

Chapter Three: Developmentally Appropriate Practice: Using New Media with Children, Birth through School-age

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The practice of striving to be developmentally appropriate in the integration of new media into the lives and library services for young children is not without precedent; health and educational institutions have weighed in on the benefits, concerns, and recommended practices in utilizing technology of all kinds with youth for as long as there have been technology formats to discuss. This chapter examines the background of these recommendations for developmentally appropriate practice over the past decade and a half before exploring the current recommended practices for infants and toddlers, preschoolers and kindergarteners, and school-age children.

A Brief History of Recommendations for Developmentally Appropriate Practice

Until recently, the prevailing wisdom had been that all screen time should be avoided for children under the age of two. For children over the age of two, it was recommended that screen time be limited to 1 to 2 hours per day. This advice came to parents through many avenues but originated with a policy

statement issued by the American Academy of Pediatrics in 1999 that addressed media use in children. The statement included a recommendation to pediatricians that they should caution parents against television viewing for children under the age of two (Hogan, et al., 1999). This guideline was supported by research on the effects of mass media in small children and included information on aggressive behavior, sexual content in media, the effects of media on obesity rates, and the fact that media consumption often displaces other activities. The statement recommended that pediatricians encourage parents to examine their media use habits, and it also recommended pediatricians give a range of advice to parents including:

- encouraging careful selection of programs to view;
- co-viewing and discussing content with children and adolescents;
- teaching critical viewing skills;
- limiting and focusing time spent with media;
- being good media role models by selectively using media and limiting their own media choices;
- emphasizing alternative activities;

- creating an “electronic media-free” environment in children's rooms; and
- avoiding use of media as an electronic babysitter. (p. 342)

Tablets and new media were not included in this AAP statement, as they were either not yet invented, or not yet used prevalently. However, many in the media and others in the early childhood education community extended the 1999 guidelines (specifically the recommendation for no screen time before age two) to encompass tablets, smartphones, and ereaders as these devices became ubiquitous. In 2011 the American Academy of Pediatrics issued an update to this statement; “Media Use by Children Younger Than 2 Years” reaffirmed the 1999 statement with updated research. It did not, however, make specific recommendations for interactive or new media and the growing landscape of digital devices. The iPad had only just been released in 2010, and research on its effects with regard to child development was non-existent. In fact, the 2011 statement was virtually unchanged from its predecessor in that it defines “media” as “television programs, pre-recorded videos, web-based programming, and DVDs viewed on either traditional or new screen technologies” (Brown, et al., 2011, p. 2).

Then the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center for Early Learning issued a joint position statement in January 2012, titled “Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8.” The joint statement highlights the fact that “all screens are not created equal,”

and the way children consume media, with regard to digital devices, has fundamentally changed (NAEYC, 2012a, p. 3). “Screen time,” according to the statement, can no longer be defined simply as children passively watching television shows or DVDs. New media in the form of apps and ebooks requires active participation from users. Taking these technological advancements and the new ways children are interacting with media into account, the definition of “screen time” must be reevaluated. The NAEYC and Fred Rogers statement takes a much more nuanced approach than the 2011 AAP guidelines and states that “as digital technology has expanded in scope beyond linear, non-interactive media to include interactive options, it is evident that each unique screen demands its own criteria for best usage” (p. 3).

In a lecture at the 2013 American Library Association Annual Conference, Chip Donohue, Director of the Technology in Early Childhood Center and coauthor of the NAEYC and Fred Rogers Center joint statement, cautioned against falling into the false dichotomy of the “screen time vs. no screen time” debate, which fundamentally overlooks the interactive aspects of new media (2013). Instead he stresses the importance of how technology is used with children to foster learning, promote creativity, and enhance real world experiences. It is also promising to note that the latest policy statement issued by the AAP in 2013, “Children, Adolescents, and Media,” included a recommendation that schools “encourage innovative use of technology where it is not already being used,” and that those schools that do use iPads need to have strict rules about what students can access (AAP Council

on Communications and Media, 2013, p. 960). From these newer guidelines, it appears that the AAP does in fact recognize that there are potential educational applications for new screen technologies.

This chapter will explore recommendations for using new media with children at different developmental stages outlined by the NAEYC and Fred Rogers Center statement. The authors of the statement based their recommendations on three distinct developmental stages—Infants and Toddlers, Preschoolers and Kindergarteners, and School-age children through age 8—and this chapter shall use the same age categories.

