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Getting on the Same Page

Identifying Goals for Technology Use in Early Childhood Education

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Technology use among young children from all income groups is increasingly a fact of life. Establishing a clear set of goals that are broadly accepted by stakeholders is critical to planning for the successful integration of technology into early childhood education (ECE). However, debates about the role of technology in ECE settings are ongoing, with some stakeholders unwilling to accept any role for technology. It has been difficult, therefore, to make progress toward identifying common goals, and toward ensuring that technology is integrated in a way that aligns with those goals, once defined. In this policy brief, we identify ways to move beyond the current debate and identify goals that might be adopted to guide technology use in ECE.

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Why Focus on Technology and Early Childhood Education?

Digital literacy—the knowledge and skills needed to use technology “to analyze, learn, and explore”ⁱ—plays an important role in a child’s ability to succeed in school and beyond. Yet, despite rapid growth in society’s use of information and communication technology, many children in low-income families in the United States are unable to access technology—including devices, software, and connectivity—in the same ways as their more-advantaged peers. And even when children from low-income families are able to access technology, they often learn to use it in different ways. The result? Fewer opportunities to learn, explore, and communicate digitally, and fewer chances to develop technology skills that might be needed for success in school and the workplace.

Technology use in formal early childhood education (ECE) settings, such as preschools and child-care centers, may help shrink the digital divide in terms of both access and use for children in low-income families. Both in and beyond formal ECE settings, technology use may also play a valuable role in ensuring that all children enter kindergarten with early digital literacy skills—and in helping them build skills in such areas as literacy, math, and motor development by providing additional opportunities for exploration, interaction, communication, and creativity. With adequate resources and support, ECE providers and family members may also benefit from technology use in ECE as they lead and encourage the education of young children.

Among children ages 3–5, technology use is not without potential pitfalls. Some physicians, policymakers, educators, and parents are concerned that technology use in ECE may have a negative effect on the development of social and gross motor skills, contribute to obesity, and diminish skill development in areas beyond digital literacy. So, as we seek to realize the potential benefits of technology use in ECE, we must also ensure that we address potential harms.

Charting the road ahead requires careful thought and planning. A broad group of stakeholders must be invited to the discussion, and their unique perspectives—and, occasionally, competing priorities—must be understood and addressed. We propose that achieving a better understanding of how to integrate technology into ECE requires answering five key questions:

1. What are the goals for technology use in ECE?
2. How do we define developmentally appropriate technology use in ECE?
3. Once defined, how do we support developmentally appropriate technology use through devices, software, connectivity, and other components of technology infrastructure?
4. How do we ensure that ECE providers are prepared to integrate technology appropriately, intentionally, and productively into ECE settings?
5. How can parents and other family members play a role in the use of technology in ECE?

Our Approach

The study of modern technology use in ECE is, by definition, a relatively nascent field, and research has largely examined only isolated aspects of the topic (with a heavy emphasis on the effects of watching television). Therefore, considerable debate, disagreement, and uncertainty remain, although consensus appears to be forming around the need to integrate technology into ECE in an intentional and productive way. In February 2014, the RAND Corporation published a framing paper, *Using Early Childhood Education to Bridge the Digital Divide*, that summarized and assessed the existing literature and outlined the five key questions introduced above.ⁱⁱ The paper also described the need to involve a wide range of stakeholders in discussions, planning, and implementation.

In May 2014, RAND and PNC Grow Up Great hosted a one-day forum that brought these stakeholders—advocates, educators, researchers, policymakers, funders, and parents—together to discuss issues, needs, evidence, and ideas related to technology use in ECE. Through plenary sessions and smaller breakout groups, the 45 forum participants shared their perspectives on each of the five key questions.

This policy brief integrates findings from our literature review with the perspectives of forum participants. Therefore, its contents cannot be considered comprehensive or definitive. Rather, we offer suggestions in the spirit of advancing knowledge and encouraging continued conversation as stakeholders move ahead with policies and programs that support technology use in ECE.

