Early Childhood Literacy and Technology: An Annotated Bibliography


Abstract: The use of Information and Communications Technology (ICT) is invading our society’s classrooms and homes. This paper examines the technological innovation at a Secondary School in St. Vincent and the Grenadines initiated by a Biology teacher through the use of ICT outside of the classroom. The innovation was decided on after careful observation of the devices students bring to school, the teacher’s personal interest in technology and the government’s introduction of ICT in education. The use of an online web portal (website), blogging, social networking and online groups with students and teachers were the resources investigated to determine student interest and motivation towards the subjects: Biology, Information Technology and Visual Art. The use of technology by the students and teachers in the subject areas and how the use affects student enthusiasm is monitored and will be reported in this paper.

This paper will not be of much use to my future research. My concerns with the article include a complete lack of statistical data and conclusions that are not based on data. The study had no real tie to the use of iPads or work with young children. I felt it may contain something useful due to the title focusing on engaging digital natives. It also discussed bringing devices as part of the
topic, but this was not hit upon directly. I do like that they spend some time on limitations to the study and also what future changes or activities may need to take place in order for their implementation to be a success. I think they saw some promising aspects, but do not have conclusive data or funding to make the implementation complete.


Abstract: Many early developmental theorists such as Freud, Erikson, Piaget, and Vygotsky suggested that play--which the authors of this article define as both playful activity and playful thought--had the power to influence the moral emotions, behaviors, and reasoning of children. More recent researchers have also found evidence of moral development in their observations of children's play. But, the authors claim, there have been many changes in the culture of childhood and adolescence in the past twenty years, and these have affected both the amount of time spent in play and the types of play that prevail. This article describes potential changes in the nature of play related to three new technologies--technology-augmented toys, video games, and virtual communities--and reviews the research and theory about their impact on play and on moral development. The authors look at research (including their own), discuss the positive and negative influences of these new technologies, and describe the need for further investigation.

This article focuses on the idea of how theorists view play in the area of development. There are many theorists that believe that play is the foundation for a variety of developmental skills. I
think in this area it is important to consider how technological toys can be considered play. The idea is brought into the area of technology through several quotations:

- “A recent article entitled “High-Tech Toys Let Children Play Like Grown-Ups” describes a variety of technology-augmented toys that “mimic adult gadgets like iPads, Kindles, and mobile phones.” They are designed primarily for children aged one to five and include apps, radio-frequency identification tagging, e-books, learning games, music games, motion-activated digital cameras, and remote-controlled toys disguised as plush animals. According to Carly Shuler, 35 percent of cell-phone apps are games for young children. If parents provide this technology, their children will likely be highly engaged in this type of game play.”

- “Some technology-enhanced materials might provide opportunities for children to extend their imagination and become more mentally active.”

The article also discussed how a variety of games and virtual environments can provide moral practice for users. Future study may involve the types of technology that promote play.


**Abstract:** Valdosta State University iDoctors group was created to research technology tools and applications that promote engagement and interactivity in the classroom. One of our main
goals since fall 2010 is to research iPad Apps, examine them and share personal learning experiences that we believe would improve teaching in the classroom with staff and faculty. During weekly meetings, members share information and best practices about the Apps they have used, tested and are confident would empower learning in the next generation classroom. In this round table interactive session, presenters will share some experiences on how these Apps are been used to encourage a collaborative learning environment. Participants are encouraged to bring their iPads. Participants without the iPads are also welcome to attend.

This article focuses mainly on how to successfully integrate iPads into a learning organization. It did not directly apply to my research interests, however, I found it a good read as my former district and many others head into one-to-one initiatives with iPads. It also really applied to my learning module. I feel that these points hit home to where weaknesses can occur in instruction.

Some quotes that hit home were:

- “One important factor that may compromise the use of technology is to assume that instructors have the knowledge to properly utilize it in the classroom. Many schools acquire technologies without providing the appropriate training that will help instructors utilize the technology (Xiao & Carroll, 2007). Training is an important component in the process of transition to teaching with technology. Institutions that are not ready to provide training on how to use and integrate technology into existing curriculum may not see a significant difference in their curriculum and teaching outcomes. “

- “Not only do instructors need training, there should be forums where they can share ideas and best practices for technology use in teaching. Because full time faculties seldom have time to do much as they are already overwhelmed by their workload (Xiao & Carroll, 2007), working closely and sharing with peers may help. Instructors may also subscribe to free online technology articles keep themselves informed about latest technological innovations “

- “The school IT (Information Technology) department must be equipped to service request for hardware and software help from instructors and other users. Professional development is critical for instructors to achieve success with technology use in the
classroom. IT must also provide support for instructors and other users as technology change from time to time. This department must adopt technologies that are easy to upgrade, and one that integrates seamlessly with other technologies. “

- “Due to the dynamic nature of information technology, it is very important to continually develop training and professional development classes that users of technology can benefit from.”


Abstract: This article reviews the multimedia instructional design literature based on cognitive load theory (CLT) in the context of foreign language learning. Multimedia are of particular importance in language learning materials because they incorporate text, image, and sound, thus offering an integrated learning experience of the four language skills (listening, speaking, reading, and writing). This use of multimedia, however, presents a challenge to instructional designers as to how the varied forms of media should be integrated to develop the best materials that facilitate learning without imposing a heavy cognitive load. This review provides a theoretical framework on CLT and examines the current research on the issue. Topics for further research are proposed for the benefit of foreign language learners.

This article was promising as far as the discussion of cognitive load theory in learning. I chose to read this as it contains a section called “Reading Comprehension and Vocabulary Learning”. The area of reading instruction and technology with early and emergent readers is the area in which I would like to focus. It discusses the idea of embedded definitions in the passage for ESL.
learners and how this eliminates split attention effect. They also discuss how this embedded information reduced cognitive load for novice learners but may have a reverse effect for expert learners due to the redundancy effect. This was slightly useful for my research, but did not have as much about my area of interest as I had hoped. All in all, it was a good review of how the principles we have learned look in action in instructional design.


