

## **Shifting Views: Exploring the Potential for Technology Integration in Early Childhood Education Programs**

## **Changement d'opinion: Exploration du potentiel d'intégration de la technologie dans les programmes d'éducation de la petite enfance**

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### **Abstract**

Using technology with children in play-based early learning programs creates questions for some within the Early Childhood Education (ECE) community. This paper presents how two faculty who teach in ECE-related degree programs integrated educational technology into their teaching pedagogy as a way to model to their students how it can be used to support children's play and learning opportunities. The authors identify how collegial dialogue helped them to use various technologies and social media in their teaching, which transformed their curriculum and pedagogical philosophy. The paper argues that if technology creates connections between learning in the college or university classroom and is effective practice, it is worthy of further exploration.

**Key Words:** Technology, Social media, Collaborative inquiry

### **Résumé**

L'utilisation de la technologie avec des enfants dans des programmes préscolaires d'apprentissage basé sur le jeu suscite des questions pour plusieurs au sein de la communauté de l'Éducation de la petite enfance (EPE). Cet article présente la façon dont deux professeurs enseignant dans des programmes d'études liés à l'EPE ont intégré la technologie éducative dans leur pédagogie d'enseignement comme un moyen de démontrer à leurs étudiants comment elle peut être utilisée pour soutenir le jeu des enfants et les possibilités d'apprentissage. Les auteurs montrent comment un dialogue collégial les a aidés à utiliser diverses technologies et médias sociaux dans leur enseignement, ce qui a eu pour effet de transformer leur programme et leur philosophie pédagogiques. L'article fait valoir que si la technologie crée des liens entre

l'apprentissage en milieu postsecondaire et une pratique efficace, elle est par conséquent digne d'une exploration plus poussée.

**Mots clés:** technologie, médias sociaux, recherche collaborative

## Introduction

Early childhood education (ECE) is a field of study that focuses on the care and education of children from infancy to school age. Early childhood education professionals plan and implement play-based experiences with the children in early learning programs. Current research is emphasizing that technology in early learning programs “supports and increases young children’s skills in social, cognitive, language, literacy, writing and mathematics realms” (McManis & Gunnewig, 2012, p. 15). The use of technology in play-based programs is positioned to change the way children engage in play, exploration and their overall learning experiences (McManis & Gunnewig, 2012; Parikh, 2012; Shifflet, Toledo & Mattoon, 2012). Such findings suggest that early learning professionals require the skills to integrate technology into play-based experiences with children that follow sound pedagogical principles (McNierney, 2004). Using technology with children is changing the landscape of play-based early learning environments (Dietze & Kashin, 2012).

With the influx of technology and social media in the lives of young children, those who teach early learning students need to consider the place technology (e.g. mobile devices) and social media (e.g. Facebook, Twitter, YouTube) have in their teaching and learning environments. With students demanding up-to-date interactive teaching and learning experiences (Clifton & Mann, 2011; Downing & Dymont, 2013) we, the authors, two faculty in higher education, embarked on a collaborative journey of inquiry to explore the influence that educational technological integration would have on our teaching practices and pedagogy. This inquiry was fueled by an awareness that ECE students arrive in our classrooms more technologically advanced than ever before, so we wanted to understand this new generation of learners (Doyle, 2008; Weimer, 2010). Whether they are digital natives, the net generation, the Google generation or the millennials, students are experienced in digital interaction and they bring knowledge about computers, and experience with social media and technology in general into the learning environment (Clifton & Mann, 2011; Helsper & Eynon, 2009; Junco & Mastrodicasa, 2007). For the purpose of this article, we view educational technology broadly - as a process of using technologies to improve teaching and learning (Roblyer & Doering, 2010).

Research on early childhood education has historically indicated that play is the medium for young children to learn. Through active play children use their imaginations and participate in an array of hands-on experiences as they construct new ideas and understanding about their world (Shifflet et al., 2012). Shifflet, et al., (2012) determined that when technology is added to the early learning environment, “the interface may be different, but the principles [of play and learning] remain the same” (p. 37). ECE students benefit from developing the knowledge and skills to use technology, not as a substitute for hands-on experiences but as a way to expand children’s play options, ideas, problem-solving strategies and learning. This requires using technology in ways that would be considered developmentally appropriate (Copple & Bredekamp, 2009).