ⁱ International Society for Technology in Education, “Digital Age Learning,” web page, copyright 2014. As of August 28, 2014: <http://www.iste.org/standards/standards-for-students>

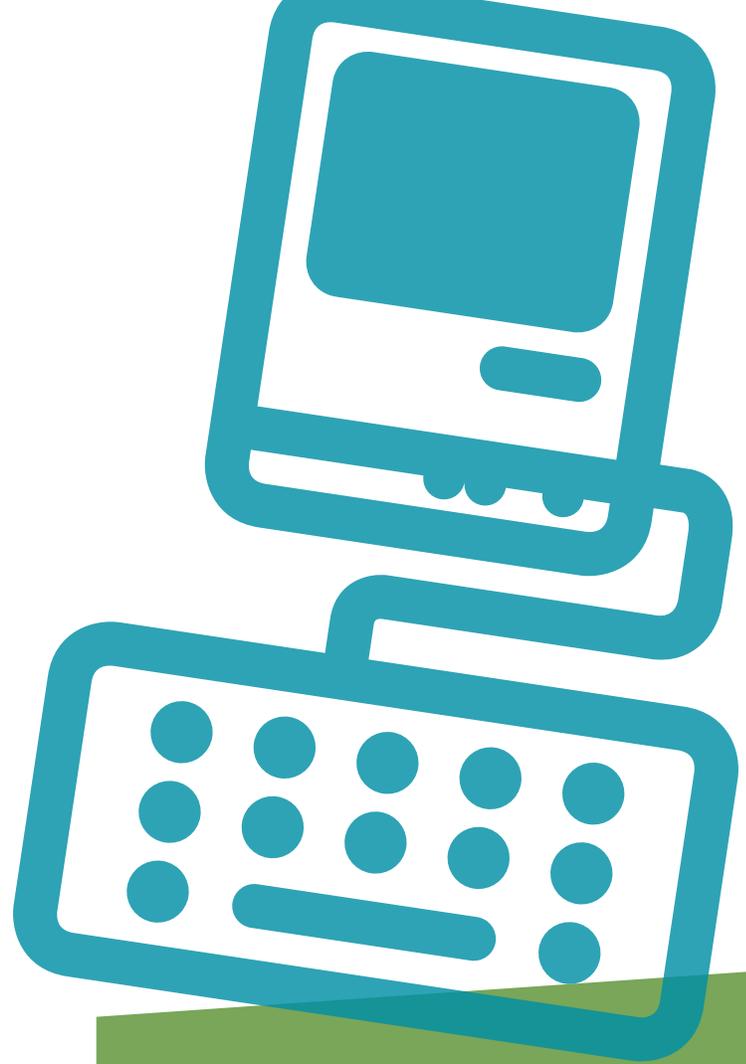
ⁱⁱ L. Daugherty, R. Dossani, E. Johnson, and M. Oguz, *Using Early Childhood Education to Bridge the Digital Divide*, Santa Monica, Calif.: RAND Corporation, PE-119-PNC, 2014. As of June 6, 2014: www.rand.org/t/PE119

Reframing the Conversation

Technology has become an important part of daily life for young children. On a typical day, children ages 3–5 spend an average of four hours with technology, and technology use is increasing among children of all ages.¹ Such organizations as the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center for Early Learning and Children’s Media at Saint Vincent College have acknowledged that technology use among preschool-age children is inevitable and have concluded that any attempt to eliminate technology use among young children would be futile and misdirected.²

Still, technology use in ECE remains a topic of considerable debate. Media coverage of the issue often characterizes technology use in ECE as a black-and-white proposition: Technology is either good or bad, more technology means less of everything else, and ECE providers have two choices—keep technology out of the classroom, or take a backseat and allow technology to drive most or all of what is done in ECE settings.³ Some stakeholders remain firmly opposed to any integration of technology into early childhood settings, leaving little room to identify common ground and set meaningful goals for technology use in ECE. Nonetheless, technology is being used in many ECE settings. According to a 2012 survey, 41 percent of school-based ECE providers, 31 percent of center-based providers, and 24 percent of home-based providers reported daily use of computers.⁴

There is also growing evidence that technology use can benefit young children. For example, studies show that technology use among young children from low-income families can increase engagement, boost achievement in academic areas and in the development of motor skills, and, in some cases, play a role in socio-emotional development.⁵ If technology is excluded entirely from early childhood settings, we may miss some of the opportunities that technology use can provide to support learning through exploration, interaction, communication, and creation.



We need to shift the conversation from “Should young children use technology?” to “How can we use technology with young children to maximize its benefits?”

Participants at the forum agreed that we need to shift the conversation from “Should young children use technology?” to “How can we use technology with young children to maximize its benefits?” To ensure that technology is integrated intentionally and productively into ECE settings, stakeholders need a common set of goals for technology use among young children. With an established set of goals in place, stakeholders can have productive conversations about important issues (such as what constitutes developmentally appropriate use) while remaining focused on ensuring that technology use among young children, when it does occur, is beneficial.

