HIGHSCOPE

HIGHSCOPE'S JOURNAL FOR EARLY EDUCATORS **Spring 2018**

THE *Active* LEARNER

In Focus: Technology

Supplementing Children's Learning With Technology

Past, Present, and Future of Early Learning Tools

Digital Media: Supporting Family Engagement

Also inside:

Update: High-Quality Preschool in Seattle

Read-Alouds: Engaging Children Through Adult-Child Interaction

From the President

There are some things technology can't replace. A computer can't give a child a hug; an iPhone is no substitute for a walk in the woods or a fort built with a friend.

But there's so much that we *can* do with technology to supplement our children's — and our own — learning about the world. To be sure, early childhood educators, whether they choose to be or not, are at the forefront of the debate about the perceived benefits and ills of children's technology use in the classroom. At one extreme are those who see the abundance of new technologies available to children as an educational panacea; at the other are those who insist that these technologies are inherently inappropriate for the classroom.

Probably the most important takeaway from the avalanche of scholarly literature on the subject is that our conclusions about how children learn best haven't changed at all: We still know that active learning is what works. So whether a child is playing dress-up or painting or using an iPad, teachers and parents can apply the same developmentally appropriate practices they use every day to guide active learning. In the end, it's the content and quality of the child's learning, not the platform, that matters most.

Certainly, there is little to be gained — and likely much harm that can be done — by using technology for technology's sake. Technology, like any tool, is a means to an end. To the extent that it's useful and offers an improvement, we should embrace technology in the classroom. The articles in this issue of *The Active Learner* can attest to the many wonderful ways that teachers are using technology to inspire children in their active learning and attainment of educational goals. You'll also find in the pages that follow a number of recommendations for age-appropriate technology use, and suggestions for how teachers can model the beneficial use of technology not only in the classroom, but through creative use of digital tools in their communication with families.

As educators and parents, we need to work to ensure that the benefits conferred by technology are widely available, in both the home and classroom. It's no secret that, just as with exposure to print media and language, there exists a technology accessibility gap between affluent and low-income families. Leadership in the early childhood field can go a long way toward ensuring equitable access to age-appropriate technology and making the digital tools so critical to success in school and life available to *all* children.

Cheryl Polk, PhD
President

THE *Active* LEARNER

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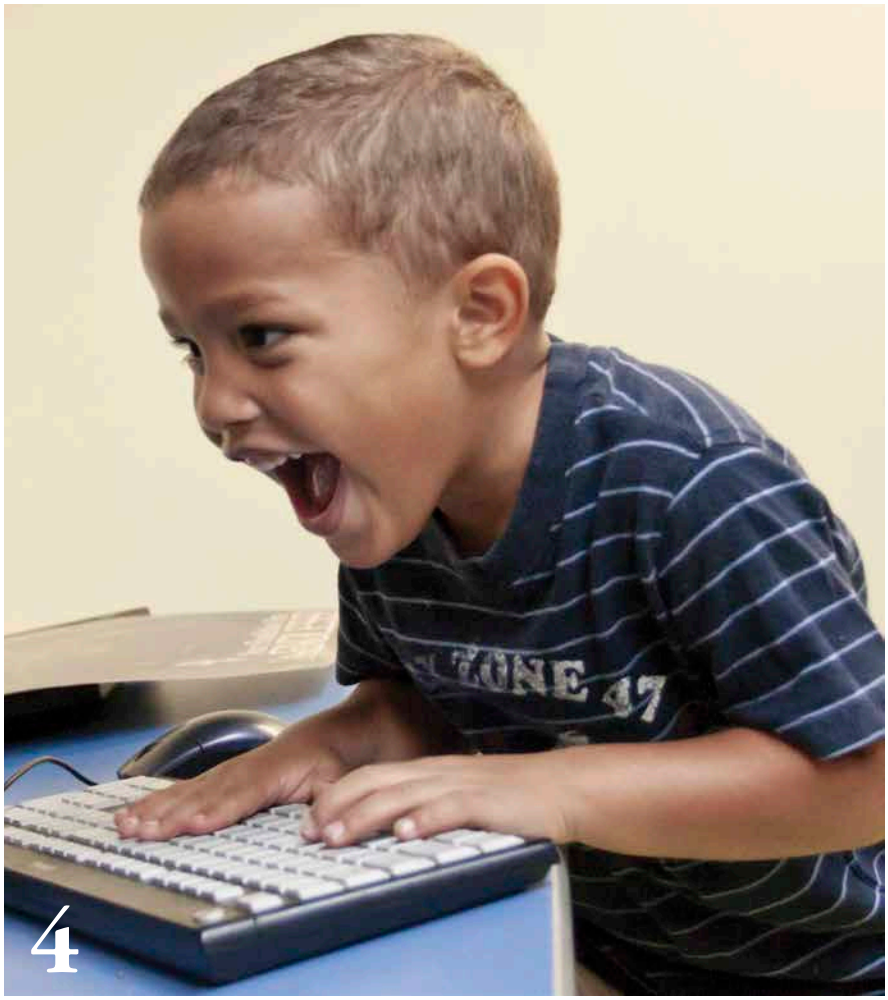


In This Issue Spring 2018

As Easy as E-C-E

Retaining the "Early Childhood Essentials" With Technology in Early Childhood Education

BY KATIE PACIGA, JENNIFER GARRETTE LISY, AND MARY QUEST

It has been a little more than five years since the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center (FRC) for Early Learning and Children's Media at Saint Vincent College put forward a joint position statement titled *Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth Through Age 8* (2012). In those five short years, the field of early childhood education has witnessed an overwhelming curiosity, some clear conclusions, and some warranted caution from early childhood practitioners and the research and policy initiatives surrounding developmentally appropriate use of technology.

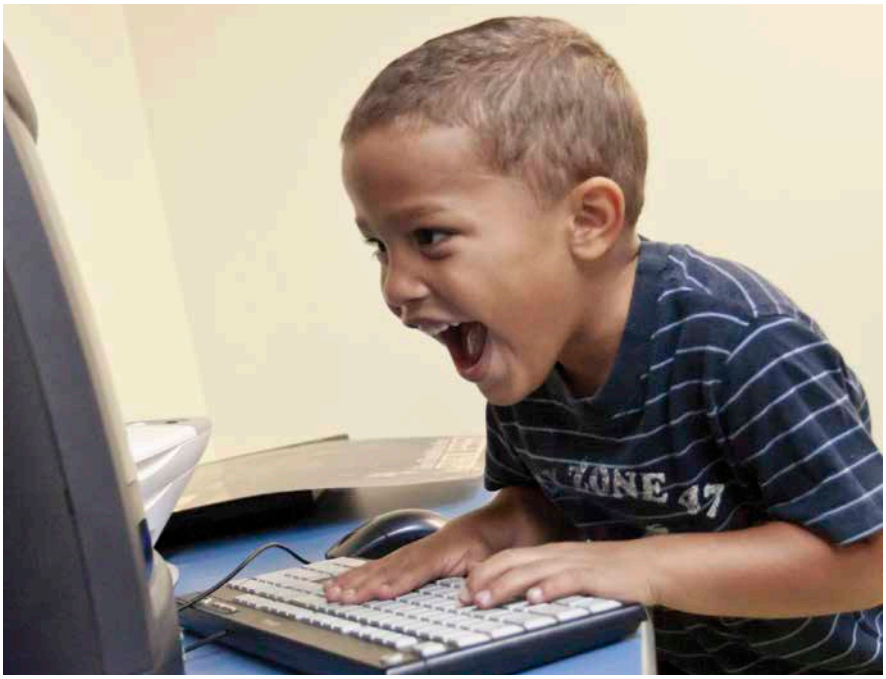
In those five years, there have been no fewer than 12 major policy pieces or position statements around the topic (see Donohue & Schomburg [2017] for a fairly complete list), including one from HighScope (2015). We see growing consensus from these sources around what matters most when it comes to technology and interactive media in early childhood. What matters consistently includes early childhood essentials such as solitary and shared experiences; relationships; creativity, curiosity, joy, delight, and wonder; inquiry, exploration, surprise, and discovery; unstructured imaginative play; hands-on learning and loose parts; outdoor play and nature; and sustained attention and deep engagement.

In this piece, we will frame technology as one cultural tool that might be utilized while engaging in the work of early childhood, suggesting that technology can be incredibly useful for some children, in some contexts, when high-quality content is utilized as a *supplement* for hands-on learning. We also recognize the need for children to utilize technology as a tool, as measured in HighScope's *COR Advantage Scoring Guide* (2016), which asks teachers to document when children explore technology devices, explain in a simple way how to make a piece of technology work, explain how to use tools and technology in the tasks of daily living, and use technology to look up information they are interested in (p. 77). The good news is that research verifies that preschool children do actually use technology in the ways identified in COR Advantage, and that there are several additional key examples of technology as an effective tool for supporting children's learning.

In 2017, Paciga and Donohue published a review of the research and practice pieces in the early childhood literature in which technology or media were involved, providing a bird's-eye synthesis of nearly 600 published pieces of literature addressing this issue. The findings are telling. Some of the most consistent data we have on technology and early childhood documents its pervasiveness in young children's lives — nearly all children 0–8 years have access to a smartphone in their homes, and 42 percent of children in that same age group have their own tablets (Rideout, 2017).

While the documentation of this pervasiveness is more prominent in the research on home use, the data also offers a glimpse of technology adoption and use in early childhood centers. The majority of early childhood educators reported having access to computers, digital cameras, and tablets in their settings (Blackwell et al., 2015). Preschool teachers frequently use these technologies for documentation and assessment purposes, and more than half of the teachers participating in the survey in the Blackwell et al. study indicated they, at least sometimes, utilize the technology in a range of instructional contexts (i.e., whole group, small group, pairs, individual), suggesting that the early childhood essential of balancing solitary and shared experiences is there on the surface level, at least. Additional work by Blackwell (2015) with kindergarten students suggests that the highest learning impact (in this study, literacy learning) is associated with using technology (in this case, iPads) in pairs or small groups rather than individually, despite there being

Does technology help or harm the early childhood classroom? The debate continues, despite mounting research that supports the inclusion of technology in specified contexts.



The early years are critical for every child's cognitive and social development. Interactive technology has the potential to positively support whole-child development in specific contexts.

some evidence suggesting that personalized learning and solitary experiences can lead to positive academic gains (e.g., Hobbs, 2016; Lozano & Ponciano, 2016; Maddocks & Redmond, 2015).