Rather than focusing attention on protecting children from technology, a re-framed image of children is necessary: one that views them as competent and capable of learning with technology in a social construct (Gandini, Hill, Cadwell & Schwall, 2005). ECE students can actively co-construct knowledge within their own technologically-rich learning communities and in turn can do the same with children. Technology, when used by early learning professionals and children, can provide a platform for learning in a social world within and beyond the play environment (McManis & Gunnewig, 2012).

When technology is used in early learning or higher education environments, it has the potential to change the learning experience for participants from one of being passive recipients of an expert's ideas of what should be taught and learned, to one where learners of all ages can actively navigate their own learning or co-construct knowledge with others (McNierney, 2004). Sharing ideas, questions, and problems enhances the learning experience; it becomes more meaningful and memorable. As we explored educational technology in our individual practices and through the sharing of experiences, we took the position that one way to support ECE graduates in being knowledgeable and prepared to incorporate technology in meaningful ways in children's play and curriculum was to integrate technology into our ECE learning environments (Clifton & Mann, 2011; McManis & Gunnewig, 2012). Borrowing from the theories of Hawkins (2002), when adults have the experience of "messing about" or playing with technology, the potential becomes evident. For the authors, a year of exploring educational technology has established its place of prominence within our teaching and we are compelled to think more deeply about broader implications of technology in ECE degree programs.

In this article, we situate a contemporary perspective of educational technology within the context of early childhood education programs. We frame the discussion around two central perspectives: (a) How, as ECE faculty, can we integrate educational technology into teaching as a way to model how it can be used to support children's play-based learning; and (b) how can we help students studying ECE to gain experience with educational technologies so that they develop the skills to integrate technology effectively into their practice? Technology requires integration in order for benefits to learning to be realized. Overcoming resistance and apprehension to technology is a requirement in order for ECE faculty to become aware of possibilities (McNierney, 2004; Underwood & Dillon, 2011). For us, the introduction of technology into our teaching, and the process of re-shaping our pedagogy to include technology created a road with new pathways and intersections, leading to intentional and serendipitous dialogue and learning.

Within a twelve-month timeframe, we engaged in the process of examining and applying technological tools in our classrooms, including social media. Our collegial dialogue led us to engage in deep thinking about the resistance to technology, given the positive influence it has had on our practices (Downing & Dymont, 2013; Underwood & Dillon, 2011). We collectively acknowledged that using various technologies and social media took us outside of our comfort zone. Despite the discomfort, we believed that it was important for us to transform our curriculum so that we could stretch our learning and pedagogy beyond our familiar practices (Underwood & Dillon, 2011). The process of using and integrating technology contributed to changing our pedagogical philosophy, professional learning processes, and confidence level as educators.

## The Technological Debate

ECE faculty aware of the various debates about providing children in early learning programs with access to technology and social media know that these are fueled by a number of experts, including educators and psychologists who express concern that computers and technology devices stifle children's learning and creativity (Cordes & Miller, 2000; Oppenheimer, 2003). Elkind (2007) has consistently stated that technology should not be a substitute for play experiences and professionals should be cautious about technology in children's places of play. Others suggest that opportunities for children to learn through play is being reduced because of the amount of time they are spending in front of television, computer screens, or using technology assisted toys (Plowman, McPake & Stephen, 2010). However, when viewed as a process, technology can contribute to opportunities to play while learning. Singer, Golinkoff and Hirsh-Pasek (2006) remind us that play equals learning. Incorporating technology with play can be educational at all developmental levels (NAEYC & Fred Rogers Center, 2012).

The National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center for Early Learning and Children's Media (2012), in their joint position statement "Technology and Interactive Media as Tools in Early Childhood Programs Servicing Children from Birth through Age 8," offer guidance on how young children learn and develop. The statement acknowledges the opportunities and challenges of using technology in early learning programs (Parikh, 2012). Parikh (2012) identified that, despite the challenges, one of the key messages in the joint statement is that "when used intentionally and appropriately, technology is an effective tool to support learning and development" (p. 10). Advocates who use technology with young children are clear about certain activities, such as electronic worksheets for preschoolers should be viewed as being inappropriate. Technology is not used as a substitute for active play; it is an enhancement to children's play experiences (Dietze & Kashin, 2012). When used intentionally by early childhood educators, technology can promote effective learning and development (NAEYC, 2012). For example, technology tools such as YouTube clips of children's block construction can trigger new or different play options for children.

