

Introduction

It's a chilly day in January, and an unexpected snow has started outside the windows of Miss Michelle's pre-K classroom. The district announces a half-day, upending the schedule of the day. Four children sit on the carpet packing their backpacks and chatting:

ZhaoHong: I have an iPad.

Leo: My mommy has a black iPad and I know the iPad phone number. It's 7628.

ZhaoHong: I know the iPad number and Mommy doesn't! (*Everyone laughs.*)

Ray: Sometimes I ask my dad if I can have an iPad, but he just gives me his phone. I know that number and play all the games.

Carolina: I have Netflix, me and my sister.

These children are talking about the technologies in their homes the same way they talk about their pets and toys. They compare their home experiences, perhaps stretch the truth a little, laugh together, and use conversations with friends to make sense of the world around them. Children are growing up with technologies as a part of their daily lives. They see adults in their communities using smartphones to text, read, watch videos, take pictures, post to social media, and, occasionally, talk. They communicate with friends and family via video calls. They watch media on TVs, phones, tablets, and laptops. They play games on tablets, smartphones, and video game consoles. They may or may not see any of the technology that permeates their personal worlds as an integral part of learning in their educational settings.

At the same time that children are experiencing and talking about technologies in their daily lives, families and the media are concerned about the effects of the omnipresence of technologies on society and especially on children. Families of young children grapple with whether or not to give their child their phone as a distraction when in line at the store. Concerned about their own and their children's technology use, some adults participate in digital detoxes and make rules about smartphones at the dinner table. Some discuss a "wait 'til 8th" policy to guide when their child will get their own smartphone. Headlines ask questions like "Have smartphones destroyed a generation?" (Twenge 2017).

Early childhood educators have begun to reflect on the role of technology in their settings and to pay attention to issues of access and equity. Some teachers feel comfortable making decisions about when and how to integrate technologies into their daily lessons; many do not. Some teachers worry that children will choose technology over the hands-on play with physical materials and interaction with peers that they know are so important. Others feel as if technology doesn't have anything new or valuable to offer in support of children's learning. Some teach in

programs and communities with little access to or budget for technologies. Still others feel like it might be a good idea but don't consider themselves "tech savvy" and are not sure how to integrate technology into their teaching.

I worry about passivity around these topics: educators are often missing from the discussions in both families and early education settings about how and when children should use technologies. The integration of technologies in children's daily lives is only growing, and while families are making choices about technology use, it can sometimes seem as if teachers are forced into making choices about technologies rather than intentionally integrating their use into the curriculum. For example, some teachers are given devices or told that the school purchased an app or web-based resource, but there is little or no training or support for using the resources. In other settings, there is no budget for including new technologies, so teachers go without or attempt to acquire funding or devices on their own through charitable means, such as DonorsChoose.org. In the absence of active, intentional decision making by those who know young children and developmentally appropriate practice, developers of digital educational tools provide suggestions for technologies to be used in schools. In homes, game developers create digital games they describe as appropriate for young children, with a main goal actually being to make money off increasing time spent on digital applications (apps). Many of these apps, however, do not serve young children well. It is time for program leaders, school administrators, and teachers to take an active role in making decisions about what technologies to integrate into their educational programs and when and how. One goal for this book is to help educators to be more intentional in these decisions.

Guidance for Intentional Decision Making Around Technologies

NAEYC, the Fred Rogers Center, and the American Academy of Pediatrics support some media interactions for children over the age of 2 (AAP 2016; NAEYC & Fred Rogers Center 2011). These recommendations are grounded in the idea that interactions with technology are part of daily life and important for future skills in school and work. In addition, these organizations note that technology has advanced considerably from offering mainly passive interactions with TV; many new technologies are interactive, and some allow for open-ended exploration and creation.

However, "all screens are not created equal" (NAEYC & Fred Rogers Center 2011, 3). The Joan Ganz Cooney Center notes that the educational technology marketplace is difficult for families and teachers to navigate because of the constantly growing and changing offerings labeled "educational" without any expertise or research validating such claims (Guernsey et al., n.d). The lack of guidelines becomes even more problematic when it comes to apps aimed at young children. Many educational apps available in online stores are labeled with a broad age range, such as 0–5 (Sari, Takacs, & Bus 2019). Early childhood educators know that this age range is extremely broad; the development that takes place within a single year during this span, such

as from age 3 to age 4, is vast, let alone the development that occurs from birth to age 5. Yet families have little to go on beyond an app developer's suggestions, top internet search hits, or recommendations from other families.

Further, although digital device ownership is becoming more common in the United States (Pew Research Center 2021) and globally (Silver 2019), many families still face challenges, such as lack of broadband internet or lack of experience with technologies. Informed teachers play an important role in helping to guide technology choices and model the use of devices and programs so that all children have experiences with technology that nurture them as active critical thinkers and participants in an increasingly digital society (Bales et al. 2020; Fantozzi, Johnson, & Scherfen 2018). It is critical that teachers build relationships with families that are respectful and reciprocal, not only sharing information with families but inviting them to be partners in their child's education through regular two-way communication and by collaborating on setting educational goals for their child and coordinating opportunities for families to share their knowledge and cultural assets with the group (Isik-Ercan 2020).