LEVERAGING TECHNOLOGY FOR THE ESSENTIALS OF EARLY CHILDHOOD

The essentials of early childhood education highlight the importance of shared experience, unstructured imaginative play, deep engagement, and many other creative endeavors. What the research on early childhood technology use shows, however, is a trend toward consumption of media, rather than a focus on play and exploration. The Blackwell et al. (2015) study suggests that technologies are commonly utilized for creation activities and for book reading; however, Paciga and Donohue's analysis suggested that much of the literature focuses on the child's reading or viewing digital materials, rather than on creating, communicating, or collaborating. When technology is used for creation or collaboration, we see children playing with one another, exploring the technology as a tool to express meanings important to them, frequently expressing joy, and showing deep engagement, among other early childhood essentials.

In one study that examined the digital play and composing practices of kindergarten children when creating stories using a digital puppet application, many of the early childhood essentials were retained (Wohlwend, 2015). Wohlwend noted deep engagement and hands-on learning as children engaged in "coordinated storying, digital literacy learning, multimodal production, and play negotiation" (p. 155). Digital stories such as these become part of literacy "playshops" (Wohlwend, 2011) in which children can create stories on their own terms using child-friendly technologies and media narratives they know.

"Nearly all children 0–8 years have access to a smartphone in their homes, and 42 percent of children in that same age group have their own tablets."

In other research (e.g., Rowe, Miller, & Pacheco [2014]), children were invited to use touchscreen tablets to take classroom photos, draw pictures, record audio narration, and write/type text. The children also brought digital cameras home to take pictures of their families' favorite activities and then used these to compose ebooks at school. The researchers supported the children's ebook creation process with explanation, direct instruction, labeling, spelling support, affirmations, questions, invitations, choices, and responsiveness. When the ebooks were completed, the researchers re-read the child-authored ebooks with the child authors, and children could choose to read their peers' ebooks in the library center. Rowe and colleagues documented that bilingual preschool children utilized their heritage languages and English to compose dual language ebooks, and they documented significant growth in children's emergent writing skills in terms of spelling, message length, and message content. Here, we see the early childhood essentials of relationships. These were fostered between researcher and children and among children themselves, as classmates learned about peers' homes through the ebooks.

The research of Bers and colleagues (2014) exemplifies many of the early childhood essentials all in one curricular

> Technology can be incredibly useful for some children, in some contexts, when high-quality content is utilized as a supplement for hands-on learning.

Although positive academic gains can follow from solitary learning experiences, some research suggests that the technology's highest learning impact is achieved when it is used in pairs or small groups.

activity — robotics coding. Such curricula engaged young children in creativity, curiosity, joy, delight, and wonder; inquiry, exploration, surprise, discovery; unstructured imaginative play; hands-on learning; and sustained attention and deep engagement. In this research, Bers and colleagues found that kindergarten children successfully learned how to choose and sequence instructions for their robots after eight weeks with the curriculum, and that when children personally selected their own culminating projects, they exhibited improved scores on several measures of learning outcomes (in computer science).

As a final example, Edwards (2015) worked with early childhood educators to invite children's favorite popular media characters and technologies into their preschoolers' play-based learning experiences. Teachers observed, documented, and mapped students' interests with a web-mapping tool and then created plans for children's outdoor, craft, fine-motor, construction, pretend, and/or role-play activities based on those documented interests. Edwards and the teachers with whom she worked found that this process afforded children the opportunity to operate with a shared common knowledge and that this allowed children to create stronger social networks and expand their play repertoires.

While some technology and media applications in early childhood have benefits, one concern emanating from the Paciga and Donohue review is that the majority of the literature does not detail well the kinds of social interactions children have or the activities in which children are engaging when they are learning and playing with technology. In other words, a significant portion of the literature does not contain live observations, and so provides little detail about the social and emotional contexts in which children are utilizing technology and media. Most of the work Paciga and Donohue reviewed relies on caregiver or teacher reporting, rather than on direct observations of children really engaging in technology-mediated play or learning activities, and the majority of this research, like that of Rideout (2017) and Blackwell et al. (2015), is survey/census in nature. As such, it does not generally provide practitioners with a compass to help them determine what is effective, developmentally appropriate practice when it comes to technology and young children.

EMERGENT READERS AND TECHNOLOGY: EBOOKS, VIDEO CHAT, AND FAMILY ENGAGEMENT

When we look at the kinds of research that might help practitioners find their way through the proverbial weeds around this issue of technology with young children in preschool settings, we see some very clear indicators of developmentally appropriate and effective practice and a few indicators of practices at the other end — not developmentally appropriate or effective. The majority of the examples from the Paciga and Donohue (2017) review fall into the domains of language and literacy. The following is a summary of three fields of technology research that have documented effects on language and literacy development — ebooks, video chat, and, family engagement.

The research in the area of ebooks has provided convincing results that these media, when designed intentionally and used in developmentally appropriate ways, can affect a child's alphabet

learning, phonological awareness (Shamir, Korat, & Fellah, 2012), and print awareness (Moody, et al., 2014). In the most intentionally designed media, children may even learn some additional vocabulary through experiences with ebooks (Smeets & Bus, 2012). We also know that ebook media intentionally designed to facilitate supportive adult reading strategies may improve emergent literacy skills, especially for dual language learners (DLLs) and/or children who enter school lacking expected skills (Rvachew, et al., 2017). These supports for adult readers function similarly to the way a teacher's guide might help a teacher determine what is important to discuss about a particular book. Roskos and colleagues' (2016) research suggests that ebook reading in Head Start classrooms affords children more exposure to key vocabulary words and provides additional opportunities for children to experience reading materials and learn vocabulary.

Skype and other forms of video chat are a second type of technology used in early childhood that has a strong research base. This technology tool engages a child with a conversational partner who is at a distance. The research suggests that video chat supports both social and emotional connection, and simultaneously supports language development, because it maintains social contingency in communication between the speakers in conversation (Roseberry, Hirsh-Pasek, & Golinkoff, 2014). We find examples of video chat in early childhood contexts used to engage in conversations with experts (e.g., robotics developers or author/illustrators) and for guest readers (e.g., Ferreira, Dominguez, & Micheli, 2012; Morgan, 2013). Also, we find that studies indicate children with long-term illness can benefit from using this type of technology when utilized to bring them into classroom experiences virtually (e.g., Simeonsdotter Svensson, et al., 2014).

Family engagement is a third technology used in early childhood with a significant and convincing research base. Family engagement ranges from teachers and parents documenting and sharing children's work and play (e.g., Given, et al., 2016), to text message nudges (York & Loeb, 2014) and reminders (Mayer, et al., 2014) sent to caregivers, to soliciting digital materials for classroom activities (e.g., a family picture, or a picture of the weather at your house [Highfield, 2017]). The research here suggests that caregivers and parents experience social and emotional benefits (McCarthy, et al., 2015) in addition to the academic benefits in language, literacy, and mathematics, when digital tools are used to engage with families, especially in cases where caregivers and teachers are provided education in how to utilize the digital tools in meaningful ways.

IS TECHNOLOGY USEFUL OR IS TECHNOLOGY HARMFUL?

While some technology use by young children is promising, potential drawbacks also exist. For example, the devices used to share ebooks with children can get in the way of rich conversation and children's story comprehension (e.g., Parish-Morris et al., 2013). We also see documentation that children may require some guidance and structure in the ways they engage in e-reading experiences. When given a choice whether to engage in the "read to me" or "read and play" mode common in ebooks, research demonstrates the children often choose the latter, but that there are mixed results in terms of children's story comprehension from such choices. In addition to these concerns about ebooks, there are general concerns from sleep experts and occupational therapists about the impact of too much screen time and the timing of such experiences can have on sleep, physical development, and emotional development. And there is also concern about the ethics of young children going digital. These concerns specifically relate to children's private information being shared for profit.

We don't disagree with many of these concerns. They are very legitimate, but we also think it is imperative to acknowledge the research-supported usefulness of technology and to point out some observations made by Paciga and Donohue (2017), who critically examined the ways in which consumers come across the research emanating from these two camps of thinking on technology in early childhood ("technology is harmful" vs. "technology can be useful"). In general, early childhood professionals and caregivers can come across research in two ways: from (1) freely accessible sources (e.g., the popular press and media, or the works that do not go into academic journals), or (2) pay-to-access academic press (e.g., academic research journals or professional members-only magazines). Paciga and Donohue found a difference in the tone and focus of messaging presented in free versus pay-to-access articles. Free articles tended to be more cautious, identifying technology and media as harmful, while articles only available behind library paywalls focused more on the benefits of

Developmentally appropriate technology can be used for documenting children's learning experiences and exploring high-interest applications.

technology for the child and their learning from more specific content in more specified contexts. In other words, the kinds of literature that *does* provide practitioners with sufficient detail about the children, the context, and the content is not what is pushed out in the mainstream media, and the messages everyday practitioners do access via these channels emphasize the "technology is harmful" side of this debate.

EVALUATING THE "ESSENTIALS"

This nuance in how practitioners come to understand the debate on technology in early childhood, along with the lack of specificity around the evaluation of technology in such contexts, surely impacts how early childhood professionals perceive the benefits and drawbacks of such tools. It is a nuance that is likely influenced by two things — the media's portrayal of the research, discussed previously, and the administrative policy that drives instruction.

When we examined the various evaluation tools and early learning standards utilized in the early childhood field, we noted a variance in the extent to which these include technologies as an object of study or as tools for literacy. Our introduction

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Katie Paciga, PhD, is an associate professor of education at Columbia College Chicago. Katie's research interests focus on the developmentally appropriate use of digital tools for language and literacy learning in the early childhood years.

Jennifer Garrette Lisy, PhD, is an adjunct professor of education for Mount Vernon Nazarene University. Her research focuses on early childhood writing and technology.

Mary Quest is a senior instructor at Erikson Institute and is completing her PhD there. Mary's research interests include professional identity development and pathways to professionalization across early childhood settings.

Read All About It: Why Read-Alouds Matter

Getting the Most Out of Read-Alouds in the Early Childhood Classroom

INTERVIEW BY MARCELLA FECTEAU WEINER

By engaging children in a conversation about the book, interactive read-alouds support children as they think about the meaning of a story.

Everyone knows that reading is important for young children, and many people think that that's as simple as opening up a book and reading it to children. However, there's a big difference between reading a book *to* children and the interactive reading to a small group that a read-aloud entails.

We've asked three early childhood professionals — Stephanie M. Curenton, Rozlyn Grant, and Chris Maier — for their expertise on why read-alouds are important, what strategies they recommend to get the most out of a read-aloud, and what their favorite book for a read-aloud is.

