Utilization of digital storytelling materials and early childhood development: basis for an action plan

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Abstract: This study aimed to examine the relationship between the kindergarten teachers' level of utilization of digital storytelling materials and the learners' level of early childhood development in Calape, Tubigon, and Loon Districts, Bohol, for the school year 2024–2025. Using a descriptive survey method, data were collected through an adopted questionnaire from public elementary kindergarten teachers. The analysis employed weighted mean, percentage, ANOVA, and Pearson correlation. Findings revealed that 97% of respondents were female, with 35% aged 40–45 years. Most had 10–14 years of teaching experience, held the position of Teacher III, and had at least a bachelor's degree, with many pursuing master's units. Teachers reported high utilization of digital story materials, rating their usefulness (mean = 3.61), ease of use (3.53), attitude (3.61), behavioral intention (3.57), and system use (3.52) under the "Highly Utilized" category. Despite the favorable reception, the developmental assessments of children based on the Philippine Early Childhood Care and Development (ECCD) Checklist showed most children fell under the "Average Development" category. Statistical tests revealed no significant relationship between teachers' profiles and their utilization of digital storytelling materials, nor between material utilization and early childhood development levels. The study concludes that while teachers positively perceive and frequently use digital storytelling materials, these tools do not significantly influence children's developmental outcomes. This suggests that other factors may be more critical in early learning. Further research is recommended to explore these influences and better understand the impact of digital materials on child development.

Keywords: Digital storytelling, Utilization, Early Childhood Development

INTRODUCTION

Digital technology has become a fundamental component of young children's daily lives across many societies. Technology offers exciting opportunities to enhance the learning experience in early childhood classrooms. Imagine a kindergarten setting where stories come alive through interactive visuals and sounds. "The integration of digital storytelling in early education plays a crucial role in fostering cognitive, emotional, and social development" (Alismail, 2015).

Digital storytelling continues to be a powerful educational tool in early childhood settings, as it enhances language development, literacy acquisition, and critical thinking among young learners. Recent studies demonstrate that combining visual, auditory, and interactive elements

through digital storytelling significantly improves children's engagement and comprehension. For instance, Yoon (2021) found that young children participating in digital storytelling activities showed increased vocabulary acquisition and narrative abilities.

Similarly, Erbay and Omeroglu (2023) highlighted that integrating digital storytelling in kindergarten classes improved expressive language skills and encouraged critical thinking by enabling children to sequence events and infer outcomes.

Despite its benefits, using digital storytelling materials in early childhood development also presents several challenges. One primary concern is screen time, as excessive exposure to digital devices can negatively impact children's physical health, including vision problems and reduced physical activity. Content appropriateness is another issue, as not all digital stories are designed with age-appropriate language, themes, or visuals. Additionally, digital literacy among educators and parents remains a challenge; effective integration of digital storytelling requires proper training to select and use these materials appropriately. Accessibility and equity also pose significant barriers, as not all children have access to the necessary technology, potentially widening the gap in learning opportunities.

This study contributed to the body of information by providing insights into the effective utilization of digital storytelling in early childhood education. It highlighted strategies to overcome barriers in technology integration, particularly in enhancing the confidence and skills of teachers. The findings informed educational policymaking, teacher training programs, and curriculum development to ensure digital storytelling is effectively utilized in classrooms. Furthermore, this research laid a foundation for future studies on innovative digital tools in early education, promoting equitable, engaging, and technology-driven learning environments.

This study is based on the following reviews, which come from different studies considered by the researcher to back up its findings.

To uphold the rights and well-being of every Filipino, the country enforces various laws. Article XIV, Section I of the 1987 Philippine Constitution declares the "State is committed to safeguarding and advancing every citizen's right to quality education at all levels and will take necessary actions to ensure its accessibility for all". This emphasizes that every child is entitled to education and must be given appropriate care, protection, and especially the social and emotional support needed to complete their basic education.

