Early Childhood Program Guidance for Children Ages Birth through Eight

Technology and Interactive Media in the Early Years

Technology and interactive media are rapidly expanding the materials and experiences young children have in their homes and classrooms. Access to technology can open up many possibilities for early childhood learning, extending children's worlds, and helping them to expand and explore their thinking.

In a joint position statement of the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center for Early Learning and Children's Media (January 2012), the term digital literacy, which is the ability to understand and use technology, is used to encompass both technology and media literacy, the ability to understand and use all types of media. NAEYC defines media in two ways, as interactive and non-interactive. "Interactive media refers to digital and analog materials, including software programs, applications (apps), broadcast and streaming media, some children's television programming, e-books, the internet, and other forms of content designed to facilitate active and creative use by young children and to encourage social engagement with other children and adults…Non-interactive media include certain television programs, videos, DVDs, and streaming media"…that can "lead to passive viewing and over-exposure to screen time for young children." With new and emerging technologies continually entering the mainstream, there will be a need for frequent revision and adaptation of this definition.

The challenge for teachers is to make informed choices that maximize learning opportunities for children and minimize misuse. For children who have little access to technology at home, having full access at school ensures equity, giving these children access to tools that build upon their learning. The way in which educational programs can adjust to children's levels and specific abilities is ideal for differentiating teaching and learning for all children, including those with disabilities and who are English Language Learners. Well designed programs also tap into children's intrinsic motivation, building upon children's feelings of competence and control.

Instead of debating the pros and cons of technology in the early childhood classroom, teachers should ask, "How can I use technology to promote the goals of my curriculum?" In addition to developing children's skills and abilities, well designed programs will engage children in thinking, creating, problem solving, questioning, critiquing, communicating and making connections.

Principles for appropriate use of technology and interactive media

Early childhood educators need to be smart in the selection, use, and integration of technology and interactive media. The following principles are summarized from the NAEYC position statement, which can be found in its entirety at http://www.naeyc.org/content/technology-and-young-children.

Information about cultural, linguistic and developmental appropriateness must guide the selection of technology and interactive media

- Developmentally appropriate practices must guide decisions about whether, when and how to integrate technology and interactive media into early childhood programs. Technology and media should not replace children's creative play, multi-sensory explorations, social interaction, or physical activity both indoors and outdoors.
- Like the selection of any classroom materials, linguistic, cultural and developmental appropriateness must guide choices about technology and interactive media.
- Appropriate use of technology and media depends on the age, developmental level, needs, interests, linguistic background and abilities of each child. Most technology and media are not appropriate for children under the age of two and exposure for this age group should be limited.

Technology should be used to support the ways in which young children learn, maximize home-school connections, and assess children's progress.

- Effective uses of technology and media are active, hands-on, engaging, and empowering; give the child control; provide adaptive scaffolds to ease the accomplishment of tasks; and are used as one of many options to support children's learning.
- Interactions with technology and media should be playful and support creativity, problem solving and critical thinking.
- Technology tools can help teachers communicate with families.
- Technology tools can be used to measure and record children's development, document growth, plan activities, and share information with parents, families, and communities.

Technology should be integrated into children's daily activities, and used to enhance adaptations for Dual Language Learners and children with special needs.

- Technology can enhance early childhood practice when integrated into the curriculum during choice and small group time.
- Assistive technology can enable equitable access for children with special needs.

- Technology tools can be effective for dual language learners by providing access to experiences that incorporate home language and support English language learning.

Teachers, children and families need guidance in becoming discerning users of technology.

- The education of early childhood educators and parents in the selection, use, and evaluation of technology tools and media is essential.
- Children need guidance in operating technology properly and safely, setting appropriate limits and avoiding inappropriate content (e.g. advertisements). Adults should ultimately be responsible for protecting children against exploitation.
- Early childhood educators need training, professional development, and examples of ways to integrate technology.

Professional Development

"The degree to which technology can extend the reach and depth of learners depends on the motivation and courage of teachers to examine their own educative purpose—philosophy and practices—against the backdrop of a technology-rich world, where knowing how to access and generate knowledge is everything" (Hatherly, July 2010). This requires investment in quality professional development for teachers that strengthens their digital literacy and increases technology skills and confidence, in order to use pedagogy to enhance learning for children. Educators need access to resources that demonstrate best practices and time to digest and discuss new ideas in professional learning communities.

In addition, professional development should address policies that make the distinction between professional and personal use of technology during class time, when all attention should be on the children. It should also help teachers cope with being instantly available to parents of children, board members, and colleagues in their program. At the same time, teachers can take advantage of expanded options in engaging and communicating with these families and colleagues beyond face-to-face meetings and conferencing. Social networking can become a new tool that has many applications with enormous potential. If the teacher takes time to find out about and engage with children and their families' virtual lives, another door opens for building trust and strong relations. A tech savvy teacher can become an important resource for helping parents to make wise choices in selecting applications and software as well.