Scarlett, Naudeau, and Salonijs-Pasternak (2005) suggested that the advancement of technology in children's play, whether it be with computers or toys with motors, is the first qualitatively different form of play to be introduced since before the turn of the twentieth century. For ECE faculty who support the position that technology is contributing to a new form of play, there is a need to figure out what this means in their teaching and learning (Downing & Dymont, 2013; Laffey, 2004; Underwood & Dillon, 2011) within both ECE higher education programs and early learning programs with children.

Thinking of technology as a tenet of play leaves some within the ECE community questioning whether to use it at all, while others grapple with its integration (Underwood & Dillon, 2011). Some struggles are related to long-held beliefs of what play and learning should look like, even though advocates who incorporate technology into play maintain the importance of honouring the principles of constructivism, experiential learning theories, and the progressive education movement (Dewey, 1938; Vygotsky, 1978). Incorporating technology into early learning programs is based on the premise that it is "open-ended and that it provides opportunities for children to discover, make choices, and to experience the impact of their decisions" (Dietze & Kashin, 2012, p. 332). Young children can be effective teachers for their peers and learning in a

social context can be joyfully collaborative, especially when more knowledgeable children become mentors to children with less experience within the play experience (McManis & Gunnewig, 2012; Plowman & Stephen, 2005).

Faculty who remain current and abreast of the contemporary issues facing early childhood education are rethinking pedagogical strategies used to advance students' knowledge and promote the use of technology with children (Downing & Dymont, 2013). They are reconfiguring ways of practice to reflect research findings (McNierney, 2004). For example, forming friendships is an important experience for children in early learning programs. Studies conducted by McCarrick and Xiaoming (2007) identified that forming friendships is much higher among children using technology than when children are involved at table work experiences such as completing puzzles. Their studies determined that "peer interaction was present during 63% of the computer play and only 7% of the puzzle play" (p. 80). This research puts into question the traditional table work that has been popular in early learning programs. As one question becomes resolved, another is expressed. What is the relationship of technology to children's creativity? Is there a place for children's expression of creativity through technology? Should early learning professionals assume that art and creativity can only be expressed with paint, paper, markers, and crayons? Why or why not? These questions cause disequilibrium in thinking, in practice, and in philosophical orientation (Dietze, 2006).

Disequilibrium can be described as tension that builds when new information collides with prior knowledge, beliefs or values. As educators and collaborators, we welcome these questions and embrace a sense of disequilibrium and discourse as we continue to explore technology integration in our own practice. Banaji, Burn and Buckingham (2010) point to research that has identified that while technology can promote creativity, it is important that educators are not using technological tools for their own sake. Technology as a process can lead to meaning-making for learners, as it has for the authors. If technology facilitates creativity, then when reflecting on the tension surrounding technology, we look to understand the resistance (Downing & Dymont, 2013; Underwood & Dillon, 2011).

Some of the tension and resistance surrounding the use of technology with children may stem from faculty not pursuing professional learning in the area of children's play and technology (McManis & Gunnewig, 2012). If faculty have not examined the current perspectives on technology, they may not have included technology in their pedagogy (Turja et al., 2009), or they may be using technologies that have not typically been designed for the educational purpose for which they are using it (Mishra & Koehler, 2009). This may mean that our up-and-coming early learning professionals complete their studies without having explored ways to incorporate appropriate technology with the principles of interactive and exploratory play (Dietze & Kashin, 2012). This can result in new graduates either leaving technology out of their practice or using it with children in ways that are not conducive to active play or developmentally appropriate (McManis & Gunnewig, 2012). Findings of a study sponsored by PBS (Public Broadcasting Services & Grunwald Associates 2009; 2011) found that "preschool teachers reported that they limited their use of technology mostly to downloading images and using digital cameras" (McManis & Gunnewig, 2012, p. 15). If this remains the norm in early learning programs, the negative implications for children's play and learning are significant (Parnell & Barlett, 2012). It is critical for early learning professionals to gain the knowledge and skills to select technology that complements children's play and support them in its use.

