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Elementary iPad Integration: An Annotated Bibliography

Delacruz, S. (2014). Using Nearpod in elementary guided reading groups. *TechTrends: Linking Research & Practice to Improve Learning, 58*(5), 62-69. doi:10.1007/s11528-014-0787-9

The purpose of this qualitative action research study was to examine the benefits, challenges, and student perceptions of utilizing Nearpod to enhance guided reading groups in a fourth grade classroom. The setting for the study was a suburban elementary school in the Southeastern United States. Participants included a student teacher and nine purposefully selected students. Given the 35% Hispanic population of the elementary school, four out of the nine participating students were English Language Learners. Semi-structured interviews of the participants were video recorded, transcribed, coded, and analyzed to develop an understanding of the emerging themes. A summarization of student responses, followed by student teacher feedback, helped reiterate findings.

There are several limitations with this study. First, the main participant was neither a veteran nor a first year teacher. The study's validity would be increased if the main participant were a licensed educator. Second, the study had a rather small sample size. Additionally, a full picture of Nearpod's effectiveness cannot be illustrated due to the limitations and restrictions that come with free account access to Nearpod.

The findings suggest that Nearpod has great potential to positively enhance guided reading activities. Of the participating students, all nine preferred Nearpod to traditional print based guided reading activities. The synchronous nature of the app and the variety of responses it produces, in addition to its real-time data features, position Nearpod as a powerful tool for enhancing guided reading to better serve 21st Century learners and their multimodal learning and multimedia needs. Overall, the researcher found few negatives associated with utilizing Nearpod, and this article would help inform a teacher who is looking for practical ways to integrate technology into their daily instruction.

Falloon, G. (2013). Young students using iPads: App design and content influences on their learning pathways. *Computers & Education, 68*, 505-521. doi:10.1016/j.compedu.2013.06.006

The purpose of this peer-reviewed qualitative case study was to examine the design and content effectiveness of a selection of iPad apps as it pertained to a class of 18 primary students in rural New Zealand. The researcher attempted to bring attention to the deficit of research on pedagogically informed software design. Additionally, through careful analysis, the researcher gained a better understanding of app content and design that exhibited high levels of engagement and productive learning.

The researcher's effectiveness in data collection was unparalleled. In addition to utilizing a case study method with purposeful sampling and a variable schedule occurring over a six month period, the researcher overcame great technical obstacles by jailbreaking the study iPads and using Display Recorder to screen capture student interactions with the apps. His innovative screen capture approach informed the blind coding of iPad interaction

occurrences, and this yielded substantial findings about app design and content effectiveness. Features such as text-to-speech, spoken word highlighting, direction replay, imposed time limits, frequent feedback, and spoken directions accompanying written directions routinely indicated that young learners were thoughtfully engaged and focused on learning objectives. Other findings indicated that banner advertisements, pop-ups, and embedded external web links were indicators that an app would impede productive learning.

   Despite the researcher's innovative approach to data collection and coding, there were noted limitations. The article emphasized that the small selection of apps and the low number of students studied were limitations to the case study. Overall, the case study did two things quite well. First, it added to the knowledge base of research in this area. Additionally, its findings suggest that well designed educational apps closely mimic teaching and teachers' pedagogy, approaches, and parameters.

Falloon, G., & Khoo, E. (2014). Exploring young students' talk in iPad-supported collaborative learning environments. *Computers & Education, 77*, 13-28. doi:10.1016/j.compedu.2014.04.008

        The focus of this peer-reviewed qualitative case study was an extension of earlier research looking at primary students in a rural New Zealand school and their usage of iPads. Researchers conducted this case study approximately one year later and closely analyzed paired students and their conversations while interacting with the devices. As with the earlier study, researchers once again used the Cydia App called Display Recorder to screen capture over nine hours of audio and video data of paired student interactions. The 19 primary students were grouped into eight pairs and one threesome. Researchers repurposed

Neil Mercer's framework for disputational, cumulative, and exploratory talk types and used his methods to code conversations of slightly younger students. The goal of this study was to understand what types of student talk emerge when app selection and student pairing are carefully considered by the teacher and how these considerations can foster more exploratory student talk.

