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Technology and Young Children

For this generation of digital natives, touch-screen technologies and mobile devices have invited earlier and more intense engagement with a variety of technologies. A burgeoning marketplace and a high degree of interest on the part of the children are key factors driving this trend (Ching-Ting, Ming-Chaun, & Chin-Chung, 2014). Parents and early childhood educators look to experts to advise them on the appropriate use of technology and related hardware (Simon, Nemeth, & McManis, 2013).

According to the National Association for the Education of Young Children (NAEYC) early childhood years are critical in shaping the futures of children. This report will present six guidelines for the integration and use of technology in early childhood learning and recreation. Although recommendations for screen time limits and technology use vary, according to the America Academy of Pediatrics (AAP) media screen time should be avoided for children under two years of age. The Fred Rogers Center for Early Learning and Children’s Media at Saint Vincent College (FRC) suggests the media use for children under the age of two should be limited to activities that promote the social and emotional wellbeing of children and can be done to promote social interactions (NAYEC & FRC, 2012). Examples of this include skyping with grandparents, co-reading ebooks with parents or watching educational videos in the company of siblings, peers and adult caregivers. For this reason herein early childhood will represent children ages two to eight.

In a joint position statement from NAEYC, and FRC the authors stated that technology and media should not replace activities such as creative play, real life exploration, physical activity and outdoor experiences, conversation and social interactions. They go on to say that technology should be used to support learning, not in isolation (NAEYC & FRC, 2012).

An important consideration in the development of these guidelines is the degree to which they are considered to be developmentally appropriate for early childhood learners. Ching-Ting, Ming-Chaun, & Chin-Chung (2014) describe four developmental domains that comprise form the rubric for age appropriateness: the cognitive, social, emotional, and physical. Research on brain development by the National Research Council Institute of Medicine suggests that children are born wired for feelings and that early nurturing relationships are essential and set the groundwork for future well being and learning. In addition early intervention can seriously impact the future potential of a child (Shonkof & Phillips, 2000). Given these findings the question is: how can teachers and families leverage technology to better serve the needs of young children and optimize their potential for future learning? Some guidelines that may help to answer this question are outlined below in the areas of time limits, creativity, movement, Intervention, educational support and safety.

Time limits on screen time are necessary in early education. Although recommendations for screen time vary, The AAP suggests that technology be limited to a maximum of 2 hours per day for children ages 2-5 (AAP.org, n.d.). Because young children have short attention spans; 1-10 minutes, discretion must be used and media use should be weaved in with conversations and social interactions to break up the time into chunks that can be assimilated by the child.

Guideline 1: Double the child’s age from age; 2-8, and keep media use to chunks of times in that range alternating with activities that support and strengthen emotional and social foundations for a maximum screen time of 2 hours per day.

Examples:

* Technology use should be limited to a maximum total of thirty minutes interweaved with activities that strengthen socialization and emotional connections in school for a half-day program (FRC, 2012).
* Technology use time should be limited to a maximum total of thirty minutes interweaved with activities that strengthen socialization and emotional connections in school for a full day program (FRC, 2012).
* A maximum of one and a half hours to two hours of technology can be used at home with parents or older siblings (FRC, 2012).

Guideline 2: Technology and media use should promote creativity. Creativity can include but is not limited to music, art, creative story telling and creative play.

Examples:

* Apps like Crayola Color Alive, which uses augmented reality to make what kids color come alive. In addition this technology allows the user to take a picture that overlays whatever the child has colored into a phototgraph with the child, encouraging imaginative play.
* Draw and Tell is one of a variety of apps that allow children to create stories. Children create characters and then create stories around the characters, which can be recorded and played back. Children can experiment with different characters and self direct stories.
* Music making apps can be used on iPads for children to create music and songs, additionally recording apps allow the teacher to record the music for playback for the parents or for children to hear what they have created.

Because of the relationship between childhood obesity and screen time the White House Task Force on Childhood Obesity cautions parents, caregivers and early childhood teachers against the incorporation of passive technology (White House Task Force on Childhood Obesity 2010).

Guideline 3: Technology should encourage movement. Teachers, parents and caregivers should discourage the use of passive technologies.

Examples:

* Leap frog, Wii, and Kinects all have games that encourage body motion.
* iPods and music apps can be used to encourage dance.
* Loop gaming encourages movement by looping it with digital gaming.

The most rapid period of development in an individual’s life occurs during the early years and this development although critical is vulnerable. Technology can be effective in redressing disparities in learning or providing access to the world if developmental benchmarks are not met or a child has qualified for early interventions through the Individual with Disabilities Education Act (Olsen, Fiechtl, & Rule, 2012). When a child experiences difficulties in development, no matter the severity, it is crucial for the adults in that child’s life to collaborate, communicate, and plan together the use of educational technologies for remediation or assistive technologies for access and communication; there should be a partnership between the home and the school setting so education plans are reinforced to provide an optimal learning experience for the child (Hamren & Quigley, 2014).