WHY ARE READ-ALOUDS IMPORTANT?

Curenton: Read-alouds help children develop vocabulary knowledge, knowledge about print, knowledge of story structure and story comprehension, and knowledge of "literate language" that characterizes written text. Children best learn these skills when the read-aloud is interactive. Interactive read-alouds can be described as reading interactions in which children are fully engaged by asking and responding to questions. Teachers can engage children in *conversations about the book* at any point during the read-aloud — before, during, or after the reading. The goal of these conversations about the book is to get children to think not only about the text (and/or illustrations) but also about the meaning of the story. So read-alouds, if they are coupled with conversations, are an important venue for fostering comprehension skills. Like vocabulary and print concepts, comprehension skills are just as important for later reading success, especially when children are in the upper elementary school grades and they have moved beyond "learning to read" and are now into "reading to learn."

Grant: Reading aloud helps develop the mind and imagination while improving communication, both written and spoken.

Interactive read-alouds engage children in making predictions, sharing experiences, and exploring their own thoughts and the thoughts of others.

During read-aloud experiences, children develop a love for reading, understanding that books are powerful tools used to gain information, increase understanding, and provide enjoyment.

"As teachers talk, listen, and engage in conversations with small groups of children, they influence their attitudes and motivation to read for learning and enjoyment."

Interactive reading gives children the opportunity to become leaders in the reading experience by engaging them in making predictions, sharing their experiences, and explaining their thoughts while thinking creatively about what the author is trying to convey through the words written on a page. During interactive reading, children are exposed to new vocabulary, helping to build their word bank; they practice phonological awareness by reciting rhyming words; they point out familiar letters within a text, eventually helping them to connect letters and sounds; they begin to understand book-handling skills as they observe teachers modeling how to turn the pages of a book; and they practice comprehension by sharing interesting parts of a story and relating story events to experiences they've encountered in their personal lives. For example, while reading a book about a family going camping, a young girl was able to draw from her background knowledge of when her family went on a camping trip. She then became the "storyteller," sharing her experience of pitching a tent, fishing, building a campfire, and hiking in the woods.

Maier: One important goal of the read-aloud is to influence children's attitudes and motivation to read for learning and enjoyment. As teachers talk, listen, and engage in conversations with small groups of children, their interests and preferences can be incorporated to accomplish that goal. As a result of these

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Stephanie M. Curenton, PhD, is a tenured associate professor at Boston University where she is the director of the Ecology of School Readiness Lab. She studies the language and literacy development of culturally and linguistically diverse children.

Rozlyn M. Grant, MEd, has more than 20 years of experience in the early childhood field as a teacher, supervisor, coach, trainer, national speaker, and, most recently, director of curriculum and instruction. Rozlyn enjoys engaging with early childhood professionals across the country, sharing and gaining expertise.

Chris Maier, PhD, leads the Early Childhood Applied Practice Department at HighScope. She has worked in the field of education for 40 years, including as a HighScope Demonstration Preschool teacher, a HighScope Field Consultant, the director of the Oakland University Lowry Early Childhood Education Center, and an early childhood education consultant.

Active Learning and Technology: Active Technology?

BY ERIN BURNETT

Active technology. **Could this be a new buzzword in the early childhood classroom?**

When the word technology is mentioned, I immediately think of computers, iPads, and the latest gadgets, as do many others. When it comes to active learning, however, I think of children not in isolation or behind a screen, but as a community, using all the materials and tools in the classroom to build its knowledge of the world and how things work. What if we think of all the materials and tools in the classroom as the technology of active learning — therefore, active technology?

Okay, I am not totally sold on the new terminology either, but I am sold on the idea of looking at technology through the active learning lens.

"I used to worry that technology was taking over our children until I realized that it is so much more than computers, iPads, and all the other gadgets that must be "plugged in" or "charged."

The most basic definition of technology is anything that is created to solve a problem or fulfill a need. With this in mind, let's turn our attention to the tools and materials in the preschool or infant-toddler classroom and how teachers use this technology to support children's learning. Blocks, collections of animals or shapes, paper, staplers, glue, crayons, markers — and even the tables and chairs — were created to solve a problem or fulfill a need. Children engage with these materials every day, using them to explore, test theories, and draw conclusions.

Building blocks are a simple and valuable technology that children use to solve problems. Blocks are also one of the most valuable tools for the development of basic math and science concepts, as well as language, problem-solving skills, creativity, and even social skills. Intentional teachers know that building with blocks will develop foundational geometry, algebra, numeracy, and physics skills — but for children to get the most out of the block area, teachers must be present. Teachers acting as partners in play can take advantage of teachable moments by using math and science vocabulary such as *length, measurement, balance, span, estimation, gravity,* and *symmetry* and help the child make the connection between her actions and the concept. Children can be encouraged to develop a hypothesis about building a structure — allowing time to test their hypothesis, finding the flaws and the strengths. When teachers do not see this depth of play, I encourage them to bring blocks to small-group time, or small group to the block area, and pose a problem for the children to solve, such as "Who can build a tower strong enough that even a giant could not blow it down?"

It would be helpful to expand our definition of technology to include the tools children use to build their skills in any area of development: books for listening, reading, and retelling; blank paper, pencils, crayons, or markers used to express thoughts, feelings, and reactions to text or music — these are the building blocks, the technology, of literacy. Intentional teachers introduce many of these tools during small-group time and continue to challenge the children to use them in new and interesting ways. Children who are provided many opportunities to write for a purpose throughout the classroom are familiarizing themselves with the technology of literacy as they develop new skills. Supporting children as they make grocery lists or write family recipes, make get-well cards for a classmate, write notes to their parents that say "I love you" — these are all simple, relevant, and meaningful ways to promote writing and literacy while encouraging the use of tools and technology.

I used to worry that technology was taking over our children until I realized that it is so much more than computers, iPads, and all the other gadgets that must be "plugged in" or "charged." Technology is all around us, every day, old and new — it is part of what makes us human. Of course, we need to be conscious of it and plan to use it intentionally and to its fullest potential. Early education plays a broad and powerful role in equipping our children with the tools and knowledge they will need to create something from nothing, or to fulfill a need or solve a problem — in other words, to create new technology.

Erin Burnett is the Assistant Director of Curriculum & Instruction for Pre-K 4 SA (San Antonio, TX).

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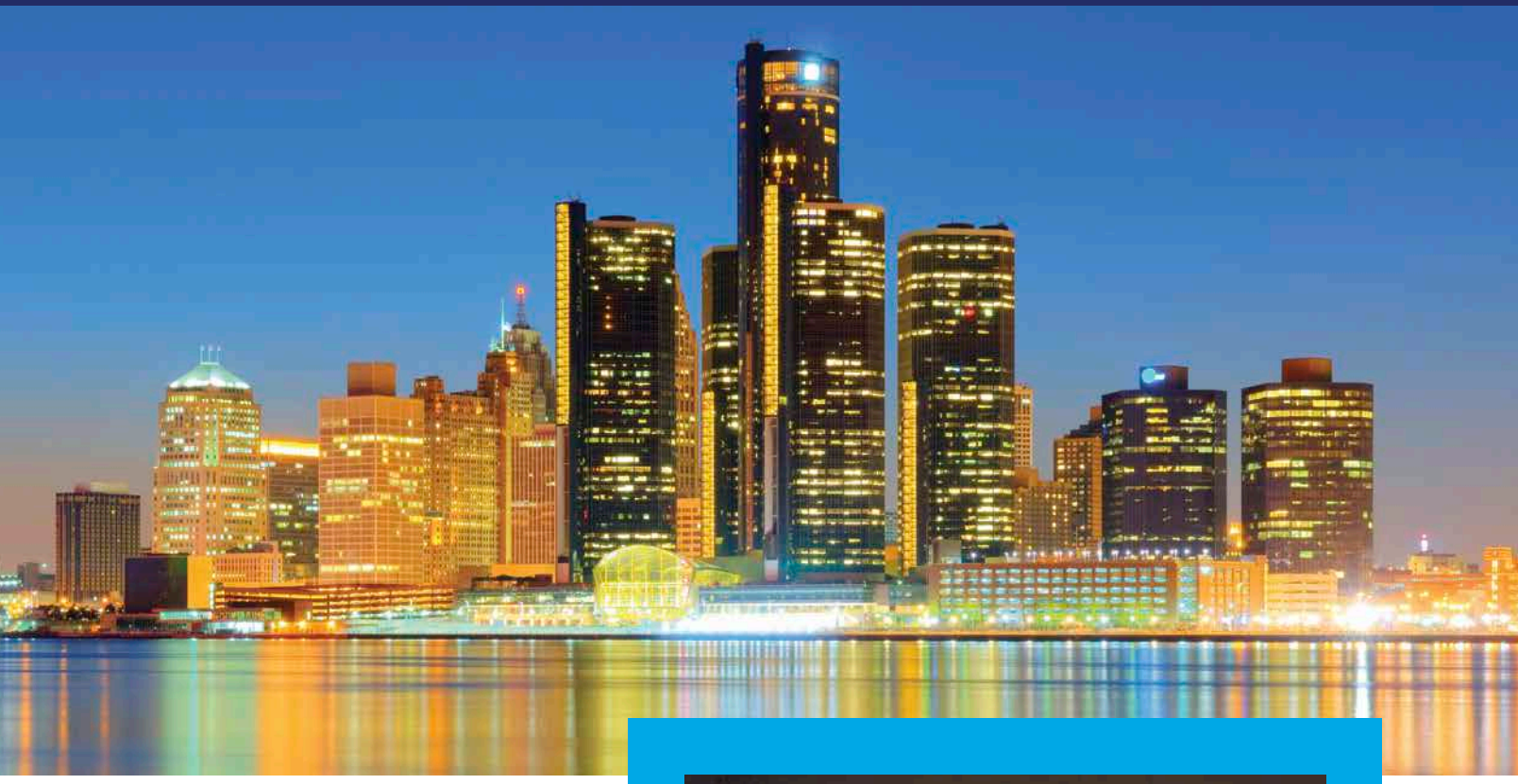

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Are We in the "Golden Age" Yet?

The Past, Present, and Future of Technology and Early Childhood Education

BY WARREN BUCKLEITNER

Time travel with me, back to 1983, to the beautiful Hutchinson House in Ypsilanti, Michigan. Microprocessor-based technologies have just started to disrupt the way things are done. The familiar rhythms of IBM Selectric typewriters are being silenced by WordPerfect, and the research department is enjoying the analytical powers of spreadsheets and email for the first time. But the influence of new microprocessor-driven technologies is not limited to the offices.

