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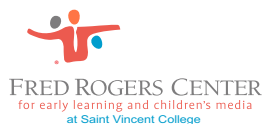
# Technology in the Lives of Educators and Early Childhood Programs:

## Trends in Access, Use, and Professional Development from 2012 to 2014

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Center on Media and Human Development



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## Summary

In 2012, 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 released a joint position statement, *Technology and Interactive Media as Tools in Early Childhood Programs Serving Children Birth through Age 8*, as a response to increased public interest in and the ever-increasing market of digital media technology for early childhood. Since the statement's release, technology has continued to infiltrate the education sector at increasing rates. Given the dynamic and fast-paced nature of the educational technology sector, there is a need to keep up to date on trends in technology access in early childhood education, as well as to better understand how technology and digital media are being used, differential use based on student and teacher characteristics, and how use is related to support and professional development.

As such, the current report provides a follow up to the 2012 report conducted by the Fred Rogers Center, Northwestern University, and NAEYC. This report draws on data from the 2012 cohort of 1,365 early childhood educators and new data from a 2014 cohort of 945 early childhood educators to understand trends and changes to the current early childhood technology environment that have occurred since the release of the NAEYC/Fred Rogers Center position statement.

## Key Findings

### **Increased Awareness**

Since 2012, there has been a two-fold increase in the percent of early childhood educators who are familiar with the NAEYC/Fred Rogers Center position statement regarding technology use in early childhood education. Whereas only 25 percent of educators knew about the statement six months following its release, now 52 percent of educators report knowing about it.

### **Increased Access but Not Use**

Compared to educators in 2012, current early childhood educators reported more access to interactive whiteboards (26 percent vs. 22 percent) and tablet computers (55 percent vs. 29 percent). For tablets in particular, access increased across all program types and student income levels. However, there were no differences in the frequency with which educators used these devices.

### **Increased Professional Development and Support**

More educators in 2014 reported ever receiving professional development in educational technology compared to educators in 2012 (49 percent vs. 41 percent). However, there were no differences in the frequency with which schools provided such professional development across the two time points. Despite this, educators in 2014 did report higher levels of school support compared to 2012 educators, including financial support, access to hardware and software, and support for finding appropriate digital content.

### **Decreased Attitudes**

Educators in 2014 had less positive attitudes toward the value of technology in early childhood education compared to 2012 educators. They were more likely to disagree or strongly disagree that technology could improve individualized learning, critical thinking and higher order thinking skills, and content knowledge.

## Introduction

Early childhood education is at a crucial moment, when new technologies offer opportunities for learning and teaching. Technology tools—including tablets, smartphones, e-books, interactive whiteboards, and other tools—are increasingly a part of early educators’ practice, even as controversies over the appropriate role of technology in young children’s lives continue. In response to the controversy, 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 developed a joint position statement in 2012 on technology and interactive media, which posited that technology tools can be effective for learning when used intentionally and in accordance with children’s age, developmental level, needs, and personal interests.

Since the release of the position statement, the Center on Media and Human Development at Northwestern University, in partnership with the Fred Rogers Center, have surveyed early childhood professionals to understand educators’ awareness of the position statement, how educators access and integrate technology into their programs, their attitudes toward technology and digital media, and barriers that educators may be facing in effectively deploying technology in their practice. A survey in 2010 found that educators had access to a range of technologies (although smartphones and tablets were not included in the survey), and that family childcare providers tended to use TV and DVDs much more frequently than classroom educators (Wartella, Schomburg, Lauricella, Robb, & Flynn, 2010). A follow-up survey in 2012 found that tablet computers and e-readers were just starting to permeate classrooms and, while technology was available, usage was still fairly low. Attitudes toward technology were positive, with educators generally believing that technology played a positive role in early childhood programs, especially for documentation and for individualizing learning.