The results of this study are encouraging because findings suggest that on task and cumulative student talk were prevalent, however, the intended target of exploratory talk and its occurrences were less frequent than the researchers had hoped for. The researchers are quick to point out two things. First, the lack of emerging exploratory talk is an indicator that thoughtful pedagogical consideration to app design and content is unrealized by app developers. Second, in addition to thoughtful app design, teachers play a large part in fostering exploratory collaborative talk by establishing and modeling ground rules with the iPads. The findings suggest that the pairing of smart open-ended app choices, better pedagogical app design, and effective teacher modeling can raise student engagement with the devices and illicit more exploratory talk with their peers.

Kearney, M., Burden, K., & Rai, T. (2015). Investigating teachers' adoption of signature mobile pedagogies. *Computers & Education, 80*, 48-57. doi:10.1016/j.compedu.2014.08.009

The focus of this mixed methods research study examined teachers' pedagogies and practices with mobile learning and technologies. Researchers drew from their two previous mobile learning projects and utilized a mobile learning framework that targeted three key areas: personalization, authenticity, and collaboration. A 30-question survey instrument front-loaded with 24 quantitative questions and concluding with 6 qualitative questions was

given to 107 primary and secondary teachers from Australia and Europe. The survey and framework were vetted through intra-researcher validation. Teachers had to identify a recent mobile learning task that was not required to be particularly innovative or successful as the basis for their survey responses. The quantitative respondent data was coded against the framework constructs of collaboration, personalization, and authenticity. Researchers acknowledge the limitation that survey respondents' chosen learning task could have both fallen outside of the parameters of the study and may have been designed with different pedagogical emphases. Statistical analysis of the quantitative data was a key concern in the study. Additionally, the qualitative data that was used to define emerging themes pertaining to the mobile learning framework of the study was somewhat questionable due to the vague and unfocused nature of the respondents' experiences.

The findings indicate that, of the three constructs of the mobile learning framework, teachers ranked authenticity the highest. This was followed by collaboration and personalization being ranked lowest by teachers. Researchers are quick to point out that this inflation could be due to the iconic value that authenticity is afforded in education. The findings suggest that teaching experience is not a factor that influences mobile pedagogical approach. Researchers suggest that teachers' technology use is primarily influenced by personal pedagogical beliefs and call for additional research to be done. Ultimately, researchers argue that professional development is needed for all types of educators to expand their pedagogical approaches to fully utilize the asynchronous, authentic, and collaborative affordances of mobile learning.

Kucirkova, N., Messer, D., Sheehy, K., & Fernández Panadero, C. (2014). Children's engagement with educational iPad apps: Insights from a Spanish classroom. *Computers & Education, 71*, 175-184. doi:10.1016/j.compedu.2013.10.003

The study conducted in this peer reviewed article summarized positive outcomes and increased levels of student engagement when utilizing an app that is easily accessible and offers open ended content accomplishments. The analysis of forty-one monolingual 4-5-year old preschool children was used to determine the varying levels of engagement within two contexts of iPad apps. Context one examined student levels of engagement with the Our Story iPad app. Context two examined two categories of apps: construction/completion apps and coloring/drawing apps. The primary concerns of the researchers were providing evidence to suggest that both educational value and engagement with iPad apps are positively affected by easy to use open-ended content that supports student creativity.

The researchers employed a variety of both quantitative and qualitative approaches to data analysis of student engagement with the two contexts of iPad apps. Strong quantitative analytic measures were used when evaluating student engagement levels and this was demonstrated by the use of Bangert-Drowns & Pyke's seven levels of engagement indicators. Additionally, researchers used both quantitative and qualitative analysis when examining collaborative talk and exploratory conversations and coded these with methods adapted from Mercer, Wegeriff & Dawes (1999) and Littleton et al. (2005). While the findings positively suggest that students' engagement is positively affected by apps with open-ended content accomplishments and success criteria, the researchers are quick to point out the limitations of the study. Particularly, the small sample size is highlighted, in addition to the limited teacher guidance and concerns with observer-effect influencing video

analysis. Overall, the researchers conclude with the assertion that open-ended and easy to use app content and features add to the app's educational value, and apps such as these increase student engagement and have a positive educational impact on students.