In HighScope's demonstration schools, the first conversations about what active learning would look like in the digital age are in full swing. We are seeing the first ads for commercial software products targeting children, and teachers are asking us for guidance. How do these new screen-based experiences influence things such as logical problem solving or social behavior? Could they replace or enhance traditional classroom materials?

Then, as now, there were more questions than answers, as personal computers and microprocessors spread to homes across America. So, with the blessing of David Weikart and the help of my mentor and colleague Charles Hohmann, we started a line of research.

Little did I know that it would shape my entire career.

The first use of technology in the HighScope Curriculum started about five years before I arrived. HighScope's TDC (Training and Demonstration Center) for early elementary-age children was already stocked with Commodore PET computers, and you could play Oregon Trail on a teletype terminal. In 1979, Bernard (Bernie) Banet wrote an article called "Computers and Early Learning" in which he described three scenarios for how technology might shape the future. In one of these scenarios, which he called the "Golden Age," he described how microprocessor-based technologies could meet every child at their level, revolutionizing how schools work. We all had a sense that this technology was powerful, and it would change everything.

From my point of view, there was no better place to be than at HighScope to explore this potential, because we had access to an ideal laboratory. Charles and I created a "Computer Area" with three Apple computers — enough so that software could be a free-choice item for any child. I began to survey the children's software market in a systematic way and write up my findings in an annual guide that eventually turned into my MA thesis, which HighScope Press published in 1985 as *A Survey of Early Childhood Software.* Charles and I started sharing our findings, helping to set up computer centers in other schools, and working with National Association for the Education of Young Children to create technology exploration rooms.

> **"While the technology has evolved, our curriculum and ideas about learning are still back in the 1980s."**

Today, we're on the other side of the future — wristwatch video phones and cars that can drive themselves. Many public schools routinely offer tablets with all-day batteries and clear touchscreens. But are we in Banet's Golden Age? Sadly, I don't think so. While the technology has evolved, our curriculum and ideas about learning are still back in the 1980s.

BANET'S GOLDEN AGE

Bernie Banet presciently envisioned an optimistic scenario — which he called the Golden Age — for the future use of technology in education.

"Home and school learning will be revolutionized by the many uses of computer systems," he said. "Teachers will become liberated from uncreative tasks such as repetitious lectures and recitations, correcting tests, grading, and checking workbook and homework assignments." Experiencing the power of interactive electronic systems, both teachers and students would come to see computers as indispensable to the learning process.

The author, surveying the latest technology at HighScope, circa 1984.

Banet described how technology could "advance the cause of progressive education in the Dewey and Piaget traditions, rather than remain the tools of those...who believe that the ideal learning environment has goals explicitly stated by the instructor and not by the student." In other words, computers would lead the way toward a new understanding of the role of public education, of the relationship between teacher and student, as they helped to redefine expectations oriented toward individualization and active learning. "The computer," predicted Banet, "will become an equalizer, in the sense that it will give previously disadvantaged youngsters access to a wide range of skills and information, plus the motivational elements." The immediate feedback and balance between the fun and challenges presented by computers would allow everyone to pursue lifelong learning from virtually anywhere. And the essential character of this new mode of learning would render the schools of tomorrow almost unrecognizable from their historical counterparts. "One version of the Golden Age scenario sees schools as institutions so substantially altered in their function by new technologies that they are ultimately transformed into learning centers operating more like libraries or museums than classrooms," said Banet. "All students will have access to tools and learning aides of all kinds, much as they do in the open-classroom environments of today."

IS IT THE GOLDEN AGE? IF NOT, WHY NOT?

Much innovation has occurred since Banet made his predictions nearly 40 years ago. We're making progress — but we're still not in the Golden Age. Today, too many schools are using powerful technology to deliver unpowerful curriculum. We have amazing tools, but we're using them to support behavior benchmarks.

What needs to be done? Active learning is alive in the app store, but it's been diluted by too many other types of media. Too many teachers exert too little control over the screen content they choose and use, unlike how they would pick materials for any other area of the classroom.

But we're not so far off track that we can't change course. Here are three guidelines to keep in mind as we continue in our quest for Banet's Golden Age:

- Frame the issue of technology and children in the context of developmentally appropriate practice. Start by reading the 2012 NAEYC/Fred Rogers position statement.
- Understand that an app is merely another type of material. Each has specific strengths and weaknesses. Teachers and librarians must be empowered to freely install or uninstall apps, to match the experience with the child.
- Continue studying new technologies with well-designed studies and solid research questions, just as my friend and mentor David Weikart did.

I recall David Weikart telling me a story in the early 1980s about the Pilgrims and Thanksgiving Dinner. "We live in a time when you can go into a Denny's restaurant and get a complete Thanksgiving dinner for $4.99 — the equivalent of an hour of labor," he said. In 1630, the Pilgrims labored for months to prepare a meal that essentially had the same items. So we've made huge gains, but are we better off? Today, we are both blessed and cursed by a cornucopia of cheap, powerful technology. We have everything we need to reach every child. We most certainly know how to create a curriculum so that we can meet every child. So the tools have changed — but our mission remains the same.

Warren Buckleitner is an assistant professor at The College of New Jersey and is a Fred Rogers Senior Fellow. He is editor of Children's Technology Review, a database that is an offshoot of the work he started as a graduate student at HighScope Educational Research Foundation in 1983.

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Eight Noteworthy ECE Apps

The Hallmarks of Quality really haven't changed much since 1983. A good app should be high in child control, mix educational and entertainment value, have state-of-the-art features, and be worth the money. Here are eight that you should know about:

BUSY SHAPES

For ages 2–5
$2.99 on iPad
(Edoki Academy, www.edokiacademy.com)

Why we like it: You can't fit a round peg in a square hole. But you can have a fun time with this smart, responsive, automatically adaptive set of classification puzzles. We especially liked the multitouch features that let more than one child work collaboratively on the same puzzle.

Need to know: This is a great one-trick pony starter app that will work with children as young as two. It's especially recommended for ECE classroom use.

Video link: http://youtu.be/msL9y_9t_j4

Children's Technology Review:
http://reviews.childrenstech.com/ctr/review.php?id=19714&target=first-result-default

CHOMP

For ages 3–12
$2.99 on iPad, iPhone, Android
(Christoph Niemann, Fox and Sheep, www.foxandsheep.com)

Why we like it: From the brain of *New York Times* illustrator Christoph Niemann (see also the app Petting Zoo) comes a powerful, easy-to-use video creativity experience that combines hand-drawn animations with real-time video.

Need to know: Projects can be exported as short videos to your photo library.

Video link: https://youtu.be/3kmiekEjlco

Children's Technology Review:
http://reviews.childrenstech.com/ctr/fullreview.php?id=19032

CRAZY GEARS

For ages 5–8
$1.99 on iPad, iPhone, iPod Touch
(Edoki Academy, www.edokiacademy.com)

Why we like it: This leveled problem-solving physics game lets children freely manipulate gears, chains, rods, pulleys, and more to pull themselves to the next level.

Need to know: There's plenty of opportunities for making mistakes (also known as debugging) to see how different mechanisms affect one another when constructing a machine.

Video link: https://youtu.be/UfU_5ZHgqbA

Children's Technology Review:
http://reviews.childrenstech.com/ctr/fullreview.php?id=18231

DRAGONBOX BIG NUMBERS

For ages 5–10
$7.99 on iPad, iPhone, Android
(WeWantToKnow AS, http://wewanttoknow.com/)

Why we like it: Children can informally tinker with number relationships as they freely explore in a lush jungle world full of "nooms" (unit block creatures) and things to collect. The more items you collect, combine, and count, the more parts of your world you unlock. This is a wonderful way for children to informally discover the amazing relationships that reside in numbers.

Need to know: DragonBox Big Numbers was made in Norway and is based on the same pedagogical principles as the other apps in the DragonBox series. Designed for graduates of DragonBox Numbers (CTR Dec 15).

Video link: https://youtu.be/bfqwJqqR_rI

Children's Technology Review:
http://reviews.childrenstech.com/ctr/fullreview.php?id=19557

LOOPIMAL

For ages 2–up
$2.99 on iPad
(Lucas Zanotto, www.lucaszanotto.com/)

Why we like it: Like Garage Band for toddlers, this app turns your iPad into a looping musical toy — in the key of C — with six moving animals. You discover that you can "program" the animal motions by dragging and dropping sounds onto one of the eight spots on a sound stage.

Need to know: This app was made in Finland from the makers of Drawnimal. All of the tunes are in the key of C major, which makes it easy to use this app as a rhythm section, for playing along (the white keys on the piano). The sound design and music were created by Ulrich Troyer.

Video link: http://youtu.be/btLfLoWhYks

Children's Technology Review:
http://reviews.childrenstech.com/ctr/fullreview.php?id=18637

MY VERY HUNGRY CATERPILLAR

For ages 2–7
$3.99 on iPad, Android, iPhone
(StoryToys, www.storytoys.com)

Why we like it: Responsive and well designed, this simple virtual life simulation features Eric Carle's *The Very Hungry Caterpillar*. You start with an egg, pick fruit from the trees, and grow a garden. Day by day, My Very Hungry Caterpillar eats more and grows, until he changes into a butterfly. Then, a new egg is laid and the adventure begins again.

Need to know: There is also an AR (augmented reality) edition of this app that lets you play with your caterpillar with your device's camera.

Children's Technology Review:
http://reviews.childrenstech.com/ctr/fullreview.php?id=18202

SAGO MINI SERIES

For ages 2–5
$2.99 each
(Sago Mini, www.sagomini.com)

Why we like it: It's a finger-driven, side-scrolling, open-ended, explore-and-tap experience full of playful theme items. High in child control, this no-fail experience lets you drag, stack, and interact with anything you can see. The learning is light and informal, and there's no print or spoken language. In the farm-themed playset, the teeter-totter works like a balance, and there's a tractor that you can load with fruit and drive around.

Need to know: Everything is movable and stackable.

Video link: https://youtu.be/b7dxDKbuOpU

Children's Technology Review:
http://reviews.childrenstech.com/ctr/fullreview.php?id=19751

TOCA HAIR SALON ME

For ages 3–up
$2.99 on iPad, iPhone, Android
(Toca Boca, http://tocaboca.com/)

Why we like it: The third edition of Toca Hair Salon lets you import your own photos and morph them onto the animated faces of your haircut customers, complete with blinks, yawns, and stretches. The effect is rather startling.

