

Title - Digital dreams or delusions; Navigating the implementation of 1:1 initiatives

Type of Session: Research Session

Abstract of Presentation:

Early childhood educators are challenged with integrating iPad technologies as one-to-one initiatives provide easy access to digital devices across the United States. Minimal research has been done to examine the impact that tablet computers have on the learning environments, teachers, and students in kindergarten and first grades. This review seeks to identify the ways that teachers implement tablet computers and the impacts these devices have on the students and teachers in the U.S. Twelve articles which examined iPad integration were reviewed and analyzed using the theories of multimodality and Orlikowski's (1992) duality of technology. Themes that interconnect each piece and address the impacts of the infusion of the digital technologies were identified. Findings suggest that impacts are present, inconsistent, diverse and that there is paucity of tangible proof of the influence of iPad technology. This review poses additional concerns in reference to professional development and teacher knowledge in relation to the integration of the iPads in the early childhood classroom. Given the lack of research and relatively new introduction of one-to-one initiatives the field would benefit from more research to specifically measure the teaching and learning experiences offered via iPad technologies.

KEYWORDS: iPads, tablet computers, digital devices, handheld computers, one-to-one initiatives; iPad programs

Introduction

Early childhood classrooms throughout the United States are integrating digital technologies in record time. iPads and tablets anywhere/anytime access, interactive interface, vibrant visuals, and touch screen, make implementation particularly alluring to young children and appealing within educational contexts (Cubelic & Larwing, 2014; Harwood, 2017; Melhuish & Falloon, 2010; Paczkowski, 2013). Researchers, school leaders, policy makers, and educators propose that iPads and tablet computers have characteristics that provide avenues to scaffold student learning and foster differentiated instruction (Bebell & Pedulla, 2015; Lemke, Coughlin, & Reifsneider, 2009; Melhuish & Falloon, 2010). With hopes of leveraging the playing field and closing achievement gaps stakeholders lean into the potential of a pervasive and somewhat novel phenomenon, one-to-one device programs (Donohue, T. & Alade, F., 2021; Bebell & Pedulla, 2015). As a result of the one-to-one initiatives, more than half of American early childhood educators now have use of digital devices with minimal direction on successful integration or knowledge of effective application of the technology (Blackwell, Wartella, Lauricella & Robb, 2015; Parks & Tortorelli, 2021). Notwithstanding overwhelming statistics on the

implementation, knowledge of how one-to-one initiatives influence young children's learning and development is lacking (Blackwell, 2014). Studies on technology integration within early childhood classrooms have indicated that children and teachers value the application of technological tools (Blackwell, 2014; Brown, 2016), however research has not yet revealed how digital devices contribute to and impact young children's learning (Donohue, T. & Alade, F., 2021; Blackwell, 2014; Flewitt et al., 2014b). The lack of research emphasizes that there is still much to learn about how to successfully incorporate iPads and tablet computers, how one-to-one programs impact young children's access to technology as well as how personal devices impact the learning environments (Donohue, T. & Alade, F., 2021; Bebell & Pedulla, 2015).

Method

This literature review intends to systematically locate empirical studies focused on the integration of iPads/tablet computers in kindergarten and first grade classes within the United States (Mohamed et al., 2020). To ensure the validity, reliability, and ability to replicate this systematic review of literature protocols, publication standards and established guidelines were in place (Xiao & Watson, 2017; Haddaway et al. 2018). I referenced Alexander's Methodological Guidance Paper: The Art and Science of Quality Systematic Reviews to overcome typical challenges that often arise during the process and to plan, justify, and thoroughly document this review (Alexander, 2020). The articles that met the inclusion criteria were then methodically analyzed and logically synthesized, to transparently present conclusions and implications that are grounded in the examined literature (Alexander, 2020).