In 2011, the Department of Education (DepEd) implemented Republic Act No. 10157, also known as the Kindergarten Education Act, mandating kindergarten education nationwide. "This act emphasizes key developmental domains expected to be achieved in early childhood education, including physical, socio-emotional, character and values development, as well as cognitive and aesthetic growth, all supported by the theory of multiple intelligences. The law ensures that all five-year-old children are given equal access to quality education to promote holistic development and values formation in preparation for formal schooling".

Furthermore, "Republic Act No. 10157, also known as the Kindergarten Education Act, provides equal opportunities for all children to access and mandatory kindergarten education.

Thus, the Department of Education issues the enclosed Omnibus Policy on Kindergarten Education for School Year 2016-2017, and the subsequent school years thereafter. This DepEd Order No. 47, s. 2016 states that 'the basic standards for an efficient and effective Kindergarten Education Program implementation for both public and private schools nationwide, shall serve as the basis for accreditation and/or recognition of those intending to put early learning centers'.

Thus, Vygotsky's Sociocultural Theory underscores that "the pivotal role of social interaction and cultural context in cognitive development. Central to this theory is the Zone of Proximal Development (ZPD) concept, which delineates the gap between what a child can achieve independently and what they can accomplish with guidance from more knowledgeable individuals". Digital storytelling serves as a dynamic medium within this framework, facilitating collaborative learning experiences where children engage in shared narratives, thereby enhancing their cognitive skills. Rubtsova (2023) states, "the efficacy of digital storytelling in fostering language development, with children demonstrating meaningful developments in expressive, receptive, and narrative abilities following structured storytelling interventions".

From the Constructivist Learning Theory, as articulated by Piaget and Bruner, posits that learners actively construct knowledge through interaction with their environment and experiences. Digital storytelling aligns with this theory by providing an interactive platform where children can explore, create, and reflect upon narratives, thereby constructing meaning through active engagement. The iterative process involved in creating digital stories -spanning pre-production, production, and post-production stages-mirrors the constructivist emphasis on experiential learning and problem-solving. "A systematic review of digital storytelling activities in educational settings has shown that such activities promote critical thinking skills, problem-solving abilities, and creativity among learners, thereby supporting constructivist learning principles" (Mendoza et al,.2023).

On the other hand, Howard Gardner's Theory of Multiple Intelligences (1983) states that "intelligence is not singular but made up of various types, such as linguistic, logical-mathematical, spatial, and more. Each person has a unique combination of these intelligences, shaping how they learn and interact with the world". Digital storytelling inherently supports this diversity by integrating multimedia elements that cater to different intelligences, such as text, audio, images, and video. For instance, the visual-spatial intelligence is engaged through the creation of story visuals, while musical intelligence is stimulated through the incorporation of soundtracks and auditory elements. This multimodal approach enriches the storytelling experience and promotes a more inclusive and holistic improvement in children's intellectual skills. A recent study emphasized the "role of digital storytelling in developing 21st-century skills, including creativity, communication, and collaboration, which align with Gardner's framework of multiple intelligences" (Li & Zhang,2024).

Thus, as Johnson and Reed (2021) highlighted, storytelling is a powerful educational tool that enhances learning by fostering emotional connections and improving information retention. Using narratives transformed traditional teaching methods, making lessons more engaging, relatable, and meaningful. When educators integrate storytelling into their practices, they provide students with opportunities to connect emotionally to the material, which aids in understanding

and memory retention. The integration of storytelling within multimedia tools further amplifies its effect. Students learn to present their ideas and develop critical thinking and accuracy skills by carefully curating content. This process ensures that storytelling remains a relevant and transformative strategy for modern education.

However, studies also highlighted the challenges of integrating technology in classrooms. The DepEd (2021) report revealed that only 42% of public-school teachers feel confident using technology in teaching, underscoring the need for professional development and access to resources. Furthermore, research by Ching and Roberts (2020) emphasized "the importance of equipping teachers with digital literacy skills to maximize the benefits of technology in early childhood education".