Recommendations for Classroom Practice

Curiosity is what makes children take an interest and get involved in learning. Technology offers opportunities for children to tackle difficult problems and to engage in thought processes as they explore concepts that add complexity to their understandings. When used for this

purpose, digital technologies provide one more outlet for demonstrating children's creativity and learning. Recommendations and examples for classroom practice include opportunities to:

- Begin to explore and feel comfortable using basic computer components, such as mouse and keyboard, and using web sites to look up answers to questions.
- Freely explore touch screens (e.g. iPads and tablets) loaded with a wide variety of developmentally appropriate interactive applications that are well designed and enhance children's interest and feelings of success.
- Capture photos of block buildings or art work that children have created; videotape dramatic play and replay for children to view. Seeing familiar people or events, hearing familiar voices, or learning about familiar topics encourages children to become meaningfully engaged and connected to peers and families.
- Document and display children's accomplishments with digital media displayed on a digital projector or on a classroom website. Being able to see themselves in digital movies can inspire children to introduce new ideas and props into their play and to listen and accept ideas from other children.
- Record children's stories about their drawings or their play; make digital audio files for documentation of progress. Teachers can also e-mail these stories of engagement in a particular topic of study to parents, who can then contribute their perspective. These documentations can be included in the child's portfolio.
- Explore digital storytelling with children. Co-create digital books with photos of the children's play or work; attach digital audio files with the child's own voice as the narrator.
- Use digital microscopes and other science materials to capture images and store them on a computer. Children can be encouraged to draw or write about their observations and to e-mail questions to experts or use a search engine to find out new information about their observations.
- Search digital files for photos and video footage of places, people, animals or objects and converse with children about what they are finding. For example, one child's question about what made a bird "dead" was answered by watching a YouTube video.
- Use video conference software to communicate with families and children in other places. In a world where parents and extended family may travel frequently or live in different countries, being able to talk to them, see them and show them what children are learning can connect families to the classroom and make face-to-face meetings more meaningful. Children can also connect to children in other classrooms around the world to appreciate differences and similarities such as languages, seasons, holidays and local geography and animals.
- Engage in play experiences to construct and explore ideas about how technology works.

- Balance the use of digital and electronic materials with multi-dimensional sensory experiences beyond the flat screen by using natural and 3-D materials.
- Use adaptive applications and tools for children with physical and emotional disabilities. In many cases, it reveals hidden strengths and removes challenging barriers to learning.
- Support a child's home language by using online spoken translations, and multilingual stories and games.
- Use technology to record project-based learning over time. For example, digital photos can be used to document the growth and change of a class pet, a plant, or a caterpillar.

Recommendations for selecting interactive media and technology products for the classroom

The same developmentally appropriate principles and practices that guide the use of classroom materials, tools and equipment, should inform the selection of interactive media and technology products for young children.

- Consider the ongoing costs of replacement and updating of hardware and software before purchasing any product. Instead of purchasing expensive, high maintenance equipment like interactive whiteboards, use flexible equipment like tablets, iPads, book readers, and laptops that can easily be placed in classroom centers and for which there are thousands of applications for under $5.
- When selecting products to support your curriculum, try them out first to ensure that they are built with young children in mind. Durability for active use should be an important consideration. Don't rely on the product's marketing claims. Programs should be intuitive to navigate, and any instructions should be interruptible or very brief. Good products avoid using verbal praise like "good job", instead providing activities that build upon children's feelings of competence and intrinsic motivation. Whenever possible, choose products that are "smart", with levels that adjust to children's responses, using a sign in system to track children's progress.
- Choose applications that support your curriculum. Hundreds of applications are now available for just about any learning domain, many of which even record children's responses, giving you valuable information about each child's skills. If you are introducing letter sounds, for instance, choose applications that let children experiment with letter sounds. If you are exploring shapes, include applications that encourage children to combine and build shapes. Be sure to include open ended creativity programs that let children write and draw and even animate, as well as storybooks that come to life, letting children hear the sounds that letters and words make, building children's print awareness.

Technology and interactive media should not replace creative play, multi-sensory experiences, outdoor explorations or social interactions, but should be used as a tool to extend and support learning in the classroom. Screen time for young children should be carefully monitored and passive use of non-interactive technologies such as television and video should be avoided. Educators should provide a balance of interactive experiences with technology and hands-on exploration with traditional materials. With high quality professional development, and time to discuss their developing technology skills, educators can tap into the best that technology has to offer and use it to communicate with families, monitor child progress, and differentiate and enhance learning based on the particular needs of each child.

References

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Resources

 * ICT is the term for "Information and Communication Technology" by the New Zealand Ministry of Education.