**Abstract:** U-Can Read: Literacy Intervention Years 3-10 (UCR) is a parent education program that supports adolescent, struggling readers. Results achieved at UCR, highlight the critical role that technology plays in engaging students in literacy learning and supporting their reading success. Too often reluctant, adolescent readers have spent years in classrooms being lost and frustrated; their enjoyment of reading diminished. According to Long, MacBlain, & MacBlain, (2007), it is not uncommon for students to respond to this frustration with inappropriate outbursts or passive disengagement. Whether they actively avoid learning or shut down completely, research shows that the achievement gap continues to widen (Fisher & Frey, 2007). This paper documents case studies of two reluctant and disengaged students and how technology served to motivate their pursuit of literacy learning. The technologies included Kindle e-book readers, iPad devices, iPods and interactive websites. These case studies give best practice examples that can be implemented in all classrooms to motivate students to read.
This article has some good supporting quotes for the integration of technology into literacy learning. The article has the following quotes:

• “Kress (2003) points out that the rapid pace of technology and the transformations in digital technologies continually forces teachers to rethink what literacy means (Kress, 2003).”

• “Larson (2009) suggests expanding the types of text students are exposed to and engaged with at school will bridge the gap between home and school. He suggests turning our attention to electronic books or e-books.

In this article, the ideas of how a digital text can influence interest and motivation are explored. I feel the results and observations seem very encouraging for the use of technology, but see no real data or statistical evidence to support these claims. I feel it supports the idea for further research into the area of e-books, but does not show any real statistical findings. I am not sure this would be helpful to my research unless I begin to compare e-book comprehension to a traditional text comprehension.


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**Abstract:** Constructivism has emerged in recent years as a dominant paradigm in education and has had a major intellectual impact on the development of pedagogy, especially in mathematics and science. Rooted in the cognitive developmental theory of Piaget and in the sociocultural
theory of Vygotsky, constructivist notions have had an impact on the development and
application of technologically enhanced microworlds and on linguistic investigation into literacy
and narrative development. To date, constructivism has had little impact on language pedagogy;
however, the advent of content-based pedagogical paradigms as an anchor of language education
has opened new opportunities for integration of interdisciplinary collaborative approaches for
language teaching and learning. Furthermore, the current emphasis on standards-based
accreditation and reconceptualization of teacher education programs will likely expand the
horizons of language pedagogy, bringing constructivist approaches to the foreground in language
teacher education and opening new avenues for linguistic and interdisciplinary classroom-based
research.

Annotation: Although this article was mostly about constructivist theory and language learners,
there was a section that I saw as interesting and relevant to young learners and technology. It
covers how technology has begun to be created that meets the Piagetian and Vygotskyian
theories. This is very relevant to early childhood and technology as the counter argument for
using technology often includes the fact that it is not social, cannot be scaffolded, etc. The
following quotes from this article contradict the notion that technology does not meet these
learning theories requirements.

- “The integration of new technologies across disciplines and educational contexts has
grown dramatically in recent years and the impact of constructivism in the development
and implementation of virtual environments has intensified with the ever-increasing
technological advances that have opened new possibilities. The application of
constructivist approaches as instructional modes in these contexts challenges learners’
preexisting suppositions and further enhances their construction of knowledge within virtual environments. Learners pursue investigations that lead them to a deeper understanding of literacy, numeracy, and scientific concepts. Computer, video, and wireless technologies have provided optimal media for the application of constructivist principles to learning and teaching, created communities of learners in electronic learning environments, and greatly enhanced student achievement and teacher learning (Beatty, 2003; Bransford, Brown, & Cocking, 2000; Perkins, Schwartz, West, & Wiske, 1995). The new technologies have extended learning environments to nonlinear, multidimensional, and interactive and have greatly expanded the horizons of learners beyond their local communities into a global context” (Kaufman, 2004).

• “Digital tools have become extremely powerful as enablers of highly exploratory virtual environments created by interdisciplinary teams. Inquiry- oriented, constructivist-based computer and video-based technologies have become powerful pedagogical tools that extend human capabilities and contexts for social interactions. They scaffold and expand student learning, enhance curriculum development and assessment, and bring real-world problem-solving issues into the classroom for deliberation. They expand professional development opportunities for teachers and build local and global communities within and across disciplines. When the technology is integrated into the curriculum and is used as part of a coherent educational approach, learners develop a deeper understanding of phenomena in the physical and social world” (Kaufman, 2004).
Abstract:

This article draws upon the cinematic, fictional portrayal of Avatars as a metaphor to show how young children are positioned in similar ways in relation to technology and nature. The authors discuss children as digital natives growing up in brave new virtual worlds, but also as vulnerable innocents who are specially attuned to--and in need of--nature. They wonder: Shouldn't children be engaged in hands-on explorations rather than glued to computer screens? Do we understand them as emergent users of new literacies and new technologies? If so, how might early literacy education change to prepare children to read, write, be, and act as full participants in digital worlds and unknowable futures? (Contains 1 table and 1 figure.)

