before they understand a reading lesson. Using digital resources allows them to replay stories and phonics activities until they become more confident readers."

These findings indicate that technology-enhanced differentiated instruction enables teachers to address learners' varying reading abilities while promoting equitable literacy development. Through individualized digital activities, learners receive appropriate support that strengthens reading fluency, comprehension, vocabulary, and confidence. The findings reinforce the Technological Pedagogical Content Knowledge (TPACK) Framework, which highlights teachers' ability to integrate technology, pedagogy, and literacy content to meet diverse learner needs. Furthermore, the findings support Social Constructivism, emphasizing that teacher guidance, scaffolding, and meaningful interaction remain essential even within technology-supported learning environments.

Theme 3: Overcoming Technological Constraints through Instructional Creativity and Resourcefulness

The findings revealed that teachers encountered several challenges in integrating Information and Communication Technology (ICT) into early reading instruction. Participants identified limited digital devices, unstable internet connectivity, inadequate technological infrastructure, intermittent electricity, and insufficient digital learning resources as major barriers, particularly in geographically remote schools. Despite these limitations, teachers demonstrated creativity and resilience by utilizing offline educational applications, downloaded multimedia materials, portable storage devices, and locally produced digital resources to sustain meaningful literacy instruction.

Participant 1 shared:

"Internet access is not always available in our school, so I download videos and interactive reading materials in advance. Even without a connection, my learners can still enjoy technology-assisted reading lessons."

Participant 6 stated:

"We maximize whatever resources are available. Sometimes I use my personal laptop and portable speaker so learners can still experience interactive reading activities."

These responses indicate that teachers' adaptability and resourcefulness enable them to continue integrating ICT despite infrastructural limitations. By creatively utilizing available technologies and locally accessible resources, teachers ensure that learners continue to receive engaging literacy instruction. These findings support the TPACK Framework, which emphasizes teachers' capacity to integrate technology effectively while adapting instructional strategies to contextual realities.

Theme 4: Strengthening Reading Development through Interactive Assessment and Immediate Feedback

The participants emphasized that ICT enhanced reading assessment by providing opportunities for immediate feedback, continuous monitoring, and individualized support. Teachers utilized digital quizzes, interactive reading applications, recorded oral reading activities, multimedia comprehension tasks, and electronic progress monitoring tools to assess learners' reading performance. They explained that technology-assisted assessment enabled them to identify learners' strengths and reading difficulties more efficiently while providing timely intervention.

Participant 3 explained:

"Interactive reading applications immediately show learners whether their answers are correct. They become motivated to improve because they receive instant feedback."

Participant 8 remarked:

"ICT helps me monitor learners' reading progress more effectively. I can identify who needs additional support and prepare follow-up activities based on their reading performance."

These findings demonstrate that ICT supports formative assessment by facilitating continuous monitoring, individualized feedback, and timely instructional adjustments. Technology-assisted assessment allows teachers to respond more effectively to learners' literacy needs while encouraging learners to become active participants in their own reading development. The findings align with Scarborough's Reading Rope Theory, which highlights the importance of systematically strengthening the interconnected components of reading through continuous instructional support and assessment.

Theme 5: Building Teacher Capacity through Continuous Professional Learning and Collaboration

The findings revealed that teachers recognized continuous professional development as essential for effective ICT integration in early reading instruction. Participants regularly attended Learning Action Cells (LACs), ICT capability-building programs, literacy workshops, webinars, and peer mentoring sessions to improve their technological competence and instructional practices. They also collaborated with fellow teachers to develop contextualized digital learning materials, exchange innovative teaching strategies, and address common implementation challenges.

Participant 5 shared:

"Through Learning Action Cell sessions, we share digital resources and discuss strategies that make ICT more effective in teaching beginning readers."

Participant 10 stated:

"Every ICT training introduces new applications and teaching techniques. Continuous learning helps me become more confident in integrating technology into reading instruction."

These responses suggest that sustained professional learning and collaboration strengthen teachers' digital pedagogical competence and confidence in integrating ICT into literacy instruction. Through reflective practice, peer support, and continuous capacity building, teachers improve instructional quality while responding to the evolving literacy needs of young learners. The findings reinforce the

TPACK Framework, which underscores the importance of developing teachers' technological, pedagogical, and content knowledge to ensure meaningful and effective technology integration in education.

Conclusion

This study explored the experiences of Key Stage 1 teachers in integrating Information and Communication Technology (ICT) into early reading instruction in Barlig District, Schools Division of Mountain Province. The findings revealed that teachers viewed ICT as an essential pedagogical resource for enriching literacy instruction, increasing learner engagement, and supporting the development of foundational reading skills. Through the use of digital storybooks, multimedia presentations, educational applications, interactive reading activities, and technology-assisted assessments, teachers created learner-centered literacy experiences that promoted reading fluency, vocabulary development, phonemic awareness, and reading comprehension. Although participants encountered challenges related to limited technological infrastructure, inadequate digital devices, unstable internet connectivity, intermittent electricity, and varying levels of learners' digital readiness, they demonstrated remarkable adaptability by utilizing offline resources, contextualized instructional materials, and innovative teaching strategies. Continuous professional learning, collaboration among teachers, and reflective instructional practice further strengthened the effective integration of ICT into early reading instruction. The study concludes that successful ICT integration depends not only on the availability of technology but also on teachers' pedagogical competence, technological readiness, instructional creativity, and commitment to creating meaningful literacy experiences for young learners.

Implications

The findings of this study have important implications for literacy education, educational technology, and instructional leadership. The Department of Education and school administrators should strengthen ICT integration by improving access to digital devices, multimedia equipment, reliable internet connectivity, and sustainable technological infrastructure, particularly in geographically isolated and disadvantaged schools. Continuous professional development should be institutionalized through Learning Action Cells (LACs), ICT capability-building programs, literacy workshops, coaching, and mentoring that enhance teachers' technological pedagogical competence in early reading instruction. Schools should encourage collaborative development and sharing of contextualized digital literacy resources that reflect learners' linguistic, cultural, and community contexts. Strong partnerships among schools, parents, local government units, and community stakeholders should likewise be established to support technology-assisted literacy learning both in school and at home. Curriculum developers may utilize the findings to strengthen ICT integration within early literacy programs by developing teacher-friendly digital instructional materials aligned with the MATATAG Curriculum and foundational literacy goals. Future researchers are encouraged to conduct similar qualitative studies in other school districts or employ mixed-methods and comparative research designs to further examine teachers' ICT integration practices and their contribution to literacy development among diverse groups of beginning readers.

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