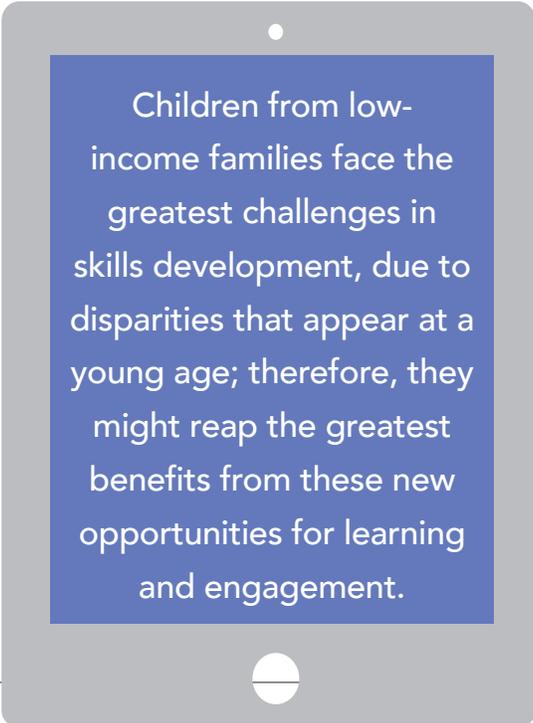
Goals Stakeholders Can Get Behind

Using findings from our literature review and the perspectives of forum participants, we identified four goals that could anchor future conversations about technology use in ECE. This list is not intended to be exhaustive, but it introduces a core set of goals that we believe most stakeholders can agree to.

Goal 1

Add a Tool to the Toolbox to Support Learning and Skills Development

Most educational technology advocates, and many of the forum participants, view technology as simply one of many tools that ECE providers and families can and should use to build skills among young children. They do not see it as a silver bullet or panacea. Indeed, research shows that technology, like any other tool, can be useful in supporting learning only if ECE providers and families use it in a thoughtful and intentional way.⁶ Technology use can help support learning and skills development in such critical areas as reading, math, science, motor skills, and socioemotional development by providing new opportunities to engage students, access to new content, and new ways for children to ex-



Children from low-income families face the greatest challenges in skills development, due to disparities that appear at a young age; therefore, they might reap the greatest benefits from these new opportunities for learning and engagement.

plore and create.⁷ Children from low-income families face the greatest challenges in skills development, due to disparities that appear at a young age; therefore, they might reap the greatest benefits from these new opportunities for learning and engagement.

Although technology use has the potential to provide benefits in certain areas, experts argue that it is not a substitute for many of the other tools, such as blocks, that research shows have positive effects on young children.⁸ Technology—as with any tool in the ECE setting—should be used only where it best suited to support learning outcomes and help children build skills. This means that providers must consider tradeoffs when choosing technology over other potential ECE tools. When technology is used as one tool in a larger toolbox, it can provide the greatest benefits while continuing to allow for the use of other learning tools and activities when they are likely to be most effective in supporting skill growth.

Goal 2

Support School Readiness in Digital Literacy

Many policymakers and stakeholders, including the federal Head Start office, state governors, and the NAEYC, contend that the primary purpose of ECE is to ensure that young children are ready for kindergarten.⁹ Goal 1 describes how technology can be used to support school readiness in traditional areas of ECE learning, including literacy and math, socioemotional development, and motor skills. Digital literacy—the ability to “analyze, learn, and explore” with technology¹⁰—has become an important skill in K–12 education and may soon be considered an aspect of school readiness to which ECE providers must attend. For example, the Common Core State Standards for kindergarteners in California

incorporate information literacy (the ability to access, evaluate, and use information effectively) and digital literacy (the ability to use digital technology, communications tools, or networks to access, manage, integrate, evaluate, create, and communicate) to enable students to function in a knowledge-based economy and society.¹¹

New standards for prekindergarten students in New York State require that students be able to independently use a computer “to write, draw and explore concepts,” among other digital literacy skills.¹² As K–12 schools adopt Common Core State Standards and computer-based testing, digital literacy may become even more critical to school readiness. As we discuss in the next section, children from low-income families may experience deficits in digital literacy because of limitations in access and differences in patterns of use.

Does the increased use of technology in K–12 settings require preparation at earlier ages to ensure school readiness? With increasingly higher standards for technology use in early elementary grades, forum experts agreed that all children, particularly low-income children, could benefit from acquiring basic technology literacy skills in ECE settings to ensure readiness for technology use in the classroom.