This article is great in terms of putting into perspective the amount of time, access, and skill early childhood aged children have with current technologies from TV to iPads. I think this quote really supports my reasoning for more research into how digital technology and tablet computers, such as iPads, can be used to teach necessary content to young children (referred to as digital natives in this article), “Increasingly, young children engage screens via mobile technologies, such as cell phones. “More than half of the world’s population now owns a cell phone and children under 12 constitute one of the fastest growing segments of mobile technology users in the U.S.” (Shuler, 2009, p. 3). The prevalence of portable handheld devices like cell phones, MP3 players, and iPads makes technology even more accessible to
young children. Today’s preschoolers are growing up in a world where the dominant way of making meaning has shifted from print on the page to image on the screen” (Jewitt & Kress, 2003). I think this quote, “Families provide children with scaffolded experiences in “technoliteracies” (Marsh, 2004), helping them learn to manipulate screens on computers, cell phones (Gillen, Gamanossi, & Cameron, 2005), and game consoles (Pahl, 2005) as they engage in shared literacy practices with email (Wollman-Bonilla, 2003), text messaging, and computer games. In this way, families pro-vide children with demonstrations of important literacy practices that allow them to explore how these literacies work with and approximate digital texts. Children pretend their way into literacies by “playing at” using computers, iPads, or cell phones as they try on technologically savvy user identities” (Wohlewend, 2010), really says a lot in terms of how technology can be used in conjunction with the learning theories of early childhood and child development research. Most early childhood research tends to support a play-based environment that involves scaffolding the learner. I feel like this author hits on the point that iPads or similar activities can provide the basis for both of these ideas. The article described educators who feel children should explore “real” items and activities versus that in the world of technology. The author also describes how this viewpoint pushes the learner farther from the reality of a technologically advancing society by sheltering them from what is happening in our daily world. Here is another quotation that I feel is pertinent to future research for iPads and early literacy, “. . . the overwhelming emphasis is on using [digital] resources to promote abilities to handle conventional alphabetic print texts rather than to generate multi-modal texts and to understand principles of making multi-modal meanings. This skew is understandable given current literacy policy directions that continue to insist on the
predominance of alphabetic text and, moreover, to approach literacy education with an assumption that high proportions of learners will actually have to struggle to become encoders and decoders. From our perspective, this trend is most unfortunate. Apart from anything else, it entails an absurd “under-realization” of the potential of new technologies to orient children toward literacy futures that will be very different from the past (Knobel & Lankshear, 2003, p. 77). One of the ways that this article breaks down the barrier of knowledge being socially constructed in an early childhood setting is the idea of using wikis or blogs with young children. Immediately it makes me think of voiceboards or other discussion tools that would not require young learners to read in order to interact. Here is a quote from the article, “..implement early literacy curricula that enable children to participate in interactive and collaborative ways of producing widely distributed digital texts such as wikis, classroom blogs, and podcasts. Literacy curricula should include critical literacy inquiries with young children (Vasquez, 2004) that examine how digital technologies and multimedia affect who can participate in literacy networks and social spheres (Wohlwend & Lewis, in press). “ I think in all this article supports the type of research I hope to do.

Abstract: This paper describes the design approach adopted for creating authentic iPad activities for use in classroom settings with the aim of increasing student engagement. The challenge of this task was to also ensure equity for learners by designing learning activities that can be completed with or without an iPad. A pilot implementation of the learning design approach in a classroom setting was received favorably and this has led to plans for a formal study trialing a range of learning designs. In theory, the results indicate that iPads can be used successfully for engaging students in authentic digital creation activities related to the content they are studying. In practice, a sequential process for the development of these learning activities was needed for implementation. A five-step approach for adapting traditional learning designs to include iPad activities is outlined.

This article was interesting in terms of deciding an activity that would be able to be adapted from a more paper-pencil or traditional method, to an iPad activity. It was completed with college level students, but it was interesting to see how their ideas of how to take a traditional activity and made make it work on a mobile device are exactly the kinds of considerations I have been making in terms of thinking about what I would use with students in a research project. I would love to read the article of their research when it is followed through and the data analysis is completed. For now, it is more a guide in terms of what I may need to think about in my own research design.

doi:10.1007/s11528-011-0540-6
Abstract: Within weeks of becoming available, the iPad reportedly sold over 3 million units, a brisker pace than other tablets in the personal computer realm. Much of the early success might be attributed to the almost 250,000 applications that could run on the device and a similar interface to the popular iPod Touch and iPhone. This article considers whether the sales spark that has ignited a hardware revolution (numerous device manufacturers have launched--e.g., HP, RIM, Samsung, Motorola, and HTC--or have plans to launch tablet devices over the next year) is being matched on the software front, with a particular focus on K-12 teaching and learning. Authors consider the potential affect both the iPad and its applications might have on teaching and learning in K-12 settings and whether these technologies allow educators and students to accomplish what they otherwise could not, from a teaching and learning perspective.

This article covers a multitude of information about the iPad, its hardware, its software, and functionality. It spends a lot of time analyzing applications for use in an educational setting. I feel that this piece brought to my attention several things I need to consider when choosing an iPad application for future research. It covers applications in a variety of categories such as tutoring, simulation, exploration, and collaboration. This is where the article caught my attention. I may need to consider whether collaboration is a critical piece in early literacy and early childhood applications. I will need to revisit this article when choosing an application for student use in the study. I also will revisit this article when adding apps to the app arsenal in my learning module. I feel it will be very helpful for sharing some of the apps with other educators who may never take the time to read a research or journal article.

**Abstract:** The recent rise of the Apple iPad and other tablet computers presents new opportunities to deliver children’s literature to young students. The combination of touch-based control, portability, screen-size, and low-priced apps is compelling, and the impact on reading education will likely be revolutionary. By providing features such as computerized narration, embedded dictionaries, instant translations, and a multitude of engaging multimedia activities that traditional paper-based books simply cannot deliver, tablet devices like the iPad and its iOS applications offer unique capabilities that demand consideration from all teachers of young readers.