This literature underscores the dual role of digital storytelling as both a powerful educational tool and a challenge requiring strategic implementation. Addressing these gaps is essential to enhancing its effectiveness in early childhood development.

This study is anchored on the Constructivist Learning Theory and the Technological Pedagogical Content Knowledge (TPACK) Framework, which supports the collaboration of digital storytelling in early childhood education. Constructivist Learning Theory, as described by Piaget and Bruner, posits that young learners build knowledge through interaction, exploration, and reflection (Piaget,1952; Bruner,1966). In digital storytelling, this theory manifests through child-centered activities where learners interpret multimedia narratives or create their own, engaging in meaningful learning experiences. Recent research affirms that digital storytelling fosters higher-order thinking and language development by allowing children to explore, construct, and share their ideas creatively (Mendoza et al.,2023). This active engagement helps develop cognitive, linguistic, and social-emotional skills, as learners make sense of the stories based on their developmental level and background knowledge.

Complementing this is the Technological Pedagogical Content Knowledge (TPACK) framework, introduced by Mishra and Koehler (2006), which "serves as a guide for educators in effectively integrating technology with pedagogy and content. TPACK highlights the interconnectedness of content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK) in designing meaningful learning experiences. In the context of this study, digital story materials are created and implemented using tools that support early childhood learning objectives, such as promoting early literacy, critical thinking, and communication skills. Teachers use their CK to embed age-appropriate themes, their PK to apply developmentally suitable strategies like guided play and storytelling, and their TK to operate multimedia platforms and apps. A recent study by Li and Zhang (2024) highlights that when these three knowledge domains are effectively combined, digital storytelling becomes a powerful pedagogical tool that supports diverse learning styles and enhances overall developmental outcomes. Thus, the integration of Constructivist Theory and Technological Pedagogical Content Knowledge (TPACK)framework ensures that the digital approach used in this study is both theoretically grounded and practically effective in promoting early childhood development.

The legal basis for integrating digital storytelling into early childhood education is rooted in various national and international educational policies and frameworks emphasizing technology's importance in modern learning environments. In the Philippines, the Department of Education (DepEd) has actively promoted technology integration in schools through initiatives such as the National ICT Policy for Basic Education and the DepEd Digital Literacy Framework. These policies aim to enhance learning outcomes and equip students for the digital age by encouraging digital tools in education. However, despite these legal frameworks, implementation remains uneven, mainly due to challenges such as limited teacher training, inadequate resources, and restricted access to technology in many public schools (DepEd, 2021).

Internationally, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) advocates for integrating technology through its ICT in Education Policy. This framework underscores the potential of digital tools, such as digital storytelling, to enhance learning experiences, support creativity, and build 21st-century skills. It emphasizes the need for educators to be equipped with the necessary skills to use technology effectively in the classroom, a concern echoed by the findings of the DepEd report (2021).

The legal frameworks and policies highlighted in these documents support

Using digital storytelling as an educational tool also reveals the gap between policy and practice. This study's implications are significant, as they point to the need for a more focused effort on teacher training, resource allocation, and access to technology to bridge the gap and fully realize the benefits of digital storytelling in early childhood education. This underscores the importance of addressing the challenges that educators encounter in incorporating technology, as outlined in the legal policies and frameworks, to maximize the impact of digital storytelling on early childhood development.

Several related studies have explored the use of digital storytelling in education, particularly in early childhood development, highlighting its potential benefits and challenges. A study by Ching and Roberts (2020) focused on the "integration of technology in the classroom, particularly on how teachers' technological competence influences their ability to use digital tools effectively". The study found that the teachers who received adequate training and support were more confident and capable of integrating technology into their teaching. This connects to the Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes the need for teachers to possess technological, pedagogical, and content knowledge to effectively use digital tools like storytelling. The challenges identified in Ching and Roberts (2020), such as inadequate training and lack of resources, are similar to those highlighted by the DepEd (2021) report, where only 42% of public-school teachers felt confident applying technology in the classrooms.

