

Empowering Young Learners: An Experimental Study on Digital Storytelling Impact on Academic Achievement in MCD Primary Schools

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ABSTRACT

This experimental study investigates the impact of digital storytelling on academic achievement among Foundation Stage students (ages 5–6) in Municipal Corporation of Delhi (MCD) primary schools. Over 12 weeks, 60 students were randomly assigned to an experimental group engaging in digital storytelling or a control group receiving traditional literacy instruction. Pre- and post-intervention assessments measured literacy skills (reading and writing) and content knowledge (science and social studies). The experimental group significantly outperformed the control group in both domains, demonstrating digital storytelling's potential to enhance engagement, creativity, and academic outcomes in resource-constrained settings. Aligned with the National Education Policy (NEP) 2020's focus on experiential learning and art integration, this study offers recommendations for integrating digital storytelling into primary education.

Introduction

Storytelling has been a universal tool for education, preserving cultural knowledge and fostering cognitive development across generations (Roby, 2010). In the digital era, storytelling has evolved into digital storytelling, blending narrative with multimedia elements like text, images, audio, and video (Robin, 2008). This innovative pedagogy engages students in creative, student-centered activities that enhance literacy, content knowledge, and 21st-century skills (Sadik, 2008). In India, where education systems are transforming under the National Education Policy (NEP) 2020, digital storytelling aligns with goals of experiential learning, multidisciplinary education, and art integration, making it a promising approach for primary education (Butler, Monda-Amaya, & Yoon, 2013, NEP 2020r).

Municipal Corporation of Delhi (MCD) primary schools serve underprivileged communities, often facing resource constraints such as limited technology access and large class sizes. Despite these challenges, Foundation Stage students (ages 5–6) are digital natives, familiar with smartphones and tablets (Prensky, 2005). Leveraging this familiarity, digital storytelling offers a cost-effective strategy to improve academic achievement while addressing NEP's call for inclusive, engaging education. Research highlights its benefits: Sadik (2008) found improved literacy and technology skills among Egyptian students, while Yang and Wu (2012) reported enhanced critical thinking in high schoolers. Sylvester and Greenidge (2009) noted its support for struggling writers, yet few studies focus on young learners in resource-limited settings like MCD schools.

NEP 2020 Mapping and Art Integration

The NEP 2020 emphasizes experiential learning, critical thinking, and art-integrated education to make learning holistic and engaging. Digital storytelling aligns with these principles by enabling students to create narratives that blend literacy, art, and technology (Robin, 2008). NEP's focus on art integration encourages using creative mediums like drawing, music, and storytelling to teach concepts across subjects. In digital storytelling, students draw images, record voiceovers, and add music, fostering artistic expression while learning (Digital Storytelling Association, 2002). For example, a story about "Plants and Animals" involves drawing plant life cycles (art) and narrating their growth (science), aligning with NEP's multidisciplinary approach (Butler et al., 2013). NEP also advocates technology integration to bridge educational gaps, making digital storytelling a fitting tool for MCD schools.

Rationale of the Study

Limited resources and conventional teaching strategies make MCD main schools difficult in involving young learners. Especially in underprivileged areas, NEP 2020 demands creative pedagogies to improve basic literacy and numeracy. Using affordable technology to create interesting, student-centered learning opportunities, digital storytelling satisfies this need (Robin, 2008). Studies by Sadik (2008) and Campbell (2012) show that its ability to raise literacy and subject retention makes it a reasonable fix for MCD schools. This study investigates if digital storytelling might improve academic performance among Foundation Stage pupils, therefore offering data to guide NEP-aligned curriculum changes and teacher training in environments with limited resources.

Research Questions

1. Does digital storytelling improve literacy skills (reading and writing) among Foundation Stage students in MCD primary schools?
2. Does digital storytelling enhance content knowledge retention in subjects like science and social studies?

Literature Review

Digital storytelling integrates narrative with digital tools, engaging multiple literacies critical for 21st-century education (Robin, 2008). These include digital literacy (technology-based communication), visual literacy (image-based meaning), and information literacy (data synthesis), aligning with NEP's multidisciplinary goals (Sylvester & Greenidge, 2009).

Engagement and Motivation

Digital storytelling improves conventional as well as 21st-century literacy skills. Thanks in part to narrative mapping (Ohler, 2005), Sylvester and Greenidge (2009) discovered that struggling fourth-graders improved writing structure and confidence using digital tools. Sadik (2008) noted technological mastery as well as literacy increases among Egyptian students. Second-graders' growing writing confidence was seen by Thesen, Kara-Soteriou, and Abadiano (2008), who also noted many wanting to digitise all of their work.