This article was just a brief description of the evolution of digital reading materials. It discussed the possible benefits and capabilities that electronic reading applications on tablet computers, such as iPads, are different from traditional methods. It describes the idea of interactivity from constructivist educational theories being more beneficial than traditional paper books. It suggests that active engagement with the text could provide more benefit. The weakness of the article is that it presents now research that backs up it’s claims for benefit. I do think that it redeemed itself by suggesting that learning outcomes from such technology should be further explored. This is one article

Abstract: As schools move toward the implementation of the Common Core State Standards for English/Language Arts, technology will permeate ways that students gain knowledge. Students will utilize technology such as mobile devices to enhance reading, writing, speaking, listening, and language use. Mobile learning devices (iPads) provide benefits for students including: (a) improved pedagogy, (b) deeper students motivation, (c) access to content and decreased access gap, (d) easy review of content, (e) augmented student-driven learning, (f) differentiated learning, (g) increased collaborative learning, and (h) improved communication. iPads have been introduced and incorporated into English/Language Arts instruction at Sunset Elementary to support students with reading, producing/publishing writing, and speaking/listening skills according to the Maryland Common Core Curriculum Frameworks. Since the iPads were introduced at Sunset Elementary, students have experienced a broader array of learning opportunities and increased engagement in the classroom aligned to the Common Core State Standards.

This article was very brief and gave no useful information to my future research. It merely described the start of use of iPads by teachers in one school. It made conclusions that they enhanced instruction with no statistical data or research questions. It made, what I consider, to be unsupported claims and had little actual information on what was used, how it was used, and
how they measured student learning. If anything, this was an example of how not to write a research article.


**Abstract:** The goal of this investigation was to explore how a fourth grade teacher could integrate iPads into her literacy instruction to simultaneously teach print-based and digital literacy goals. The teacher used iPads for a three-week period during her literacy instruction and selected apps that provided unique approaches to helping the students meet their literacy learning goals. An explanation of how to develop lessons that meaningfully integrate iPads is presented, as well as lessons learned from the project. Considerations for integrating tablets, such as the iPad, into literacy instruction are provided. Because iPads and similar tablets are relatively unexplored as tools for literacy learning, this work may provide a foundation for teachers and leaders making decisions about whether mobile devices such as these can be useful in literacy classrooms.

This article studies a fourth grade teacher as she integrated iPads for daily use in her reading instruction. She uses an app called Doodle Buddy to allow students to create illustrations based on assigned readings of text. They also used graphic organizer apps (Popplet). They used iBooks in their Daily Five independent reading activities to customize their digital bookshelf to their reading levels. The findings showed that students were more actively engaged in learned and demonstrated creative ways of responding to
text. Again, the weakness of this article is the missing research questions and data. It makes many generalizations based on observations with no support from qualitative or quantitative data.


**Abstract:** According to Ellis, S., (2011) “One of the benefits of iPad is that it enables children to self-direct their learning, and it is easy and enjoyable for parents to understand and get involved” (p. 61). The goal of this study is to determine if the faculty will need to restructure the curriculum to adjust for faster content mastery from the iPad use. This preliminary study is examining the mathematics scores from second grade students in a rural, catholic school district. The focus is the content mastery speeds by the use of iPads as engagement and immediate response tools. In investigating prior research, there are limited studies that focus on elementary mathematics and content mastery with the use of iPads. Our goal is to show a correlation between the iPad use, the improved test scores, and accelerated curriculum.

This study was very brief and focused on a study in one high school population. It’s cited sources provide some support for the positive uses of iPads in the classroom, however the results of the study were inconsistent and inconclusive about benefit vs. detriment to student learning
math classes. The study suggests that future research is needed on the impact iPads have on elementary education. I feel this is a good sign for me as this is where my research interests lie.


**Abstract:** The integration of technology, pedagogy, and content in the teaching of secondary mathematics was explored among 280 secondary mathematics teachers in the State of New South Wales, Australia. The study adopted the technological pedagogical content knowledge (TPCK) model through the administration of a 30-item instrument called TPCK-M. The instrument consisted of three major theoretically based constructs: technological content knowledge (TCK), technological pedagogical knowledge (TPK) and technological pedagogical content knowledge (TPCK). Results indicated that PowerPoint and Excel constitute the two TCK modal technological capabilities while TPK scores revealed teachers’ lower capacity to deal with the general information and communications technologies goals across the curriculum, such as creating digital assessment formats. TPCK-M scores seem to suggest a healthy standard in teachers’ technological skills across a variety of mathematics education goals. However, the magnitude of such influence in practice needs to be further ascertained, given that the study identified a number of instructional, curricular, and organizational factors seriously inhibiting the integration of technology into teaching and learning. In general, to take advantage of more novel learning technologies, teachers need to be trained in working with online tools (webquests, wikis), mobile learning, and interactive whiteboards and in authoring digital learning resources.
This study examines the use of technology and TPACK model. I think it is helpful to read in terms of the fact the educators in the study were very insistent that the pedagogical content had to come before the technological aspect. It was critical that the use of technology was not just for the sake of using technology, but it must enhance the content knowledge of the student in the subject being taught, in this case mathematics. It also focused a lot the need from teachers to be trained in the use of the technology. This may shape my research interests in a different direction. I have always wanted to study the impact it had on student learning, but maybe this may change my focus to how proper professional development of a piece of technology enhances teaching and learning. I may have to focus some of my research reading in this area to see how much is out there and what the future research indications are. This currently wasn’t connected to my area of research, but may be a future area of interest.


Abstract: The iPad is an educational technology tool with the potential to revolutionize learning. In order for the iPad to be effective, educators must identify its affordances and examine school goals. Bates and Poole’s (2003) SECTIONS framework is applied in order to evaluate the iPad’s applicability to education: student profile, ease of use, cost, teaching and learning, interaction and interactivity, organizational issues, novelty, and speed of
technology change. A literature review reveals the importance of assessing the impact of the iPad in a learning environment prior to implementation.

