Young Children and Computers
Storytelling and Learning in a Digital Age

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Young children are surrounded by technology at home, in their community, and increasingly, in early childhood education programs. Preschoolers use computers to create art, make music, tell and record stories, hear their stories read back to them, and play educational games that can connect with off-screen learning and play. Careful planning of computer use lets children explore these new opportunities.

A new way to write a name

Kumar sits at the computer using the pencil tool in a software program. He creates a digital drawing of a storm, a current topic of study. When he is done, Kumar dictates a story to his teacher, Maria, to go along with the drawing. Maria types Kumar's words. Kumar and Maria then look together through a set of printed name cards stored in a small basket at the computer. He finds the one that says *Kumar*, announcing, "Here it is." Then he chooses a color from the software program's color palette, directing the on-screen pencil tool with the computer mouse. Kumar carefully draws the first letter of his name on his digital artwork. He looks at the *K* on the name card. Not happy with the way his *K* looks, Kumar uses the undo button and tries again. This time he likes the result. Maria is thrilled. This is the first time she has seen Kumar interested in writing his name despite frequent invitations. Kumar begins to practice his name-writing in other areas, like the writing center. Soon he is writing his name fluently.

Children such as Kumar can build a variety of skills while exploring the functions of a classroom computer. Kumar's teacher thoughtfully considers the range of computer activities available to the children in her class. She considers children's interests, developmental stages, and abilities when planning appropriate computer activity options for every child.

In the following vignette, Carly, a more experienced computer user, tells a digital story.

Telling a story with the computer

Carly creates a digital "scribble" with many lines and bright colors. Her teacher, Debbie, says, "Would you like to tell me about your picture?" Carly answers, "This is a picture of Mommy and Daddy going to the hotel." To better understand Carly's story idea, Debbie asks, "Can you tell me more about what happened? How did they get to the hotel?" She uses the software's audio recording button to record Carly's response: "They're going in a big truck that works there, and they are going to take a bus. And then they are going to go back home and get their medicine and feel better."

Debbie works closely with the children's families, so she realizes that in Carly's story, the hotel is a hospital and the truck is an ambulance. Carly is describing an experience from a year ago that is still important to her. Once finished, Carly can look at her digital drawing and listen to and revisit her recorded story on the computer. Debbie prints two copies of the story. With Carly's permission, she reads the story aloud at circle time then posts it on the wall, where children's work is displayed. Carly takes home the other copy to share with her family. Carly is excited that her story is recognized and shared with her family and friends. She would like to create other stories, and may inspire other children to share their stories.

As children learn to use the computer as a tool for storytelling, their teachers can encourage them to combine use of this tool with other means of expression. They can help children make connections between computer activities and other learning centers.

Connecting computer use with other learning centers

Milos and Philip are taking turns creating a "friend" figure using an educational software program. Their teacher, Ana, knows that Milos is new to computer use. She stands nearby, ready to provide support as he learns to move the mouse and clicks to select a body part on the figure. He chooses the feet and decides to make them pointed *and* green. *Using headphones, the boys listen as the descriptive words Milos selects are read aloud. They point to changes Milos is making to the figure and discuss what is happening. When Milos decides his "friend" is finished, Ana helps him print it. Then it is Philip's turn. When he is finished, the boys each cut out their paper "friends," attach them to cardboard tubes, and bring them to the dramatic play area to use as play figures.*

When first introducing computers to young children, it is best to adopt a "less is more" approach. By starting with only a few programs and activities, teachers and children can become familiar with using them. Teachers can focus on how to use programs in intentional ways to provide the appropriate level of challenge for every learner, and provide support as needed to ensure success. Often preschool teachers have questions about including computers in their classrooms and using them as effective learning tools. Here are several common questions and the practices we have found useful.

How and where should I set up the computer center?

- Consider traffic flow patterns, active versus quiet areas, and other logistics when deciding where to locate the center.

- Place the computer strategically to avoid glare on the screen.

- Include child-size, adjustable furniture (table and chairs), space for two friends (a "doer" and a "viewer"), and headphones to reduce distractions for users and other children.

- Provide reference items such as a picture dictionary, name cards, and an alphabet chart with uppercase and lowercase letters.

- Post a turn-taking sign-up sheet with an attached pencil or marker.

- Designate child-accessible areas to display children's work, such as a low bulletin board to showcase work made using computer technology.

How do I introduce the computer to the children?

- Find out what the children already know about computers and how they work. Ask them, "What do you want to learn to do on the computer?" Note and address their interests.

- Look at and name the parts of a computer, and discuss how it works, with one child or a small group.

- Involve children in developing rules and guidelines for using the computer and printer. Post a list of the rules and guidelines as a reminder.

What strategies are appropriate for teaching children about computers?

- Familiarize yourself with the computer *and* with activities in children's software programs before assisting children.

- Introduce and demonstrate aspects of computer use to the whole group. Follow up with support for individuals, as needed. Help children learn basic computer skills, such as how to control the mouse.

- Let children freely explore new software programs (after you have reviewed them).

- Help children become familiar with a particular software activity, like the paint tool options in a drawing program for creating a digital painting and story. Explain the activity during a morning meeting, so children know how to select, do, and exit the activity. Show the computer screen or a printed image of the activity.

- Integrate computer activities with the curriculum to complement educational goals.

- Observe how children use the computer to know when to encourage them to move on to another activity and when to extend time for teachable moments.