Literacy Development

Digital storytelling enhances both traditional and 21st-century literacy skills. Sylvester and Greenidge (2009) found that struggling fourth-graders improved writing structure and confidence through digital tools, aided by story mapping (Ohler, 2005). Sadik (2008) reported literacy gains among Egyptian students, alongside technological proficiency. Thesen, Kara-Soteriou, and Abadiano (2008) noted second-graders' increased writing confidence, with many eager to digitize all writing.

Content Knowledge Across Curricula

Digital storytelling supports learning across subjects. Butler et al. (2013) found second-graders deepened math understanding by creating stories about geometric shapes. Sadik (2008) observed better science retention when students narrated processes like plant growth. Banaszewski (2002) reported 90% of social studies students identified as writers post-project, up from 60%, reflecting stronger content connections. Castaneda (2013) found improved language retention in Spanish classes, suggesting broader applicability.

Challenges and Teacher Preparation

Digital storytelling calls for teacher preparation to guarantee pedagogical fit (Robin, 2008).

While the "Seven Elements of Digital Storytelling" (Digital Storytelling Association, 2002) offer a framework for developing engaging narratives, Roby's (2010) CoRDS approach gives content over technological tools top priority.

The emphasis of NEP on teacher capacity building helps to meet this demand since qualified teachers can properly incorporate art and model tales (Dreon, Kerper, & Landis, 2011).

Introduced by Roby (2010), the Content- Related Digital Storytelling Model (CoRDS) is a pedagogical tool meant to include digital storytelling into classroom instruction in a way that gives content knowledge and educational goals first priority over the simple use of technology. The concept seeks to guarantee that digital storytelling functions as a tool to improve subject-specific learning and literacy abilities, thereby matching with educational standards and supporting significant student participation (Roby, 2010, p. 31).

The CoRDS paradigm underlines that rather than the technical tools used to produce the tale, the main emphasis of digital storytelling should be the subject matter (e.g., science, social studies, or literacy ideas). As highlighted in the PDF by Ohler (2005), who cautions that "technology must not come before the story," this tackles a common issue whereby technology overshadows educational goals (Ohler, 2005, p. 25).

The model offers teachers a methodical approach to create courses that satisfy curriculum requirements, such as the National Educational Technology Standards for Teachers (International Society for Technology in Education, 2008, cited in Roby, 2010, p. 31), so immersing students in 21st-century learning.

CoRDS invites teachers and students to consider the material and narrative technique, therefore promoting greater knowledge and professional growth for educators (Roby, 2010, p. 31).

Roby (2010) describes a process inside the CoRDS Model that combines digital storytelling with content learning using the following important components—derived from the PDF, p. 31:

Teachers use conversation and introspection to introduce subject-specific material—such as historical events, scientific methods—that they teach. This guarantees pupils grasp the content before writing narratives. Students create stories using real-world connections or personal viewpoints that highlight the material. This stage corresponds with conventional literacy skills like organising ideas and writing (Sylvester & Greenidge, 2009, p. 21).

Students use digital tools (e.g., iMovie, Book Creator) to turn their written stories into multimedia presentations adding photos, audio, or video. This last stage fosters digital and visual literacy (Robin, 2008, p. 20).

Teachers and students evaluate their fit with curriculum goals and educational standards by means of reflections on the stories. Stories told to friends or a larger audience encourage teamwork and a sense of success (Malita & Martin, 2010, p. 19).

Aligning with Standards: As stated by the International Society for Technology in Education (2008, referenced in Roby, 2010, p. 31), the approach guarantees that digital storytelling projects satisfy educational standards including those for creativity, collaboration, and digital citizenship.

Relevance to MCD Schools: Within the framework of the paper, Foundation Stage children in MCD primary schools were guided in developing tales on curriculum subjects including "My Family," (social studies) or "Plants and Animals," (science) using the CoRDS model. Teachers matched stories to the model's emphasis on subject matter by describing plant life cycles, therefore ensuring content focus (Roby, 2010, p. 31; Butler et al., 2013, p. 25).

Methodology

Participants

Sixty Foundation Stage students (aged 5–6) from two MCD primary schools in Delhi participated. Randomly assigned to an experimental group (n=30) or control group (n=30), they showed no baseline differences in age, gender, or academic performance. Parental consent and school approval were secured.