In the current survey, we were interested in following trends from our earlier reports to see if and how the educational technology landscape has shifted, especially in light of the rapid adoption of tablets (iPad, Kindle Fire, Nexus, etc.) in the general population. We were particularly interested in how educators felt supported to use technology in their programs and how professional development influenced such use. One of the key messages of the position statement is that early childhood educators need training and professional development to develop the knowledge, skills, and experience needed to be successful at integrating technology in developmentally appropriate ways. Training should be in-depth, hands-on, and ongoing, and should also provide access to the latest tools and interactive media. In 2012, only 42 percent of educators reported receiving any pre- or in-service training specific to educational technology, and one-third reported that they felt no support in understanding how to integrate technology in developmentally appropriate ways. Many educators receive new technologies with little training or support and are expected to know how to use them effectively. In light of the position statement, it is important to know how participation in professional development and training impacts educators’ use of technology.

## Current Report

The current report provides an update on early childhood educators' technology use as of December 2014. This report draws on data from 2012 and 2014 educators to draw comparisons in terms of changes in access and use of technology as well as to understand changes in attitudes, support, and professional development that may have occurred over the two-year period. Given the NAEYC/Fred Rogers Center position statement had just been released at the time of the 2012 data collection, the current report also provides information on the statement's impact on the field.

### Survey Samples and Methodology

**Respondents.** Online survey data were collected in 2012 and 2014 using the NAEYC membership database. NAEYC members were emailed a link to the survey through the NAEYC listserv. Because NAEYC membership includes not only early childhood educators working with young children ages 0 to 8 but also university faculty, researchers, and teacher educators, respondents were screened such that the data only represents educators working with children birth to age eight.

**2012 Respondents.** A total of 1,365 participants serving children 0 to 8 years old completed the 2012 survey. The majority of participants were female (98 percent) and white (86 percent), with 5 percent African American, 4 percent Hispanic, 2 percent Asian, <1 percent Hawaiian Native/Pacific Islander, <1 percent Native American/Alaskan Native, and 3 percent of two or more races. The average age of participants was 47.92 years (SE = 10.86). The median family income for participants was between \$61,000 to \$70,000, which was approximately \$10,000 to \$20,000 above the 2011 national median home income of \$50,054 (U.S. Census Bureau, 2012). In terms of educational attainment, 40 percent had a 4-year college degree, 34 percent had a master's degree, and 2 percent had a PhD or EdD. The remaining 24 percent of participants either had an associate's degree (13 percent), some college (9 percent), or a high school degree or less (2 percent).

The average teaching experience was 20.19 years (SE = 10.78), and participants worked in a variety of program types, with 48 percent working in center-based care, 34 percent in school-based care, 10 percent in early Head Start or Head Start

programs, and 7 percent in home-based childcare. Participants also reported working with students from a range of socio-economic statuses, with 43 percent working with lower- or lower-middle-income students, 32 percent working with middle-income students, and 24 percent working with upper-middle- or upper-income students. Additionally, participants worked in a range of communities: 46 percent worked in suburban areas, 35 percent in urban areas, and 19 percent in rural areas. The majority (56 percent) of participants taught preschool-aged children (3- to 6-year-olds), while 6 percent taught infants (0- to 2-year-olds) and only one person solely taught kindergarten-aged children (7- to 8-year-olds). An additional 27 percent taught both infants and preschool-aged children, 3 percent taught preschool- and kindergarten-aged children, and 9 percent taught children of all three age groups.<sup>1</sup>

**2014 Respondents.** A total of 945 participants serving children 0 to 8 years old completed the 2014 survey. The majority were female (96 percent) and white (88 percent), with 5 percent African American, 3 percent Hispanic, 1 percent Asian American, <1 percent Hawaiian Native/Pacific Islander, <1 percent Native American/Alaskan Native, and 2 percent of mixed racial background. The average age of participants was 48.66 years (SE = 11.51). The median family income for participants was between \$61,000 to \$70,000, compared to the national average of \$53,046 in 2013 (U.S. Census, 2014). In terms of highest educational attainment, 38 percent of participants had a 4-year college degree, 40 percent had a master's degree, and 3 percent had a PhD, EdD, or professional degree. The remaining 19 percent of participants either had an associate's degree (12 percent), some college (7 percent) or a high school degree or less (1 percent).