Need to know: You'll need to grant the app permission to use the camera and to store photos.

Video link: http://youtu.be/7Bg0LxyjI8o

Children's Technology Review:
http://reviews.childrenstech.com/ctr/fullreview.php?id=17390

Held in December, HighScope México's 2017 conference gathered educators and policymakers to promote active learning and share successes in the early childhood field.

Institute News

HighScope México's "interactive conference" is the first of its kind — but definitely not the last!

BY ADAM ROBSON

SPOTLIGHT ON MÉXICO

HighScope México's inaugural International Conference was attended by more than 250 teachers, parents, and school directors December 7–9 in Puebla, México. Attendees participated in a variety of main events, including a conference on the professionalization of early education services in México conducted by Sylvia Schmelkes (a National Educational Assessment Institute's Counseling Board Member) and a special presentation by internationally renowned orchestra conductor Alondra de la Parra on the importance of leadership and teamwork.

The conference was organized by the Instituto HighScope México and offered 18 workshops on a variety of topics related to early childhood education and the HighScope Curriculum. Nearly a year of planning allowed the event's organizers to overcome the *force majeure* that threatened lives and property throughout Puebla, in addition to the cancellation of the conference. "The conference was critically hampered by the series of earthquakes that devastated México in September. But with the support of local government officials and educators from across México, the event went on as scheduled," said Graciela Borja, one of the event's organizers. "The Instituto HighScope México is deeply grateful to [Puebla Secretary of Education] Patricia Vázquez and [Puebla Secretary of Culture] Moisés Rosas for their unfailing support."

"This conference was just the beginning. All teachers should get acquainted with the HighScope Curriculum — and even better, get to implement it."

Participants joining in the open dialogue sessions presented by HighScope USA President Cheryl Polk and Senior Early Childhood Specialist Shannon Lockhart were greeted by a performance from *Banda Sinfónica del Centro de Capacitación de Bandas Musicales*, an orchestra comprising young musicians from rural areas throughout Puebla and Oaxaca. "One thing we wanted to stress during the whole conference was the information, tools, and other elements that HighScope research and practice have contributed to improved early education practices, specifically in poor and rural communities," said Borja.

As a result of the enthusiasm generated at the conference, 14 schools registered for the newly formed *Red de Escuelas de HighScope* (HighScope Schools Network of México). Registered members of the network are entitled to receive information, take courses, and graduate to higher levels of HighScope implementation. "The *Red de Escuelas* is an engaged group of educational institutions that sympathizes with the HighScope Curriculum and prioritizes young children's development through active learning," said Elsa Portilla, a promoter of the event. "This network grows and fortifies itself through continuous exchanges and by training."

The event also emphasized the many educational practices pioneered by HighScope that are prominent in the new educational model launched by the Mexican government. "México's New Educational Model [SEP] has in common with the HighScope Curriculum its humanistic vision oriented toward young children's development and learning," said event organizer and President of Instituto HighScope México, Pilar Farrés. "The SEP presents a student's final profile based on ten features that include all of HighScope's key developmental indicators."

HighScope trainer and institute associate Mónica Iñesta was enthusiastic about the potential for expanding HighScope throughout México. "All teachers should get acquainted with the HighScope Curriculum — and even better, get to implement it," she said. "This conference was just the beginning. We are planning on duplicating it in other locations in México."

Adam Robson is the managing editor of Publications at HighScope.

Technology in Preschool: One Teacher's Journey

BY BRAD WILLCOCKS

Purchasing developmentally appropriate technology is one thing. Introducing it to a class of preschoolers, however, requires a little plan-do-review.

At the Child and Family Studies Lab at Brigham Young University, we wanted to introduce developmentally appropriate technology to our preschoolers. Our children had plenty of exposure to smartphones and tablets at home, and we thought they should explore other digital tools that promoted active learning. After researching our options and obtaining funding, we purchased Ozobots, Bee-Bots, Spheros, QR codes, green screens, and 3D pens. The Lab teachers were excited about these new materials but also a bit trepid because we don't necessarily consider ourselves technophiles.

We decided that each Lab teacher would choose one tool to learn, master, and then teach to the team. I selected the Ozobot, a small robot that children can program and easily manipulate. An Ozobot moves by "reading" different-colored marker lines, which are drawn by the thick side of a marker. You can also add codes to the Ozobot to make it spin and move at different speeds. I felt that Ozobots would give my children an experiential introduction to computer programming.

My initial excitement about Ozobots dampened when I realized that I actually needed to learn how to use them. Armed with basic information from YouTube clips, I sat down and experimented. Although I had great success working with the Ozobot, I realized I'd run into all sorts of problems in teaching my four-year-olds how to use one. First, the children had to understand what an Ozobot was and how it worked. Second, they had to be able to draw thick, detectable lines for the Ozobot's sensor to read. (If you've seen a preschooler use a marker, you'll understand why I was doubtful.) I, however, decided to keep a positive attitude and moved forward with my plan to introduce Ozobots. My objective was for my preschoolers to be successful in programming the Ozobots. I quickly learned that the preschoolers wanted something different — all they really wanted to do was play with the Ozobots.

I realized I needed to incorporate a systematic, guided approach to teaching the children how to use the Ozobot if they were going to do more than simply play with it. First, the children learned about the Ozobot: how to turn it on and make it move. Then we moved on to a basic understanding of its parts. And then those lines! The preschoolers had to draw a line that the Ozobot could read *before* they could do anything else. It took a lot of practice to master holding a marker the right way and drawing a thick line. Eventually, the children figured out how to draw a readable line

> As they become more successful, their confidence in computer programming grows, as well as their relationships with one another.

for the Ozobot's sensor to scan. Finally, they learned how to write a code with the markers to program the Ozobot to move in different ways. Learning, experimenting, and then trying again and again was a wonderful opportunity for the children (and teacher) to learn perseverance.

The experience left the children wanting more, and Ozobots are now part of my weekly materials. We use them at a "coding center" during center time, where children can take what they learned and then work on their coding skills. As they become more successful, their confidence in computer programming grows, as well as their relationships with one another, as it is a team effort to figure out more complex coding paths for their Ozobots.

Brad Willcocks *is the head teacher at the Child and Family Studies Lab at Brigham Young University in Provo, Utah.*

Children in Brad Willcocks' classroom learn to program Ozobots by drawing lines for a miniature robot's sensor to scan.

Where to Find the Funding for Digital Tools

Digital tools developed specifically for young learners are not inexpensive. Some programs have the resources to provide these tools; most, however, don't have these resources but can still access other funding options. Here are some ideas:

- See if your program has set aside funds for technology or works with other agencies (e.g., United Way) to increase access to technology items.
- Look to your local community. Are there local businesses and organizations that might support your program's endeavor to increase children's digital literacy? What connections and/or skills do your families have to help your program add digital tools to the classroom?
- Use the web! The internet provides a wealth of funding possibilities. Search online for "preschool technology grants" or "early childhood technology funding" to find grant opportunities.

Before you decide to purchase a digital tool (or complete a grant to receive funding for one), make sure that it is developmentally appropriate for your children. Organizations such as the National Association for the Education of Young Children (NAEYC), the Fred Rogers Center, and the US Department of Education all offer resources that can help you determine if the tool you are looking into is appropriate for early learners.

Finally, if your program decides to invest in a digital tool, make sure that you've looked into training for your teachers on how to best use it, as well as technical support services if you need help troubleshooting and/or maintaining the tool.

Digital Tools to Support Family Engagement

Using Digital Tools to Empower Parents and Overcome the "Digital Divide"

JENNY RADESKY, MD

A strong home-school connection can provide parents and teachers with a means to address the digital inequities that have arisen from an abundance of consumer-oriented digital technology.

It is understandable that parents and teachers feel overwhelmed with the rapid evolution of modern technology. It has been just 11 years since the iPhone was released and 7 years since tablet computers landed in the laps of our children at home and in school, yet mobile device ownership by families with young children is now nearly universal. Even newer technologies, such as virtual "personal" assistants (e.g., Apple's Siri and Alexa) and internet-connected toys (e.g., Mattel's "talking" Hello Barbie doll and other social robots), are interacting with young children in an increasing number of homes. Parents report feeling that they cannot keep up with the flood of new technologies — they want their children to reap the benefits of digital tools while avoiding problematic use that interferes with healthy sleep, activity, relationships, and learning opportunities. Teachers in early education settings also report feeling concerned about the effects of excessive or violent media exposure at home on their students' behavior, sleep patterns, and learning; however, multiple studies have shown that early educators often feel they do not have the knowledge or technical support to influence students' media practices, either at home or at school.

The American Academy of Pediatrics policy recommendations (AAP, 2016) on early childhood digital media use and the National Association for the Education of Young Children (NAEYC)/Fred Rogers Center (FRC) guidelines about early educational technology (NAEYC & FRC, 2012) share a major emphasis on the importance of teaching children how to use technology as a tool — not to simply "consume" information, but to use technology to create, explore, and connect with others (and to leave space in their lives for other healthful activities). NAEYC, for example, states that "technology and media should not replace activities such as creative play, real-life exploration, physical activity, outdoor experiences, conversation, and social interactions that are important for children's development" (NAEYC & FRC, 2012). Similarly, the

Early childhood classrooms serve as a venue to encourage healthy media use.

AAP proposes that families maintain "a healthy media diet" and provides an interactive, online tool so families can create a personalized family media use plan (AAP, 2016). Early education centers may serve as an ideal venue in support of these policy goals, engaging families in the use of digital technologies as an effective, illustrative vehicle for parent-teacher communication. Likewise, the topic of children's technology use can act as a shared area of strong interest around which teachers can engage and empower parents.

THE CHANGING DIGITAL DIVIDE

The "digital divide" is a term introduced in the 1990s to describe income-related disparities in access to the internet or hardware, such as computers. Recent surveys of American families show that, although lower-income families now have a rising level of access to computers, internet, and mobile devices, the quality of media consumed remains very uneven between families from different backgrounds. For example, compared to children from middle- and upper-income families, young children in lower-income families watch more hours of television or streaming video daily, are more likely to use media for entertainment (rather than for creative or learning purposes), and are more likely to download free apps (which are filled with distracting advertisements).

Thus, the "digital divide" presents a new challenge to make the increased access to technology meaningful and enriching, rather than allowing it to contribute to further disparities in educational success and social-emotional development.

"The topic of children's technology use can act as a shared area of strong interest around which teachers can engage and empower parents."