Additionally, a study by Nair and Yunus (2023) highlighted the effectiveness of digital storytelling in enhancing students' speaking skills. Digital storytelling integrates multimedia elements, such as text, audio narration, images, and video, to create engaging narratives that encourage learners to practice and develop their speaking abilities.

In synthesizing the findings from the related studies, digital storytelling has immense potential to enhance early childhood development, particularly in areas such as language

acquisition, cognitive development, and critical thinking. However, despite its effectiveness, significant challenges remain in integrating digital storytelling into classrooms, particularly in public schools. Studies like those of Ching and Roberts (2020) and Nair and Yunus (2023) emphasized the positive impact of digital storytelling on young learners. However, they highlighted critical barriers, such as teachers' lack of technological confidence, and limited access to resources.

The research gap lies in understanding how to effectively address these challenges and empower teachers to confidently integrate digital storytelling into their pedagogical practices. While existing literature has established the importance of digital tools in education, there is still a need for research that directly investigates how to bridge the gap between policy and practice, particularly in the context of the Philippines. The DepEd (2021) report, indicating that only 42% of public-school teachers feel confident using technology, underscores the urgency of exploring strategies for increasing technological competence and ensuring equitable access to digital resources in classrooms.

Given this context, this study aimed to fill the research gap by focusing on the integration of digital storytelling in early childhood education, specifically by addressing the barriers faced by educators. Understanding the underlying issues and developing targeted interventions will not only support teachers but also enhance the learning experiences of young children, ultimately contributing to more effective and inclusive practices.

Research Objectives

This study was designed to examine the relationship between kindergarten teachers' level of utilization of digital storytelling materials and the learners' level of early childhood development in Calape, Tubigon, and Loon Districts for the school year 2024-2025. Specifically, it aims to profile teachers in terms of age, gender, years of teaching, teaching position, and highest educational level. Additionally, the study seeks to assess the level of utilization of digital storytelling materials based on perceived usefulness, perceived ease of use, attitude toward using technology, behavioral intention to use, and actual system use, while also evaluating the level of early childhood development among kindergarten learners. It will explore any significant differences in the utilization of digital storytelling materials and early childhood development based on teachers' profiles, investigate the relationship between teachers' utilization of these materials and learners' development, and ultimately propose an action plan based on the findings of the study.

METHODOLOGY

Research Design

The study utilized the descriptive-correlational approach design. According to Calmorin (2007) descriptive correlation research design is used to discover the relationships between variables and to allow the prediction of future events from the present knowledge. The researcher used this design to discover relationships among variables; kindergarten teachers' level of utilization of

digital storytelling materials and the learners' level of early childhood development in Calape, Tubigon and Loon Districts in Bohol.

Respondents and locale of the study

The study was conducted in the districts of Calape, Tubigon, and Loon in the province of Bohol. Calape is the first district of Bohol and is considered a third-class municipality. Tubigon is also in the first district and is a first-class municipality in Bohol. Loon is part of the first district as well and is also a first-class municipality in the province.

The study focused on 83 public elementary kindergarten teachers in Calape, Tubigon and Loon Districts. Calape District had 21 kindergarten teachers. Tubigon District was divided into two: Tubigon East with 18 teachers and Tubigon West with 14 teachers. Loon District was also divided into two: Loon North with 18 teachers and Loon South with 12 teachers. These kindergarten teachers were required and monitored to use digital storytelling materials in teaching their kindergarten learners.