Infants and Toddlers

In her 2012 book *Screen Time: How Electronic Media—From Baby Videos to Educational Software—Affects Your Young Child*, Lisa Guernsey looks at how babies and toddlers learn in order to determine if children at this young age can derive any benefit from interacting with technology. As an example, some of the first interactive screen-based products specifically marketed towards babies and toddlers, on the market in 2006, involved a video recording and a wireless remote control-like device to be used by the child to “interact” with the video. The problem with these products, Guernsey points out, is that they fail to take into account that babies and toddlers have “a limited understanding of cause and effect when it isn’t close and immediate” (p. 196). The unavoidable distance between the television screen and the wireless remote made it difficult for the child to establish what researchers call “contingency.”

Contingency refers to the learning process where feedback is contingent upon a child’s action.

Guernsey (2012) also points out the drawbacks of using a traditional computer and mouse with very young children. Toddlers often lack the fine motor skills necessary to control a mouse. Even if they are able to master this equipment, the issue of the cause (the child moving or clicking a mouse) and effect (something happening on screen) being separated by distance still remains. The advent of touch screen technology has removed both of these issues. With touch screens, cause and effect is immediate and close, and these devices do not require the fine motor skills needed to operate a mouse. Even a baby has the ability to tap a flat screen.

The next question, then, is, can these devices be used as educational tools with children this young, and if so, how? The NAEYC and Fred Rogers Center statement recommends that if technology is used with this age group it should be in the “context of conversation and interaction with an adult” (NAEYC, 2012b, p.1). In the earliest years, children learn and interact primarily with people; studies have shown a correlation between play with an adult and improved emergent language skills in children (Guernsey, 2012, p.22).

The NAEYC and Fred Rogers Center statement also recommends avoiding passive screen time with this age group, as there is little research to suggest that babies and toddlers learn from watching videos (NAEYC, 2012a). Instead, the statement recommends that caregivers should “use technology as an active tool

when appropriate to provide infants and toddlers with access to images of their families and friends, animals and objects in their environment, and a wide range of diverse images of people and things they might not otherwise encounter (photos of children from other countries, for example)” (p.1). The statement recognizes that there is a difference between passively watching a video and using a touch screen device to interact with images, sounds, and ideas. However, the authors suggest that use of technology with infants and toddlers remain very limited and be based on “exploration and include shared joint attention and language-rich interactions; and that it does not reduce the opportunities for tuned-in and attentive interactions between the child and the caregiver” (p.6).

The suggestion that certain types of media can be appropriately shared with babies and toddlers seems to contradict, or even totally ignore, the advice by the AAP to avoid screen time for children under the age of two. However, not only did the AAP 2011 statement (and subsequent 2013 update) fail to address the effects of new, interactive media with this age group, one of the authors has published an opinion piece suggesting that there are potential educational benefits to touch screen devices. In March of 2014, Dr. Dimitri A. Christakis published a statement in *Pediatrics* addressing his concerns that the AAP guidelines do not account for the interactive nature of new media. Christakis explains that, since research on the effects of interactive media will take years to complete, he hopes to offer his opinion on the topic based on theoretical grounds. He questions whether interactive touch-screen

technologies are more similar to passively watching television or to actively playing with blocks. He states: “my hunch is that they are more akin to block play and here is why: the one thing a child never says (or thinks) when he or she interacts with passive media is ‘I did it!’ This is, of course, quite different than what might be experienced in the context of using a well-designed interactive app” (p. 399).

Christakis goes on to outline the key features of traditional toys, comparing them to new media devices:

- Reactivity - whether the device can respond to something a child does
- Interactivity - whether the device can prompt reactions from a child based on actions he or she takes
- Tailorability - whether the device can behave differently based on particularities of the child (e.g., age and stated preferences)
- Progressiveness - whether the device can move a child along a continuum such that it begins where he or she last left off, advancing in complexity as understanding deepens
- Promotion of Joint Attention - whether the device can enable or facilitate adults and children interacting with one another
- Portability - how easy it is to transport the device and make it readily available in different venues
- 3-dimensionality - whether the child can engage the device across space by manipulating

it with his or her hands (p. 399)

Christakis illustrates that, when assessed against these criteria, iPads (and more specifically interactive apps) have more in common with traditional toys than they do with passive media such as television. Christakis uses this assessment to argue that “there is a strong theoretical foundation to posit that the AAP recommendations regarding media for children younger than the age of 2 should not be applied to these newer media” (p. 400).