In addition to this new digital divide in quality media content, the design features of modern technology also need to be addressed to help parents support their child's media use. Interactive and mobile media are now designed with sensors that collect data about users and learn our preferences and interests. Also, persuasive design techniques are meant to reward and encourage more time on screens, as are attention-grabbing bells and whistles that delight immature brains. These design features require even more intentional effort on the part of adults in order to teach children how to regulate their own media use, rather than be "sucked in" by the gimmicks of persuasive design. Thus, empowering parents to choose quality media and scaffold their children during media use is now more important than ever.

A variety of tools exist to aid teachers in documenting and sharing classroom events for families, including secure websites and apps that allow teachers to share pictures.

MEDIA AS A TOOL FOR COMMUNICATION

A key part of family engagement is regular, detailed, and bidirectional communication about how a child is behaving, learning, and growing in school. Busy and highly stressed parents often do not have time to volunteer and may even miss parent-teacher conferences. Many teachers provide their cell phone numbers as a means of quick, easy communication with parents, but parents sometimes report feeling overwhelmed when receiving an unexpected text message with information about their child's difficulties. Therefore, having a regular means of communication offering constructive feedback and details about positive learning experiences may improve parental engagement.

Many different Internet-based platforms exist to suit this need. In fact, role modeling use of media as a communication tool — rather than just a source of entertainment — we might implicitly teach children about digital literacy and citizenship (e.g, being kind and creative through media).

The website Common Sense Education (www.commonsense.org/education/) includes reviews of electronic communication tools designed for preschool and kindergarten age ranges, including these top-reviewed platforms:

- **ParentSquare:** This website/app can be used by an entire school community to communicate about events, projects, photos of student activities, and one-to-one email/text messaging between parents, teachers, and administrators. Teachers can also engage parents through interactive polls or volunteer signups. Administrators can measure family engagement by seeing how many emails and texts to parents are read and received, while parents report appreciating the inside look at their child's school activities.
- **Seesaw:** This digital portfolio provides more in-depth messaging to parents about projects their child is working on, and children can showcase their work to parents in text, photos, and videos. (It should be noted that personally identifiable information and geolocation data are collected, and the terms of this platform are unclear about whether it collects behavioral data about students.)
- **TalkingPoints:** This program provides automatic translation in 20 languages for teachers sending emails or text messages to parents who are not highly proficient in English. (Common Sense Education notes that grammatical and spelling errors might affect translation.)
- **ClassDojo:** This behavior management and messaging tool provides a method for tracking difficult and positive child behaviors, without having to send home the sticker chart that sometimes makes children self-conscious. It can be used classwide, but shouldn't be used to single children out for not meeting goals. For specific children, parents and teachers can set common goals and celebrate successes. Common Sense reviews indicate that effective use is largely dependent on how thoughtfully teachers use the program — it will only be as successful as the behavioral program it is representing!

Use of social media such as Facebook can be helpful if your early education center likes to post information about parenting or local resources, but be careful not to post personal information, photos of students (without permission from parents), or potentially polarizing or political messages.

> **"A key part of family engagement is regular, detailed, and bidirectional communication about how a child is behaving, learning, and growing in school."**

These apps and internet-based programs now available to schools are presented here because they come most highly rated by educators. What is certain about these platforms and any others is that they will only be helpful in improving parent engagement if offered with a collaborative mindset, with teachers providing insights into a child's preferred activities, strengths, and challenges.

CENTERS AS A SOURCE OF QUALITY MEDIA IDEAS

Teachers are a trusted source of ideas for learning and prosocial child development. For this reason, early childhood centers can be a trusted source of information about digital media, especially when the challenges are approached in a manner that avoids judgment of parents for their home media practices, recognizes how overwhelmed most parents feel, and offers concrete ideas for what parents can do.

Even if digital media are not used in your classroom, parents may still appreciate tips on positive uses of media at home, including

- Lists of recommended digital media titles (e.g., programs shown to improve social-emotional skills when viewed with parents, such as *Daniel Tiger's Neighborhood)*
- Ideas for family media-based activities (like a family media night)
- Easy-to-read, nonjudgmental information on how to incorporate other important activities such as reading, singing, dancing, and conversation, as well as tips for bedtime and "device-free dinners"

If technologies are used in your classroom, children will likely talk about them at home, so providing a list of the apps and websites your school trusts and uses can be an immediate way to influence more positive content at home. Teachers can also model creative uses of media such as taking photos of nature, storytelling, or making music, and send home information about how this can be done on family mobile devices. High-quality content about science, crafts, or other ideas that can launch hands-on activities can be shared as well.

It can also be useful to teach parents and children to learn the pitfalls of modern technology use, such as media transition tantrums, inappropriate content on YouTube, and low-quality apps with lots of advertisements or in-app purchases. Parents often report wanting concrete tips on how to avoid these negative aspects of media use, or how to process them with children when they do occur; teachers can refer parents to the Common Sense Media website, which addresses many such parenting topics.

CONCLUSIONS

Many early educators express concerns about digital media displacing other important play opportunities for their students at home, distracting children from play and sleep, and spoon-feeding children information rather than letting children's minds take the lead. By reframing modern technologies — moving away from the idea that it controls human behavior — and instead considering them as tools that we should use to match our needs and human values, educators have the potential to positively influence home media practices in meaningful ways.

Jenny Radesky, MD, is a developmental behavioral pediatrician and media researcher at University of Michigan Medical School in Ann Arbor, Michigan. She is lead author of the 2016 American Academy of Pediatrics policy statement on media use in children aged 5 and under.

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The Journey to Affordable, High-Quality Preschool in Seattle

BY KAREN "KAY" RUSH AND MARCELLA FECTEAU WEINER

As it finishes its third year, the Seattle Preschool Program adds one-on-one coaching and translation services to its repertoire.

In September 2015, Seattle embarked on a four-year journey to offer city residents universal preschool. In 2016, HighScope reported on the Seattle Preschool Program's (SPP's) first steps. Now, almost three years into the journey, HighScope takes another look at the SPP.

In 2014, Seattle voters approved a four-year, $58-million levy so that *all* Seattle's children would have access to affordable preschool (Seattle Department of Education and Early Learning, 2017). The following year, the SPP opened its program, serving about 300 children. Today there are 55 SPP classrooms providing 1,000 Seattle children with a high-quality early childhood education (Dornfeld, 2018).

STEPS TO HIGH-QUALITY TEACHING

To have high-quality preschools, you need to have high-quality instruction. Sonja Griffin, manager of the Quality Practice and Professional Development Unit in Seattle's Department of Education and Early Learning (DEEL), and her team of coaches work on the ground with teachers to give them the training they need. DEEL offers HighScope training through its Preschool Curriculum Course (PCC), Training of Trainers (TOT), and Family Child Care (FCC) training.

After completing the PCC and TOT, DEEL coaches have acknowledged how HighScope training has affected their teaching methods, both for children and adults. "I've become more intentional in my practice, and I've shared the importance of being more intentional with the teachers I coach," explains Michael Figueroa. Kim Early, another DEEL coach, has noticed that the five ingredients of active learning have made their way into her college classes, where she's incorporating more hands-on teaching with her preservice teachers. For Polly Schmitt, an Early Achievers coach with Washington State QRIS, which places her in SPP classrooms to support teachers, HighScope provides her the link between knowing what is right and having the research to back it up: "To say it in a way that is clear and is indisputable is what HighScope has to offer."

LESSONS LEARNED

ADDRESSING SCALABILITY

After SPP's second year of operation, the National Institute for Early Education Research and the University of Washington conducted a study to assess the program's preliminary impact (Seattle DEEL, 2017). The study found that although there were signs that SPP students, particularly children from minority backgrounds, had improved literacy and math skills, the program did not fare as well as far as quality of teaching (Dornfeld, 2018). The SPP was confronting a familiar problem: how to quickly expand a program while retaining quality.

"I've become more intentional in my practice, and I've shared the importance of being more intentional with the teachers I coach."

To address this, the DEEL revamped the PCC training to include one-on-one coaching. When SPP teachers take the PCC, they receive coaching *while* they are taking course work so they can directly apply what they are learning into practice. For example, an SPP teacher might spend four days during one week of the PCC on specific course work. The last day of that week, however, that teacher spends in her classroom with a HighScope coach who is there to support her: Teacher and coach can debrief at the end of the day and discuss what went well, what steps were hard, or what the teacher missed. The coach can help the teacher make connections between her course work and her actual practice in the classroom. Coaching has been so successful in Seattle's PCC that the DEEL is now also integrating coaching with its family child care providers.

INTEGRATING DIVERSITY

Seattle, like most urban settings, has a diverse population, which is evident in the children and families that the SPP serves, as well as its teachers. One of the ways the SPP addresses linguistic diversity is by offering the services of interpreters and translators to teachers who request them. During a typical FCC training, there may be as many as five translators in one classroom providing simultaneous translation via headsets. In addition to linguistic diversity, SPP teachers are well versed in cultural responsivity. The DEEL offers two Early Learning Institutes annually where teachers dive deep into culturally responsive pedagogy. The HighScope

HighScope's Preschool Curriculum Course now includes one-on-one coaching in Seattle to help teachers in the transfer of skills from theory to practice.

Curriculum also helps teachers become more culturally responsive to Seattle's diverse culture through its curriculum content areas that focus on community and diversity.

In Fall 2018, SPP will enter the final year of its four-year journey. The DEEL is working with the city to plan the next phase of the preschool program and to secure funding for the future. In the meantime, the SPP's teachers and coaches are doing what they know best: giving as many Seattle preschool children as possible an opportunity to grow into their best selves.

Karen "Kay" Rush *is an early childhood specialist at HighScope and lead trainer of HighScope's Seattle training project.*

Marcella Fecteau Weiner *is an editor and writer at HighScope.*

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Mini-Sequences: The Routine Within the Routine

BY ERICA HILL

When you say to the children, "Let's get ready for naptime," do they all know what you mean? That's where a mini-sequence can help. Mini-sequences are visual reminders that help children successfully and independently transition throughout a specific component of the daily routine, as shown by these examples used in preschool programs, including HighScope's Demonstration Preschool in Ypsilanti, Michigan.

1. ARRIVAL TIME

When children first arrive at class, they see this task sequence, which reminds them what they need to do: hang up their belongings, sign in, read a book on the blue rug, and then read the message board.

2. MEALTIMES

Children can hold this laminated mini-visual and bring it to their table so they know the three things to do after mealtime: 1. Throw napkins away, 2. Put cups in the white bin, and 3. Use a wet cloth to wipe off the table.