This article is helpful for my future research interests in several ways. It shows support for the idea that ipads increase motivation in students (Hutchinson, et al.2012, Melhish & Falloon 2012, Peluso, 2012). I think it also has linked me to more reading I can and will do on the topic through its cited resources. It also states that the iPad is suited for even young learners due to the fact that it is “intuitive” with the touch screen technology. This supports my logic for choosing iPads as a teaching tool in my research interest area with young children. It also discusses the logic for districts and teachers choosing iPads over other technologies as well as how districts are choosing to purchase and distribute the iPads for use. Although this may not directly influence my research, it may directly effect the choice of districts for the study depending on the availability of the iPads. It also sheds light for me on the way my former district is going about iPad implementation. I think it also makes good points about planning instruction. It reminds the reader that iPads were created for individual use, not quite in alignment with the constructivist view on learning. It challenges teachers and districts to look towards ways to integrate the iPad in more constructivist ways.

Abstract: Twenty-three years ago, when I put together the 1980 book, The Computer in the School, personal computers were just making their debut. Figure 1 shows a photo from the book of a kindergartner in a vendor booth at the 1979 National Computer Conference in New York. He was using a just debuting digital stylus and tablet to draw directly into an attached Apple II and view the drawing on the screen as he made it. It was exciting—for him and for the many people watching.

This article reflects on changes in computing from an original examination of technology in the early 80’s to a more current view of technological capabilities in 2000, with a publish date of 2003. It demonstrates the changes in technology to be able to be wired, collaborative, and communicative. It discusses multimedia vs. traditional text messages as a helpful component in learning. It also covers some negative effects such as the overwhelming need to keep current with massive amounts of information and global information connections. It also discusses the need for training and caution going into a more technology rich version of education. Although I think this article provides some background support for my future research interests, it is simply background information with no direct relationship to iPads or tablet computers.

Abstract: Traditionally, literacy has been focused on the ability to read words on paper but new literacies go beyond and include reading from computer screens, and include media, technology, information, and other critical literacies. This paper describes how one institution has begun integrating technology literacy and literacy instruction in the introductory educational technology class. One of the activities of this integration has been the development and implementation of a technology enhanced literacy circle activity. In this enhanced literature circle students are provided with job assignments within their groups with provide them with reading literacy activities that have been infused with technology.

This article spent time exploring the ideas of pre-service teacher preparation as well as technology based literature circles. I think this was an interesting topic that many teachers probably already do in their classroom and do not think twice about. I think since the article was written e-reading has become part of the daily culture. It may be a little dated in terms of implying that this is cutting edge. I guess that many years ago this was a new and unexplored technique in teaching. Now I think it is a daily occurrence to use digital text for reading instruction. I like the idea of using maybe an iPad at a literature circle table, but this is not new enough research for me to consider applicable to my future research.

Hirtle, J., Patterson, L., & Stehens, L. (2007). Left Behind: Challenges for English/Language Arts and Technology Educators in the Third Millennium. In R. Carlsen et al. (Eds.),
Abstract: English Language Arts Educators are faced with more opportunities and greater challenges than at any other time in their history. The new literacies available to teachers afford a great opportunity to engage students in their literacy cultural heritage. But there is still a reluctance to utilize these tools. This position paper examines public policy, professional organizations' initiatives and research to suggest ways that powerful new tools can be utilized to support the timeless tasks of building knowledge and thinking critically.

This article focuses much less on language arts literacy and much more on technology literacy than I expected. It proposes information about how literacy has moved into the realm of instant information and instant publishing of writing and communication in ways we have not seen before. It also discusses the digital divide and questions how we can address this issue when it is so great. It also questions whether language literacy should be taught with technology or not. It almost implies that the use of technology is unavoidable in this area. I do not have much application for future use of this article. It was not what the title implied it was about.

**Abstract:** This article considers the research literature of the past decade pertaining to the use of computers in early childhood education. It notes that there have been considerable changes in all aspects of our lives over this time period and considers studies in which information and communication technologies (ICT) and in particular, computers, have been studied in early childhood contexts.

This journal is a literature review of research from the years 1994 to 2004 in the area of computers in the early childhood age group. The study includes a review of empirical articles that involve computer use by children ages birth to eight years. The review covers many topics and the review covers ten years. It describes the 80s as a time of resistance to the use of technology with early childhood learners due to abstract nature of the material, less interaction with instructors, and lack of collaborative work. Many of the technologies available were not considered developmentally appropriate. Their was also a fear that if allowed to spend time on computers children would not want to engage in traditional play methods. Near the mid 90s, the NAEYC stated that technology is important in our daily lives and that it will only increase in the future. This being an association that holds high standards for early childhood education, they released a statement about what technology in the early childhood classroom should look like. It included ideas such as choosing developmentally appropriate software, infusing computer time with the current vision for early childhood activities, enhancing equity and social justice by offering equal
opportunity and culturally sensitive content, and professional development in the area of technology for early childhood teachers. The major opponents of this debate cited programs that were not developmentally appropriate as their main arguments against computer use at this age. There was some discussion about technology being just and added tool rather than a catalyst for change. There was also a discussion about using what students know to educate them. I was happy to see that there was little direct literature reviewed about my specific topic of early readers. The article shows much progress has been made in the area of technology over the years researched. They state also that much of research emphasizes the importance of the role of teacher in the facilitation of effective learning.


**Abstract:** Against the background of Michael Kamil and Sam Intrator’s landmark reviews of research about new technologies and literacy development, this article maps recent research concerned specifically with the 0–8 years age group. Drawing on databases of research conducted in North America, Britain and Australasia, it affirms that the early childhood dimension is even more radically under researched than other age ranges with respect to new technologies and literacy development. The authors develop an analytic framework comprising four quadrants to categorize the various studies conducted in the early childhood age range, and assign these to their appropriate quadrants. This reveals a lopsided distribution of the meager corpus of studies available. The article provides a map
of the field against which early childhood educators can judge ‘at a glance’ how far their personal areas of interest are served by existing research. It simultaneously pinpoints areas where new research is needed to fill important gaps.