Preschoolers and Kindergartners

As an appendix to the joint statement issued by NAEYC and the Fred Rogers Center (2012b), the authors have offered selected examples of effective ways to use technology and interactive media with children in the classroom setting. This appendix explains that preschoolers and kindergartners are at a stage in their development that involves a newfound sense of initiative and creativity; they are exploring their ability to create and communicate, and digital technology can provide another outlet to achieve this. According to the authors, children at this age should be allowed to freely explore touch screen devices that are loaded with well-designed apps that enhance feelings of success. Guernsey (2012) offers similar advice in her book *Screen Time*. She explains that research has shown preschoolers can indeed learn from television programming if it has been well designed.

But what does a well-designed interactive app look like, and how should preschoolers and kindergartners use

them? Guernsey (2012) explains that well-designed media for children should allow them to go where their imaginations take them. To illustrate, she describes a study by Warren Buckleitner in which children ages 3.5 to 5 were observed playing two different styles of interactive games. One game included excessive praise and instructions, while the other included just a few sound effects to signify correct answers and offered few instructions. “Buckleitner found that, when kids were given a chance to go forward on their own without waiting for instructions or sitting through multiple seconds of praise, they were more active and engaged, focusing on the task at hand instead of looking around” (p. 205). Guernsey reports that Buckleitner believes this is evidence that the more children in this age group can control the interactive experience, the more they respond to it.

Guernsey also looked at the ways children and parents use interactive books. The first edition of her book was published in 2007, and at that time an ebook looked very different than ebooks we see today. In the 2007 text, she describes a study done using a specialized paper book that is inserted into a plastic frame with an accompanying computer cartridge. When a child touched an image on the page, the book would “talk.” One study found that when a parent and child read this type of book, there was much less discussion revolving around the story and much more discussion about how to use the device. This finding seems discouraging, as reading together is one of the best ways adults can improve literacy and language skills in their child. However, those ebooks were very different from ones available for tablets

today. Touch screen technology is more intuitive and easier to use, even for children with limited fine motor skills. But the issue of distraction should still be taken into consideration.

When choosing ebooks for young children, adults should avoid ones that include advertisements and requests for in-app purchases, but also those that include what some researchers are calling “gimmicks and distractions.” Schugar, Schugar, & Smith (2013), researchers who conducted a study observing teachers as they used interactive ebooks with children in kindergarten through sixth grade, found that certain features of these books acted as distractions that interfered with comprehension. Some ebooks include games that are related to the story but exist completely separate from the narrative, and the study found that often children choose to spend their time playing the game rather than reading the story. Paul (2014) suggests looking for ebooks that “enhance and extend interactions with the text, rather than those that offer only distractions; that promote interactions that are relatively brief rather than time-consuming; that provide supports for making text-based inferences or understanding difficult vocabulary; and that locate interactions on the same page as the text display, rather than on a separate screen.”

Open-ended and dramatic play is also an important feature of development during the preschool and kindergarten years (NAEYC, 2012b). Technology can be used to support this development, as the NAEYC and Fred Rogers statement suggests. In the experience of this author, Toca Boca is a highly regarded app developer that focuses on creating

digital toys for children ages 3-6 and their caregivers. Their apps are an example of new media that is designed to promote developmentally appropriate interaction. The apps have no advertising, include no scoring or levels to be completed, and are inherently open-ended and non-competitive. For instance, Toca Tea Party is a digital version of the classic imaginative game and was developed with the intention that child and caregiver would play with it together; children can choose the table cloth, dishes, cups, and even the desserts they wish to “serve” to their guests. This type of new media promotes joint engagement and increases the opportunity for conversation, creativity, and learning.

School-age Children

The NAEYC and Fred Rogers Center (2012a) statement stresses the importance of allowing children to have access to new technologies, stating that “children need time to explore the functionality of technology before they can be expected to use these tools to communicate” (p.6). According to the Pew Center for Research, as of January 2014, 42 percent of American adults own a tablet and 58 percent own a smartphone. The NAEYC and Fred Rogers Center statement explains that this “prevalence of technology and media in the daily lives of young children and their families—in their learning and their work—will continue to increase in more ways than we can predict” (p.9). As the use of new media becomes essential to the work required of teens and adults, the education of young children should include the use of these new technologies in order to ensure that all children have strong digital literacy skills.