3. TRANSITIONING BETWEEN SNACKTIME AND SMALL-GROUP TIME

At the HighScope Demonstration Preschool, the teachers found that the children were having a hard time transitioning from snacktime to small-group time. At message board one morning, they talked about this with the children and, together, came up with a mini-sequence. The children suggested adding the specific numerals (1, 2, and 3) because those were already part of mealtime cleanup.

4. NAPTIME

In full-day programs, rest time often occurs after mealtime, and children are expected to sleep or have quiet, solitary time on their cots. Teachers use this mini-sequence to help children independently transition to naptime, cutting back on the number of reminders the children need.

5. OUTSIDE TIME

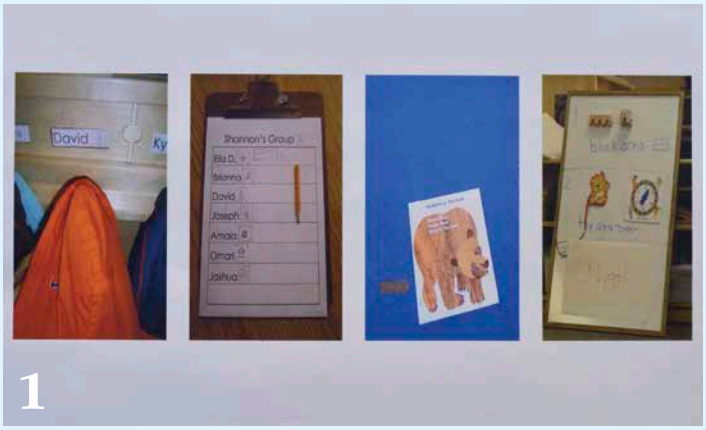
Winters at the HighScope Preschool Demonstration Preschool require lots of outerwear for outside time, and sometimes getting on all that gear can be frustrating — for children *and* adults. Posted on the side of the children's cubbies, this mini-sequence helps alleviate some of that frustration, especially when the children are reminded to put on their snow pants *before* their boots. The teachers often sing this mini-sequence to the tune of "Are You Sleeping":

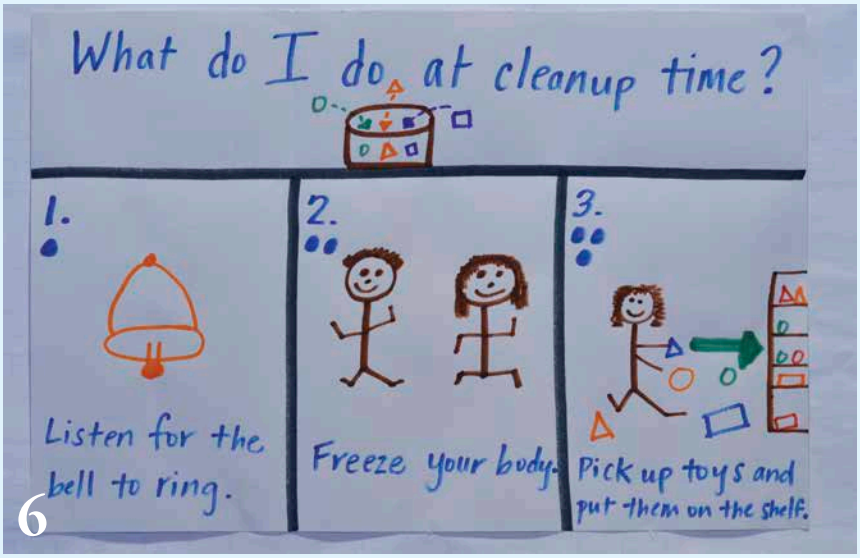
First your snow pants,
First your snow pants,
Then your boots,
Then your boots,
Then you put your coat on, then you put your coat on,
Hats and mittens,
Hats and mittens.

6. CLEANUP TIME

Most adults don't like to clean up, and children are no different. This mini-sequence supports children's understanding of what's expected of them during cleanup time.

Erica Hill is an Early Childhood Specialist at HighScope.





Getting the Most Out of Mini-Sequences

WHEN SHOULD I USE A MINI-SEQUENCE?

You can use a mini-sequence any time a child or a group of children need help remembering and following the steps within a daily routine component. These visual cues may be posted for the whole group (e.g., the steps to follow at clean-up time) and/or created in mini-versions for individual children to hold or carry with them (e.g., the sequence to follow when cleaning up after mealtime).

HOW SHOULD I INVOLVE THE CHILDREN?

Using visual reminders is an effective way to support children's understanding of the expectations for a particular part of the daily routine. Developing sequences with children, using their words and ideas, helps children build their commitment to the steps and expectations. For example, when the children decide that ringing a bell should be the cleanup signal, they are more likely to remember and follow through with the upcoming transition.

WHERE SHOULD I DISPLAY MINI-SEQUENCE VISUALS?

Mini-sequence visuals should be displayed in the area where children will be completing a particular task. For example, you can post the outside time mini-sequence near the children's outerwear, the naptime mini-sequence near the sleeping area, and so forth. Individual children may hold or carry their mini-versions of the mini-sequences with them while completing the tasks.

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Week 4 Summer 2019

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Read All About It: Why Read-Alouds Matter (continued from p. 11)

motivating, shared, and enjoyable experiences held in a safe, encouraging small group, children begin to associate the reading experiences with pleasing social interactions with peers and caring adults. Children practice taking turns and listening to other perspectives, and they hear and use language in socially acceptable ways, all the while learning important emergent literacy skills. Some teachers have also noted that dual language learners, in particular, benefit from small-group read-aloud experiences. The pace and structure provides them with more time and attention to their unique needs. These enjoyable experiences go a long way toward developing positive attitudes and dispositions as children build their English language skills.

WHAT STRATEGIES CAN TEACHERS USE TO GET THE MOST OUT OF READ-ALOUD EXPERIENCES WITH YOUNG CHILDREN?

Curenton: The most important teaching strategies for read-alouds are engaging in conversations about the book and following up about the content in the book. I focus on conversations before, during, and after the read-aloud. Before reading the book, engage children in a discussion about their predictions about the book, such as what they think the book will be about or why they think the author might have been inspired to write this book. Before reading, be sure to introduce any new vocabulary and do preparatory work to ensure the new vocabulary is challenging enough and that the children have the background knowledge to understand the vocabulary. During the reading, stop once or twice at key points to ask or respond to children's need for clarification, but don't let the book reading get hijacked by lots of questions. Reassure children that they will have time to ask more questions after the story. After the read-aloud, ask children questions that relate to two aspects of story comprehension: (1) what happened in the story and (2) why it happened. The conversation around what happened in the story is related to what actions occurred first, next, and at the end. The questions about why things happened in the story are related to "big" foundational ideas within the book, such as questions related to higher-order reasoning (e.g., the character's thoughts or motivations). Make sure that the book is available for children to read on their own, and offer follow-up activities throughout the day that are related to the topic of the story.

Maier: To make the most of a read-aloud experience so that your children reach those desired child outcomes, I recommend several strategies. First, choose high-quality engaging picture books and texts, and then identify and intentionally plan a focus for the read-aloud; think ahead of prompts and open-ended questions that encourage conversation. While reading, focus on key vocabulary words, model thinking out loud about the text and provide extended explanations as needed, and scaffold children's ability to make inferences. After the read-aloud, don't put that book away — leave it out so children can read it at their own pace. Also, consider repeat read-alouds of the same book over time with slight changes in your focus. These strategies make all the difference in the educational value of a read-aloud experience. Without the skilled use and attention to these intentional teaching strategies, the same positive effects on children's engagement, understanding, knowledge of literacy concepts, and love of reading and literature may not emerge.

Grant: There are six essential early literacy skills — phonological awareness, alphabetic knowledge, concepts of print, oral language comprehension, developmental writing, and vocabulary instruction — that lend themselves to children's reading and writing success. When teachers are intentional in their planning and purposeful in their book selections, children are exposed to these skills through interactive story reading. These six essential skills can be modeled using a *before, during,* and *after* (BDA) technique. This technique guides teachers in their thinking as they read to children by prompting children for predictions, introducing new vocabulary, and encouraging children to discuss the text. For example, *before* reading the story, introduce the book, draw children's attention to the cover, and encourage them to talk about what they think the story might be about, prompting children to make predictions. You can also model print by writing the words children say as they make predictions. *During* the read-aloud, pause (as appropriate) as you read the book and ask children to share personal experiences or feelings as they

During read-alouds, teachers focus on engaging in conversation with children about the book — before, during, and after reading.

> Make sure that the book is available for children to read on their own, and offer follow-up activities throughout the day that are related to the topic of the story.

relate to what's going on in the story. If there are new vocabulary words, use simple definitions so children build their word bank. If the book you are reading lends itself to rhyming words, point out the rhyming words, encouraging children to think of other rhyming words related to the text. If the story uses repetition, encourage children to join in the story with you. Finally, *after* the story is complete, check for comprehension by asking children what they found interesting or liked in the story and why. You can also encourage children to begin to think like the author by asking "If you were the author writing this story, how might you change the ending?" or "Would you add [or take away] characters?"

WHAT IS YOUR FAVORITE BOOK FOR A READ-ALOUD?

Grant: I absolutely love Mo Willems! His text gives teachers the opportunity to engage children in conversations, enabling them to practice their oral language comprehension skills. My favorite Mo Willems' book is *Knuffle Bunny: A Cautionary Tale*. This story lends itself to many teaching opportunities, allowing teachers to discuss emotions, reality, sequencing, recalling, and so much more. The joy that I see on a child's face when the bunny is recovered is inspiring; however, there's a bigger lesson within the text of this story. There's a problem: A child's favorite toy is missing and communicating the need to retrieve the bunny becomes a challenge in itself. As I sit with children and read *Knuffle Bunny,* we often brainstorm ways we would express ourselves if we were in a similar situation.

Curenton: One of my favorite read-aloud books for young children is *Rosie's Walk* by Pat Hutchins. *Rosie's Walk* is easy to read with young children because it has great illustrations and not too many the words on a page. This is important because the illustrations help describe the scene and provide pictures of the novel vocabulary. Because there are so few words on each page, teachers and children can explore Hutchins' use of prepositions and choice of vocabulary.