Lynch, J., & Redpath, T. (2014). 'Smart' technologies in early years literacy education: A meta-narrative of paradigmatic tensions in iPad use in an Australian preparatory classroom. *Journal of Early Childhood Literacy, 14*(2), 147-174. doi:10.1177/1468798412453150

   The authors of this article conducted qualitative ethnographic fieldwork to produce a narrative of a newly implemented iPad program in a rural Australian primary school classroom. Researchers worked closely with a newly graduated preparatory teacher, her 20 five-year-old students, and the school principal. The intention of the researchers was to illustrate the discrepancies between policy-stipulated classroom literacy practices and the interactive multimodal affordances of the iPads that could enhance literacy instruction. Additionally, researchers set out to creative a narrative of a new teacher with project-based and student-centered pedagogical leanings trying to navigate external expectations of more traditional assessment and accountability norms.

   Data collection methods for this study included both classroom observations and interviews with the participating teacher, students, and principal. Researchers presented the findings in a three-part narrative. First, the study presented a summary of student responses, followed by teacher responses and a discussion of the presented data. Throughout the study, researchers' role oscillated between insider and outsider and seemingly exhibited qualities found in the partnership approach. The complex nature of the researchers' role in the study is a noted limitation. Observer effect is a valid concern as the researchers came to the study

with obvious pedagogical predispositions and biases. Despite this limitation, the study narrative echoes many noted issues in contemporary education and its intersection with technology. Of particular interest is the notion that reward and drill and practice iPad usage condense early literacy learning down to encoding and decoding, thus stripping away project-based learning and self-expression opportunities. The authors produce a telling narrative of a new teacher navigating the terrain of the traditional and the innovative. The findings indicate iPads as effective tools to support literacy learning with the caveat that traditional pedagogies need to expand to encompass all the affordances that iPads can bring to literacy learning.

Milman, N. B., Carlson-Bancroft, A., & Boogart, A. V. (2014). Examining differentiation and utilization of iPads across content areas in an independent, PreK–4th grade elementary school. *Computers in the Schools, 31*(3), 119-133. doi:10.1080/07380569.2014.931776

A suburban preK-4th grade elementary school in the U.S. provided the setting for this mixed methods case study. Researchers set out to examine differentiated instruction in each grade level and content area following a 1:1 iPad implementation at the elementary school. Findings indicated that teachers' approach to content, process, and product, in addition to app variety and ability level considerations, were critical in effectively differentiating instruction with the iPads.

Both quantitative and qualitative research methods were utilized for this case study. In the initial qualitative phase of the case study, researchers conducted preliminary interviews and observations with both students and teachers totaling more than 50 hours. Observational methods utilized the ISTE classroom observation tool. This data was used to triangulate

findings and inform the delivery of a modified web-based survey found during the researchers' literature review. Survey questions consisted of 28 check all that apply and open-ended questions pertaining to demographics, professional development, and iPad usage and beliefs. Limitations with the observational data pointed to disproportionate observations in selected classrooms thus inflating iPad usage averages, and thus a low percentage of actual classrooms observed. Additionally, concerns with the large percentage of specialist teacher survey respondents indicated that these respondents' unique perspectives might have affected survey findings. Despite these limitations, findings indicated a number of positive outcomes of the case study. First, iPad usage facilitated the blending of content areas during lessons. Further, when teachers differentiated ability levels within apps, learners were afforded a stigma free learning experience that allowed low-level learners to work anonymously and high-level learners to soar to new levels of difficulty. Additional findings suggested that iPads also accommodate a variety of student learning styles in an engaging multi-sensory experience. In conclusion, this mixed methods case study fulfilled its purpose of examining the ways that a 1:1 implementation can foster increased differentiated learning opportunities.