NAEYC and the Fred Rogers Center (2011) have called for teachers to apply their knowledge of developmentally appropriate practice (DAP) to support children and families in appropriate technology use inside and outside of school. Principle 9 of NAEYC's revised position statement on DAP explicitly states that "used responsibly and intentionally, technology and interactive media can be valuable tools for supporting children's development and learning" (NAEYC 2020, 13). But what does that look like? This book combines guidance from practical classroom experiences and the foundations of DAP to help education professionals consider ways to evaluate technologies, create a culture of appropriate technology use, and develop mindsets—both their own and children's—that are appropriate for participating in the ever-changing world of technologies.

Guiding Principles in this Book

Writing about technologies can feel like trying to cup water in your hands. Even as it's captured, the water spills out and is never contained entirely. Since the specific technologies available to teachers are constantly changing, making it challenging to talk about them, this book presents the following key principles to guide and ground the discussion about technologies and suggestions for educational practice:

- › **Use of technologies in early childhood programs should be grounded in developmentally appropriate practice.** At the heart of DAP in any early childhood setting is the teacher as an informed decision maker. Teachers, then, should make decisions about using technologies with children, as they do with any teaching decision, based on three core considerations: what they know about commonalities in children's development and learning, the individuality of each child reflected in their unique characteristics and experiences, and the context in which learning and development occur, including the social and cultural contexts of the children and of the educators (NAEYC 2020).

- › **Playful, child-centered environments are critical to learning.** Children should be empowered by their learning communities. Play allows children to explore and understand their world. In play, children build language, explore concepts, and develop social and emotional (Wohlwend 2011) and executive functioning skills (Diamond & Lee 2011). The uses of technologies explored in this book respect and support the learning gained through play. Play also centers children as creators and knowledge makers (Zosh et al. 2022). This book advocates for placing these technologies in children’s hands so that they direct the learning and creating.
- › **Technologies offer multimodal communication.** Many people think technologies in the classroom involve gamified learning—children pressing buttons to demonstrate knowledge and being rewarded by points, coins, or flashing lights. In contrast, this book advocates for using technology in a way that allows children to reflect on their work, tell stories, and express their creativity using pictures, voice, music, movement, and text.

An Explanation of Terms

Technologies: The *Oxford English Dictionary* (1989) defines *technology* as “the application of scientific knowledge for practical purposes,” but the word is often used in the singular to describe a group of tools powered by computer chips. I use the plural term *technologies* to reflect the idea that technology is not one thing; there are many different kinds of technologies that can be used as tools to support digital learning.

Multimodal: A mode is a pathway for communication, such as a visual image, speaking, singing, or instrumental music. Teachers often use more than one mode to communicate an idea, such as mixing images, text, and their voices to teach a concept or using song and hand gestures to tell a story. Technologies, too, allow people to communicate in more than one mode, such as using images and voice or perhaps music and color, individually or in combination. This multimodal communication can enhance meaning and support young children’s learning.

Culturally sustaining pedagogy (CSP):

CSP is a teaching approach that builds on the framework of culturally responsive pedagogy (Ladson-Billings 2014; Paris & Alim 2014). Within this framework, teachers not only acknowledge and celebrate cultural differences but also consider the lived knowledge within the community an asset to be invited, explored, and sustained. Communities have shared knowledge in their language, communal stories, events, work, music, art, and traditions, labeled *community practices*; within a community, individuals may have similar knowledge and traditions related to their individual family’s heritage or cultural background, labeled *heritage practices*. Culturally sustaining pedagogy aims to support children in becoming critical thinkers, reflecting on their role in society and their right to sustain their culture and heritage.

- › **Families are integral members of the learning community.** Families are a child’s first and longest-lasting teachers. They shape children’s lives and should be welcomed and nurtured as partners in their children’s educational programs (Mancilla & Blanco 2022). Technologies can also offer families a powerful window into their children’s programs. DAP and culturally sustaining pedagogy approaches indicate that teachers should learn about individual families and their heritage practices as well as connect to the cultural contexts of the families’ communities (Paris & Alim 2014). Communication should be bidirectional, with teachers sharing about the learning happening in the program and inviting families to bring in their knowledge of their child as an individual and share their community and heritage practices. This book offers strategies for building partnerships and connecting with families.

- › **Everyone can use technology.** When teachers say they are or are not tech savvy, it implies that the ability to use technology is a gift that some people have and others do not. Although these teachers are referring to their own abilities, such beliefs and statements can “contribute to the inadvertent, often subtle or subconscious, transmission of low STEM expectations to the children they educate, especially to young girls, dual language learners, or children from households with low income or families with less education” (Chen 2021, 80). Technologies are tools, and using a tool is simply a skill. For any skill, some people will find beginning easier than others, some will have learned it from home experiences, and some will find that the way the skill is presented doesn’t align with how they learn. People learn in varying ways and at different paces, but everyone can learn and be successful with any skill. Using technologies is no different. So, there is no such thing as tech savviness!

I hope these principles will serve as guideposts as you consider decisions about technologies.