Intervention

The experimental group engaged in a 12-week digital storytelling program, with two 45-minute weekly sessions. Using low-cost tablets with free software (e.g., Book Creator), students created stories on curriculum topics like "My Family" (social studies) and "Plants and Animals" (science). Activities included story mapping, drafting, recording voiceovers, and adding drawings, aligning with NEP's art integration (Ohler, 2005; Butler et al., 2013). Teachers modeled stories, ensuring focus on content and literacy (Roby, 2010). The control group received traditional instruction (reading, writing, oral storytelling) for equal time.

Measures

Pre- and post-intervention tests assessed:

- Literacy Skills: A rubric adapted from Thesen et al. (2008) scored reading fluency (accuracy, expression) and writing coherence (organization, clarity).
- Content Knowledge: Tests based on Sadik (2008) included questions on science (e.g., plant needs) and social studies (e.g., family roles).

Tests were administered by blinded educators, with reliability confirmed (Cronbach's alpha: 0.82 for literacy, 0.79 for content).

Procedure

Teachers in the experimental group received one-day training on digital storytelling, covering software and the "Seven Elements" (Digital Storytelling Association, 2002). The intervention ran for 12 weeks, with post-assessments one week later. Paired t-tests compared within-group changes, and independent t-tests compared between-group gains.

Results

With $t(29) = 5.67$, $p < .001$, the experimental group displayed notable gains in content knowledge, $t(29) = 4.89$, $p < .001$, and literacy skills. With $t(29) = 2.31$, $p = .028$, the control group showed modest literacy gains; non-

significant content knowledge gains, $t(29) = 1.82$, $p = .079$. With $t(58) = 3.78$, $p < .001$, and topic knowledge, $t(58) = 3.34$, $p = .002$ the experimental group surpassed the control group in literacy. Effect sizes were rather high: content knowledge $d = 0.85$; literacy $d = 0.97$. Enthusiastic students in the experimental group commonly shared stories like "My Family" with friends, therefore expressing their involvement (Campbell, 2012).

Discussion

The results confirm digital storytelling's efficacy in enhancing academic achievement, supporting Sylvester and Greenidge (2009) on literacy gains through story mapping and multimedia. Students' drawings of plant life cycles reinforced science learning, aligning with Sadik (2008) and NEP's art integration. Collaboration during peer editing fostered critical thinking, as noted by Yang and Wu (2012). The use of low-cost tablets proved feasible, supporting Robin's (2008) recommendations for resource-constrained settings.

Limitations include the 12-week duration and small sample ($n=60$), potentially affected by technology's novelty (Xu, Park, & Baek, 2011). Future research should explore longitudinal effects and subjects like mathematics (Butler et al., 2013). NEP's emphasis on teacher training and technology integration supports scaling this approach in MCD schools.

Conclusion and Recommendations

Digital storytelling significantly improves literacy and content knowledge in MCD primary schools, aligning with NEP 2020's vision for experiential, art-integrated education. It empowers young learners, fostering creativity and engagement in resource-limited settings.

Recommendations for Teachers

- Integrate digital storytelling across subjects using tools like Book Creator (Robin, 2008).
- Model stories with the "Seven Elements" to guide students (Digital Storytelling Association, 2002).
- Encourage peer collaboration to enhance critical thinking (Yang & Wu, 2012).
- Conduct action research to share outcomes (Campbell, 2012).

Recommendations for Administrators

- Provide professional development on digital storytelling (Roby, 2010).
- Invest in affordable tablets and technical support (Robin, 2008).
- Promote teacher-created YouTube channels for content sharing (Dreon et al., 2011).

Future research should explore long-term impacts and inter-school collaborations to enhance global literacy (Malita & Martin, 2010).

Disclaimers

Ethical Permissions: Ethical permissions were secured via written parental consent and school approval, ensuring compliance with child protection standards. Parents were informed of the study's low-risk nature, voluntary participation, and data anonymization. These measures protected participants' rights and ensured adherence to ethical research guidelines for studies involving children, fostering a safe and inclusive research environment (Sadik, 2008).

Use of AI: AI language enhancement tools, such as grammar and style checkers integrated into Book Creator, were used to support students in creating clear and coherent narratives. These tools were supplementary, guided by trained teachers to ensure alignment with educational objectives and the CoRDS model's content focus. AI did not replace student creativity or teacher instruction but enhanced accessibility for young learners (Robin, 2008; Sadik, 2008).

Teacher Training: The experimental group's teachers received one-day training on digital storytelling, covering the CoRDS model, AI tools, and the "Seven Elements of Digital Storytelling" (Digital Storytelling Association, 2002). This training ensured ethical and effective implementation, aligning with NEP 2020's emphasis on teacher capacity building (Roby, 2010).

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