In their 2013 study “T is for Transmedia: Learning Through Trans-media Play,” Herr-Stephenson, Alper, Reilly, and Jenkins emphasize the importance of letting children play with the tools they will be expected to use as adults, stating that “in a hunting society, children learn by playing with bows and arrows. In an information society, they learn to play with information” (p. 6). Adults should help children use media in a way that allows the child to control the medium and the outcome of the experience, and in ways that allow the child to pretend and simulate how it might be used in real life (NAEYC, 2012a).

As with the other age groups discussed in this chapter, it is important that adults take an active role in using new media with children. “Digital and media literacy for children means having critical viewing, listening, and Web-browsing skills,” and according to the authors of the NAEYC and Fred Rogers Center statement, this requires that adults model appropriate uses with school-aged children (2012a, p. 10). Digital and media literacy can be achieved in myriad ways, but one suggestion is to allow school-age children to use new media as a tool for self-expression. Creating digital artwork and sound recordings or using storytelling apps is a wonderful way for school-age children to develop digital literacy skills while also engaging creatively. The NAEYC and Fred Rogers Center statement stresses also that “these opportunities should not replace paints, markers, crayons, and other graphic art materials but should provide additional options for self expression” (2012a, p.8).

In an interview with ABCmouse.com, Chip Donohue reaffirmed this viewpoint

by explaining that adults should take on the role of guiding children to make connections between the media they use and real-world experiences. He goes on to say that “we want parents to be doing the same thing with technology that they are already doing with books and stories —share the experience with the child, and talk about it so that children can relate that experience to other experiences in their lives and to the things they see in the world around them” (Donohue, 2012).

Educational apps should be used to reinforce what children are already learning in school and at home. For instance, Chiong & Schuler (2010) looked at how children are using apps and whether or not learning is occurring. Some parents in the study reported that they would reinforce vocabulary from an app in other real world situations. The researchers believe that the power of apps as a supplemental educational tool depends on how well content is linked to other curriculum and how caregivers encourage these connections.

The need for adults to model appropriate uses of new media with children is illustrated in a paper titled “Teaching With Interactive Picture e-Books in Grades K-6” (Schugar, Schugar, & Smith, 2013). The researchers describe a situation in which a teacher demonstrated how to transfer the skills commonly used by children deciphering text in print books to the newer medium of ebooks. The teacher helped a student by explaining how she determined the meaning of the word “stampeding” in the ebook *Wild About Books* by Judy Sierra by looking at the context of the word, the clues in the pictures, as well as the interactive features unique to ebooks:

She models for him how she would use this strategy with the word stampeding. She reads aloud the line from the text, "... every beast in the zoo was stampeding" and shows how she uses the text ("I see from the text clues that stampeding is something zoo animals might do."), the pictures ("The animals are all grouped together, so maybe stampeding involves a herd of animals."), and the interactions ("When I press the animals, they run in a herd across the page and make loud clomping noises."). Josey demonstrates how she uses the clues from each of these aspects of the text in conjunction with each other to infer the meaning of the word stampede. (p. 619)

Additionally, many ebooks include interactive supports such as read-to-me features and dictionaries. It is important for caregivers and teachers to show school-aged children when and how to use these interactive features appropriately, as the researchers worried that children may overly rely on these supports. We want our children to learn to be app-enabled rather than app-dependent, and this requires active involvement from and modeling by adults (Gardner and Davis, 2013).

Conclusion

With each stage of child development discussed in this chapter, the overriding recommendation is that adults take an active role in not only choosing the interactive media their children use, but also that the adult and child use apps and tablets together. This concept is

known as "joint media engagement" (sometimes also referred to as "co-viewing" or "joint attention") and has been endorsed by the American Academy of Pediatrics, the National Association for the Education of Young Children, the Fred Rogers Center for Early Learning, the Joan Ganz Cooney Center, and many more researchers in the field. Donohue summed up the importance of joint media engagement by stating that "the role of the adult is to help children make connections between the technology experience and real-life experiences" (2012).

As librarians begin to implement the use of tablets and apps with the children they serve, they should not only consider the advice summarized in this chapter, but also use the opportunity to share this information with adult caregivers. By doing so, librarians will take on the role of media mentors for the families in their communities, a much needed service in this ever-changing digital age.

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