As a way to gain knowledge and prepare to make informed decisions about “when to appropriately select, use, integrate, and evaluate technology and media to meet the cognitive, social, emotional, physical and linguistic needs of young children” (NAEYC, 2012, pp. 10-11), educators benefit from themselves exploring, experimenting and using technology (Downing & Dymont, 2013; Underwood & Dillon, 2011). Mishra & Koehler (2009) emphasized the use of technology in educational settings is most successful when teachers gain “a deep experiential understanding, developed through training and deliberate practice” (p. 16). Exposing ECE students to the use of technology and social media during their studies provides them with a foundation to build upon in their professional practice. With ECE students coming into the classroom already exposed to technology, especially social media, we have found that using technology supports professional learning. For example, social media provides platforms for students to participate in collaborative learning experiences (Mitra et al., 2010). Discussions through social media can become a forum to facilitate critical reflection on varying ideas, theories and perspectives such as what is meant by “big ideas.” According to MacNaughton (2009), critical reflection is dialogic and it is reflection that will inform technological integration into the early childhood curriculum. Rather than viewing the computers, smartphones, and tablets that college and university students bring to the learning space as distracters, faculty could benefit from viewing these items as tools to support student engagement and to create a community of learners (Mitra et al., 2010). An attitudinal shift that embraces technology will change the direction of professional practice (Downing & Dymont, 2013; Underwood & Dillon, 2011). ECE students, who use social media platforms such as Facebook, Twitter, and YouTube as part of their learning experience, may be more engaged. This increased engagement can lead to deeper thinking and understanding of the multiple viewpoints and strategies associated with integrating developmentally appropriate technology into their work with children (Clifton & Mann, 2011).

## **Towards Technology Integration**

Learning to think about technology integration with young children requires faculty, professionals and ECE students to be comfortable using it in various contexts so that they begin to “think big” about its use with children. The process of “thinking big” about technology helps to shift thinking from treating technology and social media as a linear movement, to one that embraces exploration and innovation (Dietze & Kashin, 2012). Faculty members who use technology in their learning environments are in a position to support students in examining how to use technology appropriately with children.

As part of our quest to bring social media into our degree programs, we began designing learning environments that intentionally included opportunities for students to play and learn using Facebook, YouTube, Twitter, and Wikis. We each made observations after reviewing students’ work, about how the technology integration changed communication, collaborative learning, and student engagement. A brief descriptor of each follows.

YouTube is a video-sharing web site. We used it for examining topical curriculum issues from various points of view and from a wide variety of experts and professionals. Examining YouTube clips helped students gain skills in working as a team, collaborating on examining information and connecting or questioning its content, in relation to theory and application. Students prepared YouTube clips in a team, which gave them the experience of examining the

theoretical concepts and breaking these concepts down into short messages that would communicate the issue, the research, and how research or a theory informs practice. Creating the story component for the YouTube clip increased the students' communication and negotiation skills, helped them learn collectively and individually, and showed them how to combine creativity with theory and application skills. In presenting the YouTube clips, students exhibited a sense of accomplishment and extensive knowledge about their topics. Clifton and Mann (2011) suggested that using and producing YouTube clips not only increases engagement among learners, it provides them with deep and authentic learning that supports critical thinking. In our case, the process of creating YouTube clips provided students with a deep, integrated, and transformative learning experience (Clifton & Mann, 2011; Mitra, Lewis-Jones, Barrett & Williamson, 2010).

Wiki and Tumblr are micro-blogging social networking web sites that were used for student groups to have discussions on the content of their assigned readings. Asking one another questions and posting their perspectives on the readings helped students gain an understanding of the strengths and weaknesses presented in the articles. This process supported students in completing the readings and in building a learning community, with shared learning goals. We both observed that some students, who had not previously expressed their views in the larger classroom setting, began to have their voices heard. They also increased their contributions to the overall learning situation. They practiced reflection-in-action and reflection-on-action skills and gave feedback to their colleagues. These observations are similar to research findings. For example, research conducted by Chang, Morales-Arroyo, Than, Tun and Wang (2010) and Harsell (2010) indicated that using wikis adds to student retention, the development of communities of learners, and image-building that attracts students, and also increases continuous conversation and the flow of dialogue.