This major review spends much time describing the types of reports and empirical articles that were finding searching under specific key terms. The findings showed much basis for the use of technology to enhance students’ engagements and helped them engage in learning for extended period of time. It showed that technology helped children make significant gains in communication and other emergent literacy skills. This holds promise for my prospective research question as I am hoping to look more specifically at emerging literacy and technology. It describes a group of seven studies on literacy instruction and technology that all showed positive effects for children in a diverse group as well as those with learning disabilities in the areas of communication, cooperative work, and in language.


**Abstract:** In recent years, the usage of iPads has spread rapidly in the U.S., with the hope of improving student performance and motivation as well as altering learning environments to be more engaging and interactive. However, there is little known in the
literature about iPads, particularly in relation to successful implementation strategies and their perceived effectiveness. This exploratory case study examined existing iPad logistical models in NJ public school classrooms. It is anticipated that these findings will help to inform school district planning and logistical concerns; as well as to examine the students’ and teachers’ perceived attitudes and beliefs about using iPads in their classrooms.

This article has much pertinent information to my future research topics. It not only aims to look at the use of iPad technology, but how much, what content, how much administrative control versus how much freedom, and how it is currently used. Data on the research questions were gathered with likert-scale. I wonder if this could be modified for my own mixed method research proposal? I hope to work with young children but hope to gather similar information about attitudes from them I think this article gave me some food for thought in my own design and it’s potential flaws. I like that there follow up study leads right into one of my potential research questions, which relates to the impact of iPad use for instruction and improving student achievement.


**Abstract:** Integration of computers across the classroom curriculum has been an object of debate for over 15 years. This paper compares the integration of computers with what has been learned about literacy education. The integration of literacy learning into the
classroom is given as a model for computer integration. Examples are given of what constitutes quality computer integration and what does not. A basic set of "curriculum integration software" is described and recommended. A brief discussion of how computers can function as scaffolds and manipulatives is presented. A detailed example is given of how to design an integrated unit that incorporates technology. What children need to know to be independent computer users is also discussed. The authors emphasize that computers and other information technology should be thought of as just another learning tool. It is the software and the context within which it is used that makes the difference.

This journal spends time focusing on specifics of emergent literacy components which are drawn from the research and works of others. They provide many accurate key aspects to literacy learning and language acquisition for young children. The do spend some time on what this means as far as instruction for early childhood aged children. This includes concepts of print, reasons for writing, immersion in a print rich environment, and availability of reading and writing materials. After this, they apply the lens of technology in the area of literacy instruction and instruction in an early childhood setting. They describe computers to be set up in a way that encourages individual or group activities, open-ended activities, and the avoidance of drill and practice software. They look at software that should be on a computer in this setting and focus on Vygotsky’s theory of ZPD and scaffolding. Although the article is very applicable for a classroom teacher trying to implement technology in a developmentally appropriate way, it helps me very little as a researcher unless I apply it’s content to my experimental design.

**Abstract:** In collaboration with pre-service elementary teachers and in-service kindergarten teachers, the authors engaged in small-scale, demand-side production of educational software focused on numeracy skills. That is, the authors built applications designed to address children’s specific learning needs as they surfaced in the classroom and were identified by the teachers. Details about the design and rationale of the software, the collaborative development process, indications about its impact on teachers’ practice, and discussion about the potential of this approach to educational software production are shared.

This article researched how including teachers in the design of numeracy software would impact its effectiveness for students and a better pedagogical understanding of how the software could benefit teachers in their instruction. The findings showed that when teachers were involved in the development they were able to meet very specific learning goals through the program creation. I think that this article helps me to see that involving teachers in a survey or interview prior to choosing an iPad app for my study would be beneficial. This may help me to choose a program that is effective for the instruction of sight words with early learners. Being a teacher of this age group will help, but getting more perspectives would be the best method of approach to cover a wider range of learners and diversity.

**Abstract:** Research has found that these teaching strategies can contribute significantly to early literacy development. Using current technology young children and their teachers can easily weave song, music, story narration, and images to create compelling multimedia stories, or digital stories. This session will explore the use of digital storytelling as a means to promote children's development of early literacy skills. Examples of young children's digital stories will be shared. Qualitative analysis of these stories will be shared and the implications of these data for early childhood teacher education will be discussed. Session participants and presenters will discuss methods for guiding teachers to develop digital stories and potential applications of digital storytelling in early childhood settings.

The research review in this article bring up many ideas that I have seen as a common theme in early childhood education the role that technology plays in the classroom. It does discuss some the ideas that were thought about technology that were viewed as negatives. These were ideas were inhibition of social interaction, lessening language skills, and the question of developmental appropriateness. The article does a great job at discussing what future research should be done in the area. It suggests ideas such as to what extent early
childhood educators could incorporate technology in developmentally appropriate ways, the benefits of media on cognitive and emotional growth, and virtual schooling.