Murray, O., & Olcese, N. (2011). Teaching and learning with iPads, ready or not? *Techtrends, 55*(6), 42-48. doi:10.1007/s11528-011-0540-6

This research study began in June 2010, two months after the commercial release of the first iteration of the ubiquitous iPad. To try to better understand the educational implications and affordances of the iPad as a tool for educators, researchers sought to answer questions about the iPad's ability to extend learning opportunities in classrooms. Researchers

purposefully sampled, analyzed, and systematically reviewed 315 applications before

further refining their analysis to focus on 112 of those applications. The previous work of

Barbara Means was utilized as researchers used her framework to categorize the 112

remaining applications with educational significance. Applications were categorized into the

following groups: tutor, explore, communication, and tool. Additionally, researchers sought

to look at other app affordances including collaboration and content creation versus content

consumption. Researchers describe the process of data collection and analysis as multi-

layered with data being further analyzed and classified via the utilization of a Bento

database.

The close proximity of this study to the initial release date is a limitation of this study.

While the app marketplace at the beginning of the study was heavily populated with apps,

the conducted research might have had very different findings if the study was conducted

six months to a year after the iPad's initial release. The findings suggest that the gap

between software developer's approaches to app design and more contemporary

pedagogical theories of learning is cause for concern. This discrepancy doesn't fully utilize

the innovative design of the iPad. Researchers conclude that until the gap between app

design and the needs of 21st Century learners is narrowed, the potential for the iPad to

revolutionize and extend classroom learning opportunities will not be fully realized.

Neumann, M., & Neumann, D. (2014). Touch screen tablets and emergent literacy. *Early*

Childhood Education Journal, 42(4), 231. doi:10.1007/s10643-013-0608-3

Due to the prevalence of iPads and the lack of substantial educational research in the

literature base, the authors of this article sought to examine and review contemporary

literature and synthesize the information into a suggested theoretical framework.

Particularly, researchers' analysis closely scrutinized previous findings about the potential

benefits and affordances that iPads could bring to early literacy teaching practices. The

authors' suggested theoretical framework of emergent literacy development was derived

from a synthesis of multiple social theories, with many of these theories underpinning the

final framework. Additionally, based on their synthesis of the existing literature pertaining

to iPads and emergent literacy, the authors make a number of recommendations for

educators seeking appropriate literacy apps for young learners.

Overall, this article is well aligned with contemporary educational technology pedagogy

and thought about iPads. The authors' similar sentiments regarding gaps in appropriate

educational tablet policy, the lack of app content reinforced by pedagogy, and overall design

concerns echo other authors' calls for more research to be done in these areas. Additionally,

the authors suggest that while it is clear that there is much potential for iPads to enhance

early literacy learning, there also needs to be more research conducted about the precise

nature of the these benefits. In conclusion, this article would be a great starting point for an

educator or administrator looking at an overview of established theory about touch screen

tablets and how they intersect with enhancing literacy instruction.

Simpson, A., Walsh, M., & Rowsell, J. (2013). The digital reading path: Researching modes and

multidirectionality with iPads. *Literacy, 47*(3), 123-130. doi:10.1111/lit.12009

This mixed-methods, 2-year study involved three diverse sites from Oakville, Canada,

San Diego, USA, and Sydney, Australia that focused on third and fifth grade students and

how iPad usage— more specifically touch devices—influenced their reading and reading

pathways. Citing Ilana Snyder's previous work, researchers reiterate that the fluidity and non-linear nature of hypertext and digital texts undoubtedly affect and influence reading pathways. Additionally, the researchers try to gain new understanding into how touch and the haptic learning affordances that iPads provide affect reading paths, cognitive processes, and meaning-making. Data collection for the study involved filming paired students during literacy work, and coded video data sought to identify and subdivide different varieties of touch-based interaction and learning. Data was documented and illustrated in both table and diagram format. Paired with the video data, researchers also called on participating teachers to journal their experiences in order to provide understanding into their pedagogical motives during the study.

While the researchers admittedly started with "lofty goals," their findings were smaller in scope than anticipated, as is often the case. However, findings indicated that iPad usage in collaborative pairs supported the exchange and sharing of ideas between students with varying degrees of reading ability. The researchers are quick to point out that more evidence is needed to substantiate this finding. Additionally, researchers' findings underscore the complexities of the iPad effect on reading pathways and call for additional research on how the affordances of iPads influence literacy learning with young learners.

Appendix A

All articles are directly available for download and viewing at the following link:

https://www.dropbox.com/sh/1m9g1pqpg9vo41r/AACD8zG9QCopAgV2ChIpqR2Xa?dl=0