Facebook is one of the more popular social media sites for students, if used productively for purposes other than socializing and electronic game play. Facebook was used to connect two sections of a graduating class within an early childhood education degree program. Establishing a professional Facebook group for students, faculty, and alumni offered participants a place to share information, photos, research surveys, and opportunities for professional learning, employment and post degree programs. Links shared led to dialogue on an array of on early childhood related subjects. The site is a place where announcements are made and good news shared from acceptance to postgraduate programs to positive stories of practice, once employed. This is a professional site with its members engaged in a learning community, offering information, questioning perspectives, seeking advice, and discussing a variety of just-in-time issues that support their professional learning needs.

The second usage of Facebook involved the creation of a page to be visible publicly. Posted on this site were links to research, news items and related information connected to professional knowledge in the early learning sector. Managing these sites led to the realization that having access to professionally-focused information enhanced learning and expanded professional knowledge through the sharing of information. It offered a platform for archiving endless resources that can create active learning for early childhood education students. This real-world assignment offered students experiences in developing a communication strategy that is common in businesses and has similar potential for professionals and students in the early childhood

sector (Crews & Stitt-Gohdes, 2012). Similar to Junco's (2011) findings, in this situation we noticed an increase in student engagement.

The changing landscape of ideas about children's learning and development and the role of early childhood educators are influenced by demands for increased accountability (MacNaughton, 2009). This requires new ways of accessing information beyond presenter-focused presentations, and moving new theoretical constructs to practice based on self-learning. Facebook as a professional learning strategy advanced discussions, opened up research options, and led to new knowledge development for students. It has gone beyond the classroom and is now influencing their learning as practicing professionals.

Twitter is an online social networking and micro-blogging service. Incorporating Twitter and other blogging options into the learning environment provided students with a real-time stream that supported them in responding to questions or asking questions that may be answered by any member of the learning community. This process was particularly supportive of more reticent students, as it supported them in "finding their voice." Tweets can be used "in the moment" or after giving considerable thought to a comment or question. Similar to the findings of Crews and Stitt-Gohdes (2012), our examination of the tweets created by the students revealed that over time the students became more proficient in formulating clear and concise responses that focused on the key elements of the assignment. The assignment gave students the opportunity to apply their writing to real-world issues within the early childhood education sector (Crews & Stitt-Gohdes, 2012; Tyma, 2011). The level of student engagement, access to a learning community, and depth of learning that students exhibited using Twitter showed how they were connecting new knowledge with their personal experiences (Chang et al., 2010) in ways that were not been observed when using traditional delivery methods, which were presenter-focused rather than learner-directed.

## Reflections and Future Directions

Social media is evolving and so the explorative journey will continue. For example, we are preparing to bring Skype into our learning environments so that students can be connected to various speakers and early learning environments nationally and in the global community. Pinterest is a virtual pin board and forum that will be used to post images related to the practice of early childhood education. It creates a virtual classroom bulletin board and provides opportunities to share images of student's experiences in practice.

Drawing on our observations and reflections on the use of technology and social media, we reflected on how technology and social media influenced our students' learning, our pedagogical position on teaching and learning, and our position that ECE students benefit from exploring research and discussions on how to integrate the use of technology into early learning programs in ways that enhance children's play experiences. We acknowledge that some faculty are incorporating technology into their teaching and learning, but the question remains if we are collectively preparing our graduates to use technology effectively as tools in children's active play? Many questions emerge that could benefit from future research, such as:

- the role that technology and social media currently play in early childhood education programs in higher education;



- the professional learning required by faculty and early learning professionals to use technology and social media effectively; and
- the perspectives that students have about using technology and social media with children.

With resources becoming available to support technology integration with very young children (Simon & Nemeth, 2012), it will eventually become a professional responsibility to help children become digitally literate (Burnett, 2010). To prepare professionals for this new reality, a collective exploration of these questions from a regional, provincial and national perspective would potentially yield rich data. Analysis could help define the state of integration and identify ways to initiate broader support and acceptance.

## Conclusion

Technology will continue to advance and evolve. As educators we have a responsibility to reduce tensions that surrounds children's play and technology. We argue that incorporating technology as a process to support learners in playing with, using, and examining the many uses of technology in various ways and settings, and also using it to facilitate their own learning, can be a starting point. Collectively, ECE faculty and students can explore how to use technology and social media in their own learning environments as they seek ways to enhance children's active play and learning with technology. If technology creates connections between learning in the college or university classroom and is an effective practice with children, it is worthy of further exploration.

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