Research Instrument

A survey questionnaire was used to gauge the views of the kindergarten teachers in the utilization of digital storytelling materials. The researcher utilized the adapted sets of questionnaires from different reliable sources. The instrument has two parts. The first part is about the personal information of the respondent such as age, gender, years of teaching, teaching position and highest educational level. The second part is about a survey questionnaire to gauge the kindergarten teacher's level of utilization of digital storytelling materials which was adapted by the researcher from the study entitled "Perceptions and Beliefs of the Teachers of Kindergarten and the First Primary Stage for Employing Digital Technologies in the Education Process in Jordan" by Aljaberi, Nahil. (2021); "Elementary Teachers' Acceptance of Digital Game-Based Materials University of South Carolina ProQuest Disssertations & Theses" by Simpson, Andrew L. (2022); "The Role and Attitudes of Kindergarten Educators in ICT-Supported Early Childhood Education" by Preradovic,N. M.,Losin, G.,& Boras,D. (2017); "Exploring Factors That Predict Kuwaiti Preservice Kindergarten Teachers' Intentions to Use Web 2.0 Technologies in Their Future Kindergarten Classrooms Using the Decomposed Theory of Planned Behavior'' by Alazemi, Laila Alkhayat. (2017) and "Digital storytelling in education: A study on enhancing literacy and creativity" by Rahiem, M.D.H. (2021).

Data Analysis

The responses were gathered, classified, recorded, and tabulated for analysis, interpretation, and treatment. To determine the profile of the teachers in terms of age, gender, years of teaching, teaching position, highest educational level, and the learners' level of early childhood development, a percentage was used. Likewise, to determine the level of utilization of the digital storytelling materials in terms of perceived usefulness, perceived ease of use, attitude toward using technology, behavioral intention to use, and actual system use, weighted mean and percentage were used.

To assess the significant differences in the utilization of digital storytelling materials among kindergarten teachers and the corresponding levels of Early Childhood Development in their learners, an Analysis of Variance (ANOVA) was conducted. Additionally, to explore the relationship between the teachers' use of digital storytelling materials and the developmental progress of the learners, the Pearson Product Moment Correlation Coefficient was utilized.

FINDINGS AND DISCUSSION

Profile of kindergarten teachers in Calape, Tubigon, and Loon Districts

The majority of the kindergarten teachers in the study were female (97%) and mostly aged 40–45 years (35%), indicating a mid-career teaching demographic. Most had 10–14 years of teaching experience (63%) and held the position of Teacher III (54%), showing a workforce with significant professional maturity. Educational attainment revealed that while all had at least a bachelor's degree, a substantial number (55%) were pursuing master's units, reflecting a strong interest in professional growth. The demographic profile indicates a stable, experienced teaching workforce committed to ongoing development.

Utilization of digital storytelling materials

Teachers reported a high level of utilization of digital storytelling materials across five dimensions: perceived usefulness (mean = 3.61), attitude toward technology (3.61), behavioral intention to use (3.57), perceived ease of use (3.53), and actual system use (3.52). All aspects fell within the "Highly Utilized" category. Teachers believed digital storytelling enhanced learning, supported creativity, and helped retain information. However, slightly lower scores in actual system use suggest occasional barriers to consistent application, such as access or time constraints. Overall, there is strong acceptance and positive disposition toward digital storytelling as a pedagogical tool.

Level of early childhood development of learners

All learners assessed (100%) fell within the "Average Development" category as per the Philippine Early Childhood Care and Development (ECCD) Checklist. This indicates that the children observed were meeting the expected developmental milestones for their age. While no learners exceeded or fell below the average range, the consistency across classrooms suggests a stable developmental environment but also signals limited differentiation or impact from innovative instructional methods like digital storytelling.

Influence of teacher profile on digital storytelling utilization

No statistically significant differences were found in the level of digital storytelling utilization when teachers were grouped by age, gender, years of teaching, teaching position, or educational attainment (p > 0.05). This indicates that the use of digital storytelling materials was relatively consistent regardless of demographic or professional background. These results suggest that other factors—such as institutional support or access to resources—may have a more significant influence on how digital tools are integrated into teaching.