**Abstract:** In this study, an interpretive qualitative approach was employed to explore how pre-K children interact with educational software programs. This study addressed four aspects of children’s computer use: mouse manipulation, interface interpretation, level of enthusiasm or disengagement, and human interaction between peers and between a child and their parents. The data was collected in a pre-K classroom and the houses of the participants during a two-month period. The study consisted of observations and brief conversations with children, as well as interviews with the teacher and parents. The findings demonstrated that children have a wide range of mouse manipulation skills and interface interpretation abilities. Their skill levels influenced their level of enjoyment. Children were more likely to be engaged when they possessed the proper computer skills or received appropriate scaffolding from a knowledgeable adult or advanced peer. Thus, prior experience in computer use and developmental level seems to have a strong effect on an individual’s capabilities and interaction with the software. This research will greatly assist with developers in designing better software and teachers in effectively using educational software programs with young children.
This study aimed to answer questions in relationship to children’s ability to operate a computer program and whether or not it increased their engagement during the use of technology. This study included work with preschool aged children. There was only a sample size of 10 children that included seven girls and three boys. The study was qualitative in design and included eight visits to the children’s pre-kindergarten classroom and four home visits to three homes. The location of the study was Charlottesville, Virginia. The study was completed over a two-month period and included observations of children using a science based computer program with graphics and animation. The researchers came up with measurable verbal and non-verbal behaviors to observe. They based their reasoning for the study on Piaget’s theory that children construct knowledge through worldly experiences. They also included Vygotsky’s work on learning being socially constructed through shared experiences and scaffolding. Their review of literature showed greater gains in learning when animation and graphics were used to aid instruction. They found that prior use of a computer had an impact on student engagement and also frustration levels. Overall, the effect of using technology to deliver content in science was beneficial in the areas of motivation and engagement. The article stated that the technology was a good start for learning but not a replacement for human exchange. I think the researchers used too small of a sample size to draw any major conclusion. The sample also lacked diversity. It does give some insight for educators as they plan for instruction using technology, but again to make any major conclusions with such a small sample size seems irresponsible. I think it lends itself as a tool to help me create a design for my own study. The use of an iPad to eliminate the coordination issues involved with young children and a mouse will help eliminate some of the frustration of the subjects. I
also think it will lend itself to helping me decide what previous theory in early childhood will support my study.


**Abstract:** Is computer usage appropriate for young children? The manner in which the computer is used can benefit the child, have no effect whatsoever, or actually be detrimental to the child's academic and personal growth. Specific conditions can be instituted to assure that young children benefit from their exposure to or interaction with technology. How computers are used is dependent on several factors: the teacher, technical and curricular support, the software, the way the software is used, and the classroom environment.

One quote that has emerged repeatedly in the articles I have read in relationship to my research question is, “Technology plays a significant role in all aspects of American life today and this role will only increase in the future” (NAEYC 1996a, P.11). It has been the foundational quote for many of the articles I have read as it comes from one of the leading associations in early childhood education. In this article it seems the basis provided for how early childhood education can find developmentally appropriate ways to incorporate technology into existing routines and activities. The article makes recommendations for educators on how to
successfully integrate technology into the classroom effectively with young children. It does not demonstrate research, other than a use of previous studies as its support for the recommendations made. It only informs me in terms of my future research as possible suggestions to help design my experiment.


**Abstract:** The use of digital resources in early childhood settings in Australia is a recent phenomenon. In 1999 Education.Au, a company funded by the various educational authorities in Australia, commissioned a study of the educational use of the Internet with children eight years and under. Data were collected through a literature review and discussions or interviews with all stakeholders in early childhood education: children, families, early childhood educators, school system representatives, academics, researchers, policy makers and advisers. This paper reports on the major outcome of the commissioned study: a pedagogical framework for the use of digital resources in early childhood settings. The framework includes a rationale and a description of the key elements of effective practice: quality resources, effective learning environments and appropriate teacher interactions.
Education.au completed a study of children in the age ranges of three years to eight years of age. The three to five year old children were part of a daycare setting and the five to eight year olds were part of a school setting. The study took place in Australia. They stated that the study was important to explore based on the current immersion of young children in a technology filled culture. They looked at how you can create an effective learning environment with the use of technology and young children. They wanted to see how it could lend itself to the support of Vygotsy’s learning theory of socially constructed learning, which implies that learning happens through the immersion of children in their society. They looked at how technology could be used to in an open-ended way instead of traditional drill and practice software. They used the data to create a start to a framework for using technology with young children. They had a variety of steps in their data collection. They completed a review of the literature, a workshop, telephone interviews and discussions with parents and teachers, parent focus groups, e-mail and telephone discussions with system consultants, early childhood educators, and a review of the website edNa and the internet resources on the world wide web to evaluate sites appropriate for early childhood children ages zero to eight years old. The study was published in 2001. I think the flaws in the presentation lie in the lack of data presentation or summary. Although it is clear that they collected data, they provide no actual data in the report of their findings. They also seemed to have too many modes for data collection. I would have liked to see a more detailed report of their findings in some form of quantitative review. I feel like there is little support provided with evidence for their findings. As far as informing my future research ideas, the framework they suggest does seem to match the theories that permeate early childhood education. I would say that to
study this more closely I would need to narrow the focus and find a more effective way to collect and present empirical data to support the claims made for the suggested framework.


Abstract: This paper reports on an innovative integration of two undergraduate courses at Arizona State University West: an early childhood language arts course and an educational technology course. Both professors believed that technology should be explained, modeled, and used within the context of methods courses, rather than as a stand alone course. Further, they wanted to teach their students, and thus encourage them to teach, in ways that reflected a holistic, learner-responsive curricular position in early childhood education. This included modeling a process approach to teaching writing, and demonstrated the use of technology as a tool for creative writing and early literacy learning.

This article focuses on teacher preparation to integrate technology into a language arts context. I feel that the information was interesting and also exciting me as person whom is interested in shaping future teacher education. The do discuss how they would teach their classes again differently, but this does not really have any influence or support for my future research interest. I would like to focus more on student benefit and outcomes, not
necessarily teacher preparation or teaching language arts with technology.


**Abstract:** The purpose of this study was to survey how early childhood educators in districts around Arizona State University West integrated technology in literacy instruction. Six districts were identified and 18 participants interviewed to determine how they used technology, to identify concerns for developmental appropriateness and to discuss how learning was enhanced when literacy was linked to technology. Findings indicate that technology was used within the existing curriculum, schedules accommodated use of technology and that the software used extended literacy activities. Adaptations were made to address the needs of young children and technology-motivated acquisition of literacy in purposeful ways. Results have influenced future reading method courses in content and requirements.