The average teaching experience was 20.71 years (SE = 10.73), and participants worked in a variety of program types: 43 percent worked in center-based care (i.e., for- or non-profit non-school based care, such as a YMCA, Montessori, or Bright Horizons), 39 percent in school-based care (i.e., public or

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<sup>1</sup> In the 2012 survey, participants were asked to report all age groups with which they worked and the age groups were assigned slightly differently than in 2014, where participants were asked to pick the primary age group with which they work.

private programs within K-12 school programs), 11 percent in early Head Start or Head Start programs, and 7 percent in home-based childcare (i.e., in-home care). Participants also reported working with students from a range of socioeconomic statuses, with 45 percent working with lower- or lower-middle-income students, 28 percent working with middle-income students, and 27 percent working with upper-middle- or upper-income students. Participants also worked in a range of communities: 44 percent in suburban areas, 36 percent in urban areas, and 21 percent in rural areas. The large majority of participants worked with children in the preschool age group (3 to 5 years, 11 months; 81 percent), while 14 percent worked with infants and toddlers ages 0 to 2 years, 11 months, and 3 percent worked with kindergarten students ages 6 to 7 years, 11 months.

**Procedure.** The 2014 survey was based on the 2012 survey (see Wartella, Blackwell, Lauricella, & Robb, 2013, for the final report), and focused on early childhood educators' access to and use of technologies in their programs and classrooms. Technologies included traditional devices, such as TV/DVDs and computers, as well as newer mobile devices, such as e-readers and tablet computers. Survey questions also addressed educators' attitudes as well as professional development and support toward technology use in early childhood education.

Additionally, to simplify analyses, respondents' program types were grouped into four mutually-exclusive categories: school-based, center-based, Head Start, and home-based. School-based consisted of all programs—both public and private—associated with an elementary school. For example, pre-K through a public school would constitute a school-based program. Center-based care consisted of programs that were not associated with an elementary school, home child care provider, or Head Start center. Head Start consisted of Head Start and early Head Start centers. Home-based programs consisted of all care that took place outside of a center or school and was reported by respondents as being either home-based or family care.

Analyses included comparing 2012 and 2014 educators' access to and use of technology in the classroom, as well as attitudes, support, and professional development. Additional analyses were conducted using data exclusively from 2014 (similar data was not collected in 2012) to provide more specific information on how current educators are using computers and tablet computers in their classrooms and programs.

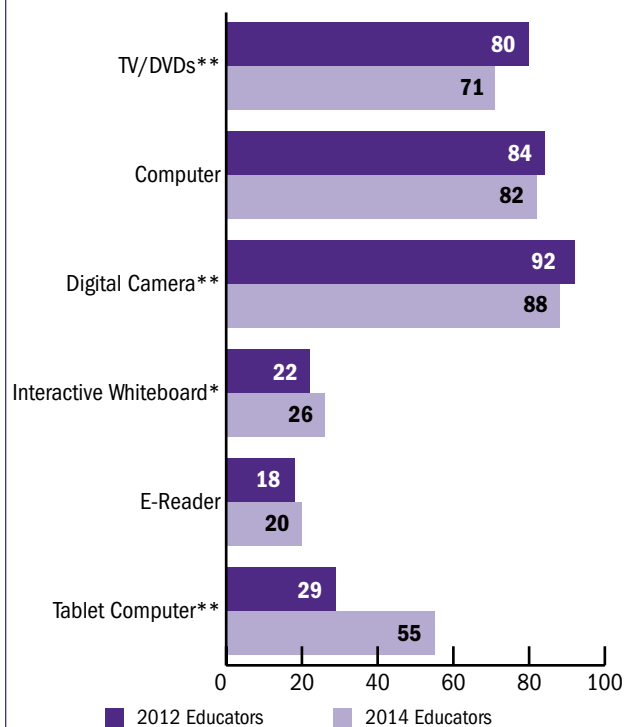
### Findings: Comparisons between 2012 and 2014