In addition, *Rosie's Walk* explores the concept of "theory of mind," given that the whole narrative is situated in the context in which Rosie does not know the fox is following her and, therefore, is unaware of the danger she is in. If teachers engage in a discussion about this dimension of the story, they are introducing children to a higher-order aspect of the narrative in which the reader must understand the character's thoughts and feelings and how Rosie's thoughts and feelings do not match the action in the story. For example, if Rosie knew the fox was following her, she would probably be scared! These conversations about what Rosie knew or didn't know and what the fox was trying to do or why he was following her can go on and on. In fact, they could make a nice follow-up activity for the story.

Maier: My favorite read-aloud book of all time is *Now One Foot, Now the Other* by Tommie dePaola. There are so many aspects of this simple but incredible story that lend to children's understanding of concepts in all domains of learning. The first sentence "Bobby was named after his best friend, his grandfather, Bob" immediately provides possible discussion points concerning the notion that a grandfather can be both a grandfather and a friend. So many personal connections, predictions, and extended examples from the children can be developed by the teacher using well-planned, intentional prompts and open-ended questions.

When this book is used through repeated focused readings, children have the opportunity to grapple with social, family, and emotional situations; language and literacy concepts about text structure, alphabetic knowledge, print concepts, and comprehension; math concepts related to number, numerals, passage of time, sequence, and comparisons; aspects of diversity and disability; and learning dispositions — namely perseverance — and how to break down difficult tasks into small steps.

With all of these available concepts to be pointed out and discussed, using this book for repeated read-alouds seems like a win. However, the most basic and, for me, the most important reason for choosing it as my favorite has more to do with relationship building with the children. Every time I've read this story, whether alone, with other adults, or with groups of children, I've struggled to hold back tears and have had to stop and compose myself. At first, I thought that I couldn't continue to use this book because of this emotional reaction. Then I began to understand that when children see a model of how literature can evoke strong feelings, they become awed by the power of books. They also begin to see the teacher as very human and much like them. I believe that using this book throughout my long career working with young children has helped me to understand the power of high-quality literature and has helped me to model that for young children.

Activity

Try this STEM activity adapted from HighScope's newest publication, *STEM Made Simple*. In this small-group time, children build bridges using Unifix cubes and craft sticks.

Building a Bridge

Connections to STEM

Science
What do you observe as you build your bridge longer? Wider? Higher?

Technology
What do people use bridges for?

Engineering
How could you redesign your bridge to provide more support?

Mathematics
What conclusions can you draw about the relationship between height and stability?

Materials

Materials for each child and teacher

- Craft sticks
- Unifix cubes or inch cubes
- Small plastic animals
- Blue paper or felt (for the river)
- Basket to hold materials

Backup materials

- Tape
- Scissors

Intentional vocabulary
elevate, span, support

Beginning

- Ask children to tell you what a bridge is and encourage them to share what they know about bridges. Acknowledge their ideas and experiences. Talk about how bridges allow people, cars, trains, and bikes to cross rivers and roads.
- Distribute the baskets. Ask the children to place the piece of blue paper on the table and pretend that it's water. Tell the children that their challenge is to use the materials in their basket to build a strong bridge across the water for the animals to cross.

Middle

- Watch how children use materials and describe and imitate their actions using your own set of materials.
- Encourage children to communicate what they are doing and thinking as they use the materials.
- Support children's collaborative problem solving.
- Find opportunities to use the intentional vocabulary listed on this page (e.g., *Your bridge **spans** the river*).

End

- Give the children a two-minute warning that small-group time will be ending.
- Have children sort their materials by type into containers.
- Engage children in your planned transition to the next part of the daily routine.

Ideas for follow-up or related activities

- Take and post photos in the block area of the children's bridges, as well as pictures of real bridges, so children can see (and refer) to them during work time.
- Add additional bridge-building materials (e.g., cardboard, wood planks, foam pieces, paper tubes) to the block area.

Ways for families to extend this activity at home

- Encourage families to point out bridges in their community and discuss with their children how bridges help people to get from place to place.
- Read books about bridges and bridge construction.

Activity idea contributed by Kristine Lindemulder, Director, Bemis Farms Childcare and Preschool, Saline, MI.

Excerpted from *STEM Made Simple: 25 Activities by Preschool Teachers*
$25.00 | HighScope.org (P1440), Ebook (1440E)

Equity in Access to Digital Technology

BY CHARLOTTE FEDDERS, COMMON SENSE MEDIA

With school, work, and life increasingly happening online, it is critical that all children have the technology they need to be successful in and out of the classroom. But for many families, especially in low-income communities, high-speed internet access and homework-friendly digital devices are hard to come by.

Our latest report, the *2017 Common Sense Census: Media Use by Kids Age Zero to Eight,* found that while device use and ownership among young children is up, there is a 22 percent gap in high-speed internet access between children in lower- and higher-income households, and a slightly higher gap in tablet and home computer access. More than one in four low-income homes with children aged 0–8 lacks high-speed internet.[1] Seven in ten high school teachers across the country assign homework requiring the internet, leaving the 12 million children without broadband access at home without the tools they need to succeed. This homework gap is the most disheartening aspect of the digital divide, and it is crucial that we maintain and continue to modernize programs like E-rate and Lifeline to close this gap, as well as support other innovative partnerships and efforts.

E-RATE

E-rate is a federal program that assists schools and libraries across the country in obtaining high-speed broadband and quality wireless networks. The program expanded its reach in recent years to bring Wi-Fi to schools, including those in rural areas, where 40 percent[2] of homes still do not have access to high-speed broadband. The modernized program has proven to be a significant victory, with 88 percent[3] of schools now connected. However, the work doesn't end until all classrooms and all children are connected. The best way to ensure that is for FCC staff to approve promising proposals without delay, and for FCC leadership to not make changes that would weaken the program or diminish funding.

LIFELINE

The federal Lifeline program also plays an important role in bridging the gap between digital haves and have nots. Established in 1985, Lifeline enables low-income families to purchase more affordable communication services. Initially, Lifeline provided a monthly subsidy toward phone service (expanded in 2005 to include wireless plans), but in 2016 the FCC took a giant leap forward, modernizing the program to subsidize broadband services as well.

Despite these improvements, the FCC has recently proposed changes that would essentially gut the program, including a hard budget cap and a ban on the "resellers," or companies that serve as the middlemen in providing Lifeline-eligible services to the majority of subscribers. This recent proposal is a cruel reminder that these programs can be highly susceptible to change, so it is imperative that we fight for their continuation and modernization and consider other solutions for closing the digital divide. You can register your concern here: https://www.commonsensemedia.org/kids-action/campaign/keep-kids-connected-with-lifeline.

PARTNERSHIPS

Nonprofits, communities, schools, and telecommunication providers are coming together to make internet connectivity affordable and accessible to all families. Nonprofits, such as EveryoneOn, help families find low-cost internet and affordable devices in their communities. Common Sense works with EveryoneOn's program, ConnectHomeUSA, to bring together key stakeholders to close the digital divide for families in HUD-assisted housing. In addition, as they embrace the educational possibilities of technology, school districts and teachers are also finding creative ways to help their students stay connected throughout the day. Districts can work with internet providers to find low-cost options for their qualifying families, provide Wi-Fi on school buses, and even include cellular data modems with their devices for access to internet at any time.

Access to technology and the internet is key to academic and economic success. It is up to all of us to make sure our children have the resources and support they need to thrive in our increasingly digital world.

[1] Common Sense Media. (2017). The Common Sense census: Media use by kids age zero to eight. *Common Sense Media.* Retrieved from https://www.commonsensemedia.org/sites/default/files/uploads/research/csm_zerotoeight_fullreport_release_2.pdf

[2] West, D. M., & Karsten, J. (2016, July). Rural and urban America divided by broadband access. *Techtank.* Retrieved from https://www.brookings.edu/blog/techtank/2016/07/18/rural-and-urban-america-divided-by-broadband-access/

[3] Education Superhighway. (2017, September). 2017 state of the states: Fulfilling our promise to America's students. Retrieved from https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/educationsuperhighway_2017_state_of_the_states.pdf

As Easy as E-C-E (continued from p. 9)

here pointed to the prominence of technology in the HighScope *COR Advantage Scoring Guide*. When we examined other tools utilized elsewhere for early childhood administration, the *Early Childhood Environment Rating Scale-Revised* [ECERS-R] and *Teaching Strategies Gold* [TSG], we found limited guidance for practitioners around technology use. In the ECERS-R, there is one item related to TV, video, and computer use with a guideline of no more than 30 minutes of media screen time per week and 15 minutes of computer time per day. TSG includes one item related to technology ("Uses tools and other technologies to perform tasks"), but with no suggested examples for what might constitute "emerging" or "meets program expectations," as many of the other objectives include (Heroman, Tabors, & Teaching Strategies, 2010). In each case, the limited inclusion of technology in the standards and objectives and lack of concrete indicators for appropriate use with young children beyond screen time limits does not offer practitioners guidance around the potential for technology to add value to an experience.

"The use of technology has the potential to enhance and support, but never replace, interactions that promote positive whole-child development and supplement young children's experiences of the real world."

These evaluation and assessment tools could support practitioners in understanding the aforementioned academic research around the usefulness of technology in early childhood settings if, across content areas, there was acknowledgement of the potential for technology to be used appropriately as a tool for communication, research, and creativity. For example, TSG includes an objective under "Demonstrates emergent writing skills: Writes to convey meaning" that offers detailed examples of different levels of emergent writing (Heroman, Tabors, & Teaching Strategies, 2010). If there was an image of invented spelling that a child created using a tablet or computer, it would present the possibility to practitioners that these tools could also be used for this purpose, just as the provided examples indicate pencil, marker, or crayons can be used.

Unique advantages offered by some technologies not only supplement early childhood learning experiences, but represent a critical new form of literacy in the 21st century.

The early years are critical for every child's cognitive, linguistic, social, emotional, and physical development and the use of technology has the potential to enhance and support, but never replace, interactions that promote positive whole-child development and supplement young children's experiences of the real world. In this article, we've identified how creating and exploring ebooks and high-quality and high-interest apps are examples of effective practice. In supplemental material to this article, we discuss additional examples of positive technology use in the classroom examples of effective practice:

- Documenting the child's real world experiences through photo or video
- Browsing and discussing photos and videos together with children
- Video chatting with people important to the child

As Dr. William H. Teale suggested, "technology is critically important because it literally has redefined what it means to be literate these days" (as quoted in Turner, 2018, p. 179). We tend to agree. As far as the technology is concerned, the field of early childhood has made some significant progress in the last decade of research and practice. We know more now than we did five years ago, but there is room to expand and grow as we remain cautious and strive to retain the early childhood essentials *while* integrating developmentally appropriate instances of technology into preschool classrooms.

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