Goal 3

Help Narrow the Digital Divide in Access and Use

Early childhood education is a well-established step in the education pathway for young children and is viewed as particularly important for children from low-income families, as these children may experience early deficits in foundational areas, such as literacy, motor skills, and socioemotional development.¹³ Indeed, high-quality ECE experiences have been shown to substantially reduce gaps between children from low-income families and their more-advantaged peers in the areas of reading and math skills, motivation, and socialization.¹⁴ However, there is another gap between disadvantaged students and their peers: a disparity in access to and use of technology, also known as the *digital divide*. Low-income families are less likely to have access to most types of technology, which may prevent children from having the opportunity to gain exposure to important tools for learning and skill growth. In addition, research indicates that children from low-income families who do have access to technology are more likely to use it in ways that are passive and isolated—patterns of use that are less likely to be associated

As K–12 schools adopt Common Core State Standards and computer-based testing, digital literacy may become even more critical to school readiness.

with positive outcomes in skill growth.¹⁵ Technology use in ECE settings has the potential to address both aspects of the digital divide: access and use. In ECE settings, children from low-income families can access technology that is not available in the home, and they can be taught to use technology in ways that are more likely to result in skill growth and learning, thereby addressing disparities in use.

It is important to note that this goal presumes that providers have the right technology and the knowledge they need to use it effectively. Unfortunately, we know that this is not universally the case. Indeed, many ECE providers lack the funds to purchase devices, software, or connectivity, which makes effective use of technology either extremely challenging or impossible.¹⁶ This may be more common in the case of ECE providers who serve low-income children, compounding the digital divide access problem.

Early childhood educators attending the forum also reported having little or no time to evaluate software, websites, and other media prior to using them in the classroom. Some ECE providers may also lack confidence in their own digital literacy, and providers who serve children from low-income families may be less likely to

Trends in K–12

education suggest that young children may need to achieve basic digital literacy before starting kindergarten, and the presence of a digital divide suggests that children from low-income families may need the most support to ensure readiness in digital literacy.

use educational technology in ways that are associated with positive skill growth. For example, evidence indicates that K–12 teachers at schools that serve students from low-income families are more likely to use technology with students for routine activities and less likely to use it to increase student engagement and expand learning opportunities.¹⁷ Without substantial professional development for these providers, and absent policies and funding that would provide the needed infrastructure, technology use in ECE could exacerbate the digital divide rather than help resolve it.

Goal 4

Expand Resources for Providers and Families

Goals for technology use in ECE settings need not focus exclusively on use among children, as there are many ways that technology can be used to support providers and families as they, in turn, support the education of young children. For example, ECE providers, who receive substantially less professional development than they want and need,¹⁸ could use technology to access virtual communities, find materials (e.g., lesson plans, worksheets, activity ideas), watch exemplars, create networks, and exploit other resources—and they could do so at their own pace and convenience. However, to do so, providers will require sufficient access to technology and the ability to use that technology productively.

Like ECE providers, families play a critical role in the lives of young children and in ensuring that they have posi-

tive learning and growing experiences in ECE settings. However, efforts to increase family involvement in education can be challenging, and technology provides new opportunities to engage families in education and increase communication with their children and ECE providers. For instance, a 2013 study indicates that text messaging is a useful means of engaging with parents to support effective practices with young children in the home.¹⁹ Video clips, such as those sent through the ReadyRosie program, which is directed at the parents of young children, can be used to provide guidance about activities parents can use to interact with children.²⁰ Ideally, families will benefit from technology use in ECE settings through increased opportunities to engage and communicate with their children and ECE providers.

The Bottom Line

Technology use among young children from all income groups is increasingly a fact of life. Although technology use in ECE settings is controversial, a growing body of evidence is revealing the benefits of technology use by young children. Furthermore, trends in K–12 education suggest that young children may need to achieve basic digital literacy before starting kindergarten, and the presence of a digital divide suggests that children from low-income families may need the most support to ensure readiness in digital literacy. Some of that learning will undoubtedly take place in preschools, child-care centers, and other venues outside the home. To ensure that technology is integrated thoughtfully and effectively into these ECE settings, stakeholders must agree on a set of goals for technology use among young children. The four potential goals supplied in this policy brief are intended to help stakeholders remain focused on ensuring that technology use in ECE is intentional and productive, even as they debate other aspects of the issue of technology use in ECE. To be relevant, these goals—or any future set of goals—must evolve as new research evidence comes in from the field, and they must be communicated both to the public and to policymakers.



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The RAND Corporation gratefully acknowledges the PNC Foundation, the sponsor of this research. Among other initiatives, PNC supports early education through PNC Grow Up Great, a \$350 million, multi-year, bilingual initiative that began in 2004 to help prepare children from birth to age five for success in school and life. The project was conducted within RAND Education, a division of the RAND Corporation. Its mission is to bring accurate data and careful, objective analysis to the national debate on education policy. For more information and resources on technology in early childhood education, please visit www.rand.org/t-is-for-technology.

The authors wish to thank Chip Donohue, Gail L. Zellman, and Cathy Stasz for their reviews of this manuscript.

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