**Technology Statement.** Compared to 2012, when only 25 percent of participants were aware of the NAEYC/ Fred Rogers Center position statement regarding technology use in early childhood education, significantly more participants in 2014 (52 percent) reported being familiar with the statement. Additionally, more participants in 2014 (70 percent vs. 66 percent) agreed or strongly agreed with a key line from the statement, that “technology and interactive media are tools that can promote effective learning and development when they are used intentionally by early childhood educators, within the framework of developmentally appropriate practice, to support learning goals established for individual children.”

**Access.** More participants in 2014 had access to interactive whiteboards (26 percent vs. 22 percent) and there was almost a two-fold increase in access to tablet computers (55 percent vs. 29 percent). However, participants in 2014 reported less access to TV/DVDs (71 percent vs. 80 percent) and digital cameras (88 percent vs. 92 percent; Figure 1).

**Figure 1. Access to technology for educators in 2012 compared to educators in 2014.**

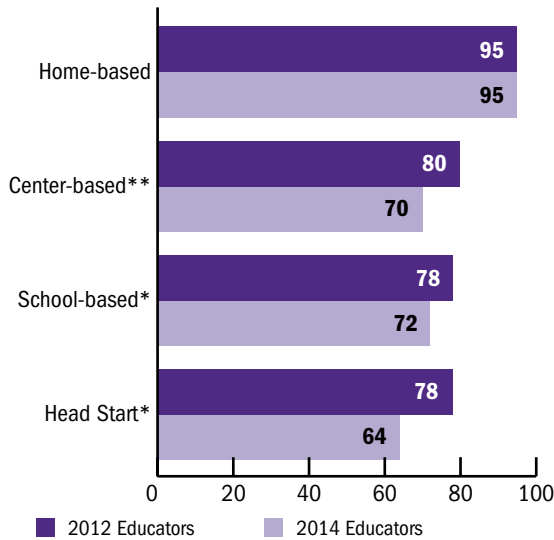
\*p<0.05. \*\*p<0.01.



**Access by Program Type.** When comparing access of educators across program types in 2012 and 2014, several significant differences arose. Center-based (N = 1044), school-based (N = 813), and Head Start (N = 243) educators all had less access to TV/DVDs in 2014 compared to educators in 2012 (Figure 2), but all types of providers, including home-based educators (N = 160), had more access to tablet computers in 2014 compared to 2012 (Figure 3). Additionally, more 2014 school-based educators had access to interactive whiteboards (40 percent vs. 31 percent) while fewer 2014 Head Start educators had access to digital cameras (85 percent vs. 95 percent) compared to 2012 educators.

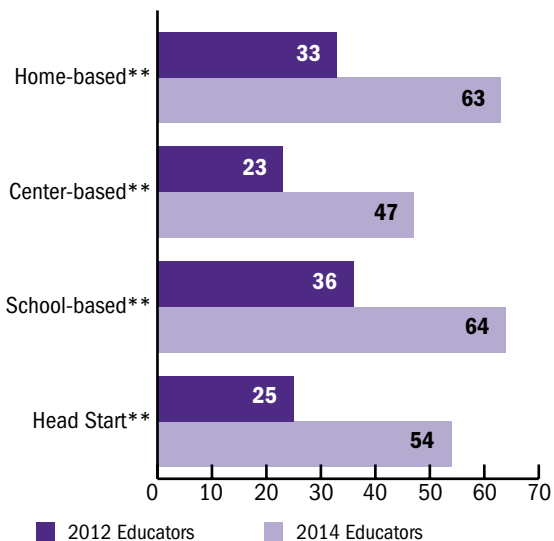
**Figure 2. Differences in the proportion of educators in 2012 and 2014 with access to TV/DVDs.**

\*p<0.05, \*\*p<0.01.



