

Creating, Collaborating, and Communicating

A Framework for Thinking About Technologies

As discussed in Chapter 1, considering technologies in terms of being open or close ended is helpful for evaluating their usefulness in the classroom. This chapter focuses on three skills that technologies can foster and how those can provide a framework for thinking about integrating technologies into your curriculum. While testing and standardization movements emphasize basic literacy and math skills, children must be able to think critically, think creatively, and problem-solve. Early childhood educators must teach in ways that enable children to develop these skills (Resnick 2017).

I started my work with early childhood teachers thinking about how technologies can be used in developmentally appropriate ways in play-based programs. These teachers were committed to play-based teaching. They knew that technologies were integral to the children's daily lives but also worried that using technologies in their programs would detract from the rich play they saw occurring. However, rather than intentionally choosing technologies that aligned with their beliefs about effective teaching and learning, they were often simply not using technologies. So, I partnered with them to see how technologies could be implemented in developmentally appropriate teaching. Together, we discovered that the teachers could approach learning in a developmentally appropriate way by using apps that allow for creating, collaborating, and communicating. These skills align with the NAEYC and Fred Rogers Center's position statement (2011) on technology and interactive media. In addition, groups like the National Educational Association and International Society for Technology Education identify creating, collaborating, and communicating as critical for learning and participation in daily life and the workplace.

Thinking about creating, collaborating, and communicating as skills that can be fostered by technology use can be helpful for selecting technologies and planning for use, but keep in mind that these skills are not really separate. In fact, they often overlap in one project. The aim of this chapter is not to sort activities by skill but to support teachers in considering the kind of thinking and skills children can develop by using different technologies.

Further, I acknowledge that the technologies available in a classroom or program will vary widely depending on the resources available to teachers and administrators. I have worked in settings where each classroom teacher had several technologies available to use and also with a small program that began incorporating technologies into the curriculum by purchasing one iPad for its two classrooms. The framework presented in this chapter can help teachers and administrators consider how to use existing technologies; it can also help them begin a conversation about planning to include technologies in the classroom, including what kinds of technologies would help meet goals for creating, collaborating, and communicating and what resources are needed to meet those goals. Chapter 7 discusses planning for intentional integration of technologies in the classroom or school and shares some resources to guide that discussion.

Creating

The Lifelong Kindergarten research group, founded by Mitchel Resnick at the MIT Media Lab, is based on Friedrich Froebel's conception of kindergarten, which valued childhood as time of exploration and learning, centered play as an important context for learning, and encouraged creativity (Froebel Trust n.d.). In his research, Resnick aims to foster joyful learning that involves exploration, creation, collaboration, and play and to apply this to learning with technologies. However, he worries that this kind of learning may not be found in all kindergartens anymore. He says, "kindergarten is becoming like the rest of school. . . . I believe the rest of school should become like kindergarten" (2017, 10). One of the aspects Resnick believes is missing from kindergarten is the learning that children do when they use creative thinking in play.

In play-based classrooms, children are given extended periods of time to engage in various kinds of self-directed play, such as block building, painting, playdough, and dramatic play. During these experiences, children use creative thinking to conjure up stories, take on roles in these stories (which builds their working memory and inhibitory control), and problem-solve. For example, as preschooler Milo builds an X-wing fighter jet with hollow blocks, he has to draw on his memory of *Star Wars* for the outline of the ship and then look at the shapes available in the hollow blocks to figure out which will help him build the ship. He has to problem-solve to figure out which blocks will help him make the X shape of the wings. He, his friends, and the teacher test out different block combinations to try to achieve a structure that matches the image in his mind. Milo has to use clear communication and social skills to work with friends while building. Then, once he is finished building, he uses creative storytelling skills to begin weaving a story around the X-wing fighter. He and his friends use their working memory to remember this fictional story and practice inhibitory control as they try to stay in their roles and participate in the story. All of the work done in play builds skills critical for later problem solving and critical and creative thinking.

It might seem as if integrating technologies in the classroom would prevent this kind of imaginative play, but the opposite is actually true. Later, Milo took a picture of his creation and audio-recorded a reflection on the work that he did to create it. He shared this picture and audio reflection with his family so that they could talk about it further. This connection with his family encouraged Milo to build more, both at home and at school, and to talk more about what he was doing. Intentionally adding technology use in a program can extend and support children's play.

You can use technologies to support creative play by

1. Providing a space for children to explain and reflect on their nontechnological creations
2. Providing a medium for creating

Using Technologies to Explain and Reflect

Children often engage in focused, creative, and critical thinking in play, but they don't always have a chance to reflect on what they did or to share that work. Reflection is an important process that helps children develop metacognitive skills as they think about how they arrived at a conclusion or solution. It can also be an opportunity to build resilience: Did they do anything that was hard for them? How did they keep going? How did they problem-solve? How did they ask for help? Recognizing how to get through challenges helps children understand that not everything runs smoothly and that they can learn from failures. This can be particularly important for work created with technologies. Because children often only see finished products that look perfect, they may feel like everything done with technologies is seamless and perfect. Reflecting on process helps children see that learning takes place through exploring, observing, thinking, trying, reflecting, and refining.

Here are some suggestions for using technologies to help children reflect on creating:

- › **Develop an explain-and-reflect routine:** Technologies such as tablets make it easy for children to take pictures of their creations and record their process. This can become a routine, in which children can choose to capture a painting, building, or project that they are proud of and explain their process. Start the routine by having a teacher support the reflection with questions, and move toward independence as children understand the process.
- › **Use a different kind of show-and-tell:** Show-and-tell is an opportunity for language and community building. It does not have to be restricted to objects brought from home. Take pictures of a child's creations, then project the image so the child can explain and answer questions from their peers about their creative process.
- › **Share child examples:** Writers often use mentor texts to inspire their work. To apply this with young children, take pictures or videos of play to share with the class. Point out the problem solving, collaborating, or creative thinking that classmates are doing in play and encourage other children to think about how they might use the same skills in their play.



Technologies can support traditional play activities by allowing children to record and reflect on the work done in play.