Influence of teacher profile on learners' early childhood development

Analysis of variance revealed no significant differences in learners' early childhood development levels based on the profile of their teachers (p > 0.05). This means factors like the teacher's age, experience, position, or education did not notably impact the developmental outcomes of their learners. The findings imply that learner development is likely shaped by other elements, such as curriculum design, home environment, or classroom resources, rather than solely by teacher demographics.

Correlation between digital storytelling utilization and early childhood development

The Pearson correlation coefficient (r = 0.20, p = 0.126) showed no significant relationship between the level of digital storytelling utilization by teachers and the early childhood development levels of learners. Although teachers widely adopted and positively viewed digital storytelling, this did not translate into measurable improvements in developmental outcomes based on ECCD metrics. The result underscores the need for a deeper investigation into the quality of implementation and other influencing variables beyond tool adoption alone.

CONCLUSION

Based on the findings of the study, it is concluded that the kindergarten teachers in the Calape, Tubigon, and Loon Districts are mostly female, middle-aged, experienced, and professionally qualified. Many are continuing their education, showing a strong commitment to personal and professional growth. Teachers have a very positive view of digital storytelling materials—they see them as useful, easy to use, and are willing to use them. However, even though their attitudes are positive, the actual use of digital storytelling in classrooms is slightly lower, which may be due to challenges such as lack of resources or support. The children in the study were found to be developing at an expected level for their age, based on the Philippine ECCD checklist. There were no significant differences in how teachers used digital storytelling materials based on their background or their students' development levels. This means all teachers used these materials in similar ways, no matter their age, experience, or their learners' progress. It was also found that how often teachers used digital storytelling did not have a strong effect on the children's development. These findings suggest that other factors—like the quality of the materials, teacher training, school support, and access to technology—may play a more important role. The study had some limitations, such as a small sample size, use of self-reports, and limited geographic coverage. Future research should look into these other factors, examine how digital storytelling is actually used in classrooms, and explore its real impact on children's learning and development.

RECOMMENDATION

1.   The School District may continue supporting kindergarten teachers by

providing more opportunities for professional growth through training programs, workshops, and scholarships for graduate studies. Additionally, encouraging younger teachers to enter the field and offering mentorship from experienced educators can help sustain and enhance the quality of kindergarten education in the district.

2. Schools may enhance teachers' use of digital storytelling materials by offering greater support and training opportunities. Regular workshops, practical hands-on sessions, and access to up-to-date technology can strengthen teachers' confidence and skills. Providing technical support can also help resolve any system-related issues. Additionally, encouraging collaboration among teachers during LAC (Learning Action Cell) sessions can foster the exchange of best practices for using these materials in the classroom.

3. Continue offering age-appropriate learning activities that promote all aspects of children's development. Teachers and caregivers may regularly track each child's progress using the ECCD checklist to ensure they are on the right path. Additional support and enrichment programs can be provided to help children surpass average expectations and achieve their full potential.

4. Schools and education authorities may ensure all kindergarten teachers have   equal access to digital storytelling tools and training, regardless of them background. Professional development programs may focus on practical   strategies for classroom use, with schools providing the necessary technological resources. Future policies may explore the role of school support, teacher motivation, and infrastructure in promoting digital storytelling.   Additionally, further research is needed to understand its impact on children's learning and development.

5. Schools and educators may focus   on both the   frequency and quality of digital storytelling materials. Teachers need training on using these tools to support children's learning and development, with access to high-quality resources and ongoing support. Future research may examine the specific effects   of digital storytelling on child development, including   language, cognition, and   social skills. Expanding studies to include more schools and classroom observations could further guide the effective use of digital tools in   early education.

6. It is recommended to develop a concrete action plan that outlines specific steps, timelines, and responsibilities to implement the use of digital storytelling tools effectively in early education.

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Utilization of digital storytelling materials and early childhood development: basis for an action plan the problem and its scope

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Utilization of digital storytelling materials and early childhood development: basis for an action plan the problem and its scope

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