Searching

The two main techniques employed during this investigation were advanced searching on University of South Florida's library database and manual searching on Google Scholar. I used the phrase searching function and the Boolean operator AND to combine keywords in the advanced searching process. This review also used handpicking and backward tracking as techniques for manual extrapolation (Mohamed et al., 2020). I started the literature pursuit by doing an advanced search using search strings. To ensure that each article was relevant and current I sought studies that were executed and published between 2013 and 2023. Since the focus of this review is U.S. early childhood educators' use of tablet computers in their classroom instruction with children the context of the research being reviewed must be situated in the United States. My inclusion criteria also required that the empirical studies be written in English. After my initial search, preliminary relevance was determined by obtaining the full reference, including author, year, title, and abstract, for further evaluation. (Xiao & Watson, 2017) The next phase used to filter included a close examination of the data set to extract articles older than 10 years and duplicates. The quality of the remaining 44 articles underwent a title, abstract, and contextual screening (Mohamed et al., 2020). 15 residual articles that were deemed relevant and met the inclusion criteria were thoroughly assessed to prepare the collection of studies for data extraction, analysis and finally synthesis (Xia & Watson, 2017). The content of three additional articles did not support the purpose of the review and were eliminated. I selected 12 studies to include in the literature review.

Data Analysis

Thematic analysis was employed as I analyzed, summarized, and synthesized the data to report themes within the literature (Braun & Clark, 2006; Xiao & Watson, 2017). The investigation was nonlinear and iterative as I followed Braun and Clark's six phases of thematic analysis (Alexander, 2020; Braun & Clark, 2006). The included articles were organized in my review log to present pertinent information (See Appendix 1). The articles were then imported into NVIVO 14.0, a qualitative data analysis software, to generate codes (See Figure 2) and engage in cyphering as part of the process of analysis (Miles and Huberman, 1994), I then ordered my data into themes and subthemes (Tuckett, 2005). After the data was collated into themes, I cross checked the coded extracts and worked to name and describe the themes (Table 2 & See Figure 3). Each theme captured something important about the data in relation to the research question and helped examine the ways in which the integration of iPads and tablet computers have impacted experiences, educators, and children in early childhood classrooms across the United States (Braun & Clark, 2006). Four significant themes were identified: 1. Integration, 2. Teacher Perception, 3. Teacher Knowledge, and 4. Student Impact.

Findings

Drawing on the theories of multimodality and Orlikowski's (1992) duality of technology this study examines the use of tablet computers in early childhood classrooms across the United States. Findings suggest that U.S. early childhood educators and young children experience impacts with the integration of digital devices. The adaptable nature and mobility of tablets offer teachers numerous instructional opportunities and provides pathways for learning to be experienced through multiple modalities (Beschoner & Hutchison, 2013; Lu et al., 2017; Rowsell, 2017; Braun & Clark, 2006; Blackwell, 2014). A thorough investigation of the literature identified the themes (a) integration, (b) teacher perception, (c) teacher knowledge, and (d) student impacts.

Conclusion

Research studies documenting the successful integration of iPads in early childhood classrooms within the U.S. are minimal. However, initial findings indicate that community members, administrators, teachers, and students express enthusiasm about the technology; conversely, there is a paucity of tangible proof of the influence of technology, and particularly the use of iPad technology, on student achievement in young children. (Cubelic & Larwin, 2014; Singleton et al., 2018). While the research presents optimistic viewpoints on the use of educational technology and positive consequences for young children (see reviews by Glaubke 2007; McCarrick & Li 2007; Penuel et al. 2009), it also specifies that technology integration needs to (1) incorporate professional development to provide tools to help teachers infuse the technology effectively, (2), be developmentally appropriate for young children and (3) be implemented into the curriculum and classroom (see Clements & Sarama 2003; Glaubke 2007; NAEYC & Fred Rogers Center 2012). The findings from this systematic literature review

identifies current trends of tablet computer use in early childhood classrooms in the U.S., a need for teacher supports as one-to-one initiatives roll out, and some data supporting the effectiveness of digital devices in promoting student achievement.