- Plan times to share children's work. Read and discuss class books and stories created on the computer with the group.

Ways to share digital stories

Having children's stories available and shared in a variety of formats can have a positive impact on children's concept of themselves as authors and artists. As the stories receive attention from other children, teachers, and families, children's enthusiasm and skills will grow—simple one-line explanations will evolve into more descriptive stories. Hearing other children's stories can also provide a window into understanding the thoughts and feelings of others. Digital stories can be:

- easily printed full size or smaller (to save on ink costs)

- displayed on the wall

- turned into books (in document binders, or other binding systems)

- shared with families

- used to create class slideshows and/or digital books that can be stored in a format that children can open themselves and watch again and again.

- used as scripts for story acting.

Note: Effective teaching involves modeling conventional oral and written language for children. When creating class publications for review by children and families, be sure to use correct spelling and grammar, without changing the content of the children's stories.

How can I be sure all children are comfortable using the computer?

- Be sensitive to children who lack experience or are reluctant to use the computer. Provide plenty of support and time to practice, explore, and have fun using the computer. With focused assistance, children can become more comfortable.

- Assess a child's ability using a technology skills checklist, such as the one at www.ccids.umaine.edu/ec/techintegration/handouts/TechSkillsChecklist.pdf.

- Adjust the computer volume, screen brightness, mouse sensitivity, and font size and type to suit the needs of individual children. Children can learn to make these adjustments.

- Offer headphones, touch screens, and other adaptive equipment to help all children access computer activities.

- Encourage tech-savvy children to become computer peer mentors. Model language and techniques so the mentors can build self-esteem and new relationships.

- Consider finding extra hands to help. Classroom volunteers might be parents, foster grandparents, other family members, a college student intern, or a teen doing a community service project.

- Study the classroom schedule to identify when extra hands might be available, and take advantage of opportunities—such as days or times with lower enrollment—to ensure all children have a turn and the support needed to learn to use the computer successfully.

How can computer use support dual language learners?

- Enlist families, staff, and other volunteers to record songs, stories, and frequently used words in English and children's home languages. Children can record stories in their home languages for later translation.

- Match text and spoken words with images to help children understand what they are listening to. Invite children to listen to favorite stories again and again to help build language and conceptual skills.

- Pronounce words slowly, clearly, and with expression when recording audio for digital versions of books.

- Make digital versions of children's stories and ideas available as slideshows or movie files for children to view.

How can computers support family involvement?

- Talk with families about appropriate use of computers with children. During a family night, introduce the programs you use and explain how they support learning.

- Inform families who do not have computers at home about local places to use them, such as the public library or a community center.

- Help children publish their stories/work and share classroom news and plans on a class Web site or blog. Family members near and far can review and find out more about children's learning. Their comments or replies can also extend and enrich children's learning.

- Explore free online resources, such as those offered by the NAEYC Technology and Young Children Interest Forum (www.techandyoungchildren.org)

- Keep a printed copy of software program guides near the computer to use as a reference when questions arise. Also use the software programs' Help menus or video tutorials.

- Encourage children to show you when they discover something new about a software program or on a Web site.

- Learn more through technology workshops in your community (try the local library or adult education center), online tutorials, professional conferences, or a visit with a tech-savvy community member, such as a colleague or teenager.

Resources for learning more about computer use with young children

On Our Minds: Meaningful Technology Integration in Early Learning Environments, by Technology and Young Children Interest Forum members—www.naeyc.org/files/yc/file/200809/OnOurMinds.pdf

Introducing Technology to Young Children e-clip featuring Dr. Douglas Clements and Dr. Sudha Swaminathan—www.easternct.edu/cece/e-clips_Technology.htm

Technology and Young Children—Ages 3 through 8. NAEYC position statement—www.naeyc.org/files/naeyc/file/positions/PSTECH98.PDF

Technology and Young Children Interest Forum Diigo group—http://groups.diigo.com/group/ecetech/content/tag/digitalstorytelling

Technology and Young Children Interest Forum Web site, Technology with Children—www.techandyoungchildren.org/children.html

Technology Integration & Early Childhood Education—www.ccids.umaine.edu/ec/techintegration/default.htm

Telling Stories with Photo Essays: A Guide for Pre-K–5 Teachers, by Susan Conklin Thompson and Kayenta Williams. 2009. Thousand Oaks, CA: Corwin. www.corwin.com/booksProdDesc.nav?prodId=Book232537

Another motivational tool

Marco, who teaches English language learners, notes, "Giving children an opportunity to draw pictures or use stamps and animations delights them and gives them the chance to express themselves when they can't yet express themselves in English. While working with Nadja on the computer, Abdi, whom I had never heard speak, came over and asked, 'It my turn?' When I told him that he could have another turn tomorrow, since it was almost time to go home and he already had a turn, he said, 'but not very long.' Wow, talk about being motivated to speak! The computer is a powerful motivator for this child!"

SUPPORTING DUAL LANGUAGE LEARNERS

This article presents some great ways that educators can use computers to enhance learning for dual language learners. Creating a digital story in a child's home language, for example, can also be a great opportunity to involve bilingual parents or community volunteers. With a little training, volunteers can be prepared to engage in those excited home-language conversations that happen when a child discovers the magic she can make using a computer. As the adult helps the child learn, he is improving his own computer literacy at the same time. It's a win/win situation.