The research completed in this study had a large component of survey involving teacher’s attitudes towards technology in literacy instruction and also asked about their use of technology during instruction. The findings showed that teachers were using technology in a variety of ways such as presentation tools or authoring tools. They stated that technology was accessible and able to be used in the existing schedule. They also used games as an extension or remediation for children. This study did not have much
Annotated Bibliography


**Abstract:** This presentation focuses on the work produced in one classroom of four-year-olds that is part of a larger collaboration exploring how technology can be used to significantly enhance the learning of young children. Our work moves beyond introducing available software in early childhood classrooms in order to provide an additional context in which students might explore skills that can be developed without technology. Rather, we are designing the means for integrating interactive authoring environments into preprimary and primary classrooms. Our goal is to provide an infrastructure, via technology, from which young children can make previously unexpected cognitive leaps. While some might argue that this goal has merit enough in and of itself to drive a research agenda, an additional motivator of our work has been the ongoing demands that technology be implemented in classrooms for young children (Bewick & Kostelnik, 2004) with little consideration as to the appropriateness of its typical uses.

This conference paper was very short, as it appears the presentation was on the beginning stages of a larger implementation. Children were asked to use Squeak to data to back up their findings. I think if it had a bit more evidence provided in the article it would be beneficial as support for my research area of interest.
study and manipulate art. The study had only been completed with a single class size of four year olds. The children involved did demonstrate the ability to learn Squeak with little or no difficulty when instructed on how to use it. They were able to manipulate art in ways that were not possible in paper pencil task due to their development in the area of fine motor skills. The implications for future research are to work with a larger sample size. The article indicates that they are in the process of completing the study on a larger scale. For my future research interests, the only useful information was that children were able to use the technology at a young age with some initial instruction. I would need to be sure when designing a study with young children to include a modeling and teaching segment as part of the design.


**Abstract:** This paper explores the implementation and the use of the Interactive Whiteboard (IWB) in literacy teaching in an Australian primary school. A socio-cultural approach (Vygotsky, 1978) and Activity Theory (Engestrom, 2001) are used to explore the integration of the IWB in the literacy classroom environment where the individual, classroom and the whole school contexts are considered. A socio-cultural conceptualization of technology allows us to view the IWB as a tool that can be used to
enhance teachers’ pedagogical practices. The paper is based on a case study in an independent primary school located in a South - Western suburb of Sydney.

This study focused on how teachers applied the interactive whiteboard to the schools accepted teaching philosophy and practices. It examined the comfort zone of one teacher in particular. I find many faults with this research as it only describes how one teacher in the school used and felt about the whiteboards. There was no discussion on its actual impact on learning for the students. It also very briefly discussed the teacher’s feelings of application and limits. It did state the limit of one child using at a time was not a good fit for discovery activities. I felt in all that this article did not truly explain useful information for a teacher who may be considering use of a white board, a district considering purchasing whiteboards, or even a researcher who is hoping to continue research in this area. I am still unclear as to what their goals were at the conclusion of their research. In the end, I am disappointed in the content disclosed in the article. It will not help me a lot in the area of research I am interested in.


**Abstract:** This study explored the viability of tablet computers in early education by
investigating preschool children’s ease in acclimating to tablet technology and its effectiveness in engaging them to draw. A total of 41 three- to six-year-old children were videotaped while they used the tablets. The study found significant differences in level of tablet use between sessions, and engagement increased with age. Teachers reported high child interest and drawings as typical to above expectation. Children quickly developed ease with the stylus for drawing. Although technical issues in learning this new technology were encountered, children were interested and persisted without frustration. What seems to matter for children’s learning is the ways teachers choose to implement this technology.

The author researchers in this study have looked at a few areas that are interest to me in the area of future research. They discussed previous study of how images and sound can be used to promote learning in children. They also noted research that indicates technology’s ability to promote an increased time period of focused on attention and on-task behavior. They discuss how the use of tablets promotes a new medium for activities that are already done in the classroom setting. The sampled children from a university daycare setting from ages three to six. Their design included a survey for demographic information and information on their experience with technology. They began the use with students in a teaching period, which was followed by more independent use. The results indicated that children felt at ease with the tablet computers as a drawing tool. Teachers also saw an increased motivation from students as well as an increase in product quality. They also noted that students felt that they had more control over their finished products. In the area of future studies of tablet computers, the authors stated that a larger and more diverse sample should be studied. They encouraged the study of a variety of diverse early
childhood settings with a much larger sample size. They indicated a need for more empirical data and a comparison to traditional drawing methods as well as general technological tools such as a PC with a mouse. For my own application, the idea of future study with a comparison of delivery methods may be useful. The study did not hit directly on reading instruction, but implied the idea that it may be motivating to early learners to learn on a tablet. I am hoping to look at reading intervention students that are just learning to read and are struggling. This article shows that the motivation piece from tablet use may be beneficial to these students as well as the ease of use for them.


Abstract: The iPad holds amazing potential for classroom use. Just a few--or even only one--is enough to get results. Having a class set promotes traditional, whole-class instruction, but fewer iPads facilitate individualized and tailored instruction. In this article, the author discusses the potential of the iPad and suggests ways to put the iPad to use in a classroom.

This article was extremely helpful to me in my question for information on my research area of interest in a surprising way. It began immediately discussing how the iPad device can impact not only student learning, but also behavior management through increased focus and concentration in reading. It discussed the ease of use for even the youngest children. It talks about different ways in which an iPad can be used in a classroom, even if
you only have one device. I have implemented several ideas in my classroom and also enjoyed seeing their recommended apps. I feel that this article was more for practicing teachers and immediate application. It did not show a research base or empirical evidence for the use of the iPad. I think in terms of my research, it can give practical ideas for the design of the activity to be used in the research, but no support as far as past studies or where to start in researching iPads in with young children. I still enjoyed reading it as we are implementing iPads in our district currently and are at the initial stages of the implementation where only the teachers have them. This definitely helps with idea of how to teach only using one iPad.