Guideline 4: Technology should be used to support interventions when needed. Any technology used for intervention should allow the child to participate as fully as possible in their natural environment, encourage or require interaction, address learning goals and provide progress monitoring towards goals (Ching-Ting, Ming-Chaun, & Chin-Chung, 2014; McManis & Gunnewig, 2012). The technological platform should be customizable so it can grow with the child, adaptable to apply to more than one setting or learning goal, and engaging to hold the young one’s attention (Gillis, Luthin, Parette, & Blum, 2012).

Examples:

* Mobile devices can be used quickly and intuitively by teachers to communicate with families by e-mailing of pictures, videos, or screenshots of student work. Parents can reinforce lessons and enhance the youngster’s excitement by sharing the e-mail and conversing with the learner about the contents (Beschorner & Hutchison, 2013).
* In more severe early intervention cases, video conferencing technology can be used to provide virtual home visits to support, educate, coach, and provide therapies to families (Hamren & Quigley, 2012; Olsen, Fiechtl, & Rule, 2012). This type of technology allows families and service providers to communicate frequently and provide a flexible plan for children.
* Many software programs provide the flexibility required to assist struggling early learners. Dreambox, a math software program, is adaptable by providing personalized lessons for each child’s ability level. Teachers use the progress monitoring feature to develop lesson plans, while both parents and teachers can track progress towards goals (Herold, 2015).

Acquiring early literacy skills is an imperative milestone in a child’s life and is vital to future reading success. Educational technology can enhance the connections between the early literacy standards of reading writing, listening, and speaking if it is based on research, child development theory, developmentally appropriate practices, and when it is incorporated into the child’s learning program (Beschorner & Hutchinson, 2013; Hupert, Cervantes, & Degroof, 2010; McManis & Gunnewig, 2012). At school and home children should be involved in creating goals for their technology related literacy activities but the adult should set up the activities, oversee safety, encourage discussion, and ensure that the child is not getting stuck (Ching-Ting, Ming-Chaun, & Chin-Chung, 2014; Plowman, Stevenson, Mcpake, Stephen, & Adey, 2011). Further adults can support attainment and meaning through interaction or scaffolding, which can include questioning and/or conversation pre/post activity, modeling appropriate use of technology, and encouraging collaboration with peers during technology use (Ching-Ting, Ming-Chaun, & Chin-Chung, 2014).

Guideline 5: Technology should support literacy. When choosing technology for literacy, learning goals should be established first and the platform or program that best addresses those aims selected; keeping in mind early literacy platforms should be fun, engaging, interactive, and research based with built-in tips and other “scaffolds” or help features that do not distract from the learning with unnecessary “bells and whistles” (Herold, 2015; McManis & Gunnewig, 2012).

Examples:

* Effective adult interaction or scaffolding during technology use keeps youngsters on task and encourages higher level thinking. This communication with learners can include an adult staying close by and giving positive feedback like a thumbs up when the child experiences success or providing encouragement when the child gets frustrated (McManis & Gunnewig, 2012).
* Digital book applications can enhance connections between literacy skills increasing a child’s learning (Beshorner & Hutchinson, 2013). I Like Books, an iPad application, allow children to listen and record the story, change text and photographs in the story. Learners can create their own stories using the familiar words, record themselves reading the text, and listen and share their book (Beshorner & Hutchinson, 2013).

Young children, while digital natives, are also emerging digital citizens Adults should take care to guard them against exposure to inappropriate material on the Internet and the hazards of the commercial marketplace (NAYEC, 2012). At the same time, efforts should be made to help young children cultivate good judgment, learn how to use technology appropriately, and appreciate the consequences of its misuse.

Guide line 6: Digital safety should be modeled and encouraged.

Examples:

* Generally, young children should have the benefit of adult supervision while using technologies.
* As needed, parents and educators should employ control apps that provide a browser filter, limit in-app purchasing, access to the marketplace, and the ability to add new apps.
* Parents should protect children from accidental access to inappropriate material by using screen-locking devices, like Toddlerlock. This type of application prevents the child from unlocking the phone and provides an interactive screen to accommodate the child’s creative doodling (Hoal, 2014).

Ching-Ting, Ming-Chaun, & Chin-Chung (2014) point to the adults in a young child’s life as mediators for technology integration. Parents and educators, therefore, need resources, opportunities to learn, and on-going support for appropriate integration of technology use in early childhood. “Lack of informed leadership, supervision, professional development, and on-going support can lead to misuse and abuse” of technology. (Simon, Nemeth, & McManis, 2013). The six guidelines outlined above can serve as a compass for school and community-sponsored continuing education programs, online programs and coursework, and Early Childhood discussion forums on the topic of technology use by young children.

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