Overall, this review suggests that early childhood educators would benefit from increased training and structured support. Professional development (PD) aimed to promote child-centered pedagogy would instill mind-sets that embrace student-centered philosophies to leverage the potentials of tablet computers. Trainings to empower teachers with knowledge on effectively incorporating iPads through demonstration would impact and lead to effective incorporation of tablets into their curriculum (Blackwell, 2014). Teachers need teacher-leaders' demonstrating and supporting as they work to integrate digital devices to scaffold, reinforce, and promote children's academic and social development (Blackwell, 2014; Glazer & Hannafin, 2008; Neumann, 2023). Cubelic and Larwin (2014) present a model of integration which includes an initial PD, guidance during planning and implementation of applications, quarterly meetings, and reviews to debrief.

As I conclude, I present implications associated with the findings of this systematic review of literature which imply that in the wake of the one-to-one iPad initiatives early childhood educators are revisiting the potential benefits of technology integration. In 2012, the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center acknowledged the growing presence of technology in children's lives by issuing a joint position statement on technology use in the classroom (NAEYC & Fred Rogers Center, 2012). This statement encourages teachers of young children to implement purposeful technology pedagogies that support children's learning and development (Donohue & Alade, 2021). Despite this call-to-action, early childhood educators are reeling as the access to technology has become invasive while the professional development associated with digital technologies is scarce. The research indicates that there is a need for trainings that not only address the use of technology in early childhood but student-centered mindset pedagogies as well. Professional development models (See Figure 4) that provide real world applications and initiates a shift from didactic teaching to more student-centered teaching will promote the unique characteristics of the tablet computers to effectively improve the learning environment (Blackwell, 2014).

Objective(s) of the Presentation

The presentation will...

- Present the findings of a systematic literature review aimed to answer the research questions: 1. In what ways do US early childhood educators use tablet computers in their classroom instruction with children? 2. In what ways does the implementation of tablet computers impact teacher efficacy in the US early childhood classroom? 3. In what ways do early childhood educators' experience and training in the use of tablet computers in their classroom instruction with children influence the implementation of technology?

- Discuss the identified themes: (a) integration, (b) teacher perception, (c) teacher knowledge, and (d) student impacts.
- Provide recommendations for building teacher capacity will be connected to teacher efficacy in relation to the implementation of tablet computers in the early childhood classroom..

Relationship to Conference Theme/Strands

Advocacy - The findings of this research and the identification of the paucity in the field will empower others. Researchers and administrators will be able to take action. Further research is warranted to identify the impacts of the 1:1 initiatives. Administrators and district officials will be encouraged to provide professional development as digital devices alter the early childhood learning environment.

Relevance or Implications of Topic

Research studies documenting the successful integration of iPads in early childhood classrooms within the U.S. are minimal. However, initial findings indicate that community members, administrators, teachers, and students express enthusiasm about the technology; conversely, there is a paucity of tangible proof of the influence of technology, and particularly the use of iPad technology, on student achievement in young children. (Cubelic & Larwin, 2014; Singleton et al., 2018). While the research presents optimistic viewpoints on the use of educational technology and positive consequences for young children (see reviews by Glaubke 2007; McCarrick & Li 2007; Penuel et al. 2009), it also specifies that technology integration needs to (1) incorporate professional development to provide tools to help teachers infuse the technology effectively, (2), be developmentally appropriate for young children and (3) be implemented into the curriculum and classroom (see Clements & Sarama 2003; Glaubke 2007; NAEYC & Fred Rogers Center 2012). The findings from this systematic literature review identifies current trends of tablet computer use in early childhood classrooms in the U.S., a need for teacher supports as one-to-one initiatives roll out, and some data supporting the effectiveness of digital devices in promoting student achievement.

Participant Outcomes

As educators, we need to use our skills and talents to help the people who make the decisions that affect us understand what we do and what we need to effectively serve our students and the communities in which we live. We need to tap into the expertise within our organization, as well as outside of it, and learn and apply the skills needed to take control of the narrative and let folks who have decision making power know how they can best support educators and education.

- The findings of this research can be used as a call to action. There is a need for immediate action and steps should be taken to advocate for training to empower early childhood educators.
- Participants will gain insight and action steps that will lead to increased efficacy.

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