**Figure 3. Differences in the proportion of educators in 2012 and 2014 with access to tablet computers.**

\*\*p<0.01.



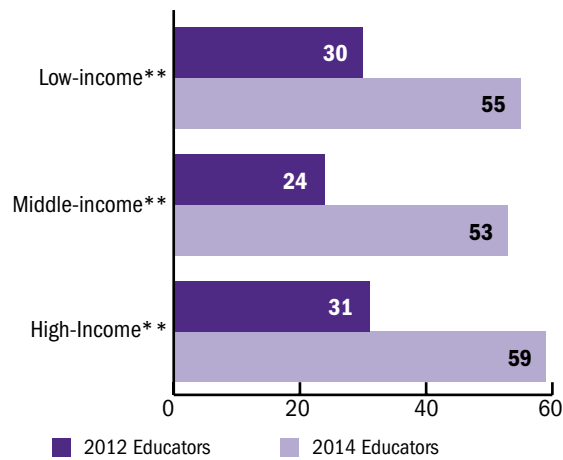
**Access by Student SES.** While educators of low-income children in 2012 (N = 580) had more access to traditional technology (e.g., TV/DVDs, digital cameras), educators of low-income children in 2014 (N = 418) had more access to newer technology (e.g., tablet computers, interactive whiteboards). Indeed, more educators of low-income students in 2012 reported access to TV/DVDs (81 percent vs. 70 percent) and digital cameras (92 percent vs. 85 percent); however, in 2014, more educators of low-income children reported access to interactive whiteboards (34 percent vs. 24 percent) and tablet computers (55 percent vs. 30 percent).

There were fewer differences in access for respondents who served middle- and high-income children. Educators of middle-income students in 2014 (n = 261) reported slightly less access to e-readers (48 percent vs. 52 percent) but more access to tablet computers (53 percent vs. 24 percent) compared to 2012 educators (N = 434). Similarly, 2014 educators of high-income children (N = 257) reported less access to TV/DVDs (68 percent vs. 76 percent) but much greater access to tablet computers (59 percent vs. 31 percent) compared to 2012 educators (N = 325). Together, these findings suggest that all children, regardless of income-level, have greater access to more advanced technologies, particularly tablet computers (Figure 4).



**Figure 4. Differences in the proportions of educators in 2012 and 2014 with access to tablet computers by student income.**

\*\*p<0.01.



**Use.** There were few differences in how frequently educators with access to each technology reported using the technology, measured on a scale of *never*, *less than once a week*, and *at least once a week*. Of note, more 2014 educators reported never using TV/DVDs (41 percent vs. 35 percent) or digital cameras (7 percent vs. 5 percent), compared to 2012 educators (Table 1).

**Table 1. Differences in the frequency of technology use between educators in 2012 and 2014, for those with access to the device.**

	Never		Less than once a week		At least once a week	
	2012	2014	2012	2014	2012	2014
<b>TV/DVDs</b>	35	41	49	42	15	16
<b>Computer</b>	21	25	26	26	53	49
<b>Digital camera</b>	5	7	28	25	67	68
<b>Interactive whiteboard</b>	23	26	18	19	59	56
<b>E-reader</b>	60	63	15	16	25	22
<b>Tablet computer</b>	25	21	23	22	52	58

**Age-Appropriateness of Technology.** Educators in 2014 believe that technology in general should be first introduced in education settings when children are 2.68 years old (SD = 1.15), which is almost half a year later than 2012 educators, who reported technology should be integrated when children are 2.25 years old (SD = 1.04).<sup>2</sup> For specific technologies, 2014 educators reported that TV should be introduced when children are 3.02 years old (SD = 0.05), computers when they are 2.54 years old (SD = 0.04), and tablet computer when they are 2.5 years old (SD = 0.04), suggesting differing beliefs based on technologies. Indeed, while 2012 educators were not asked to report the age at which children should use specific technologies, 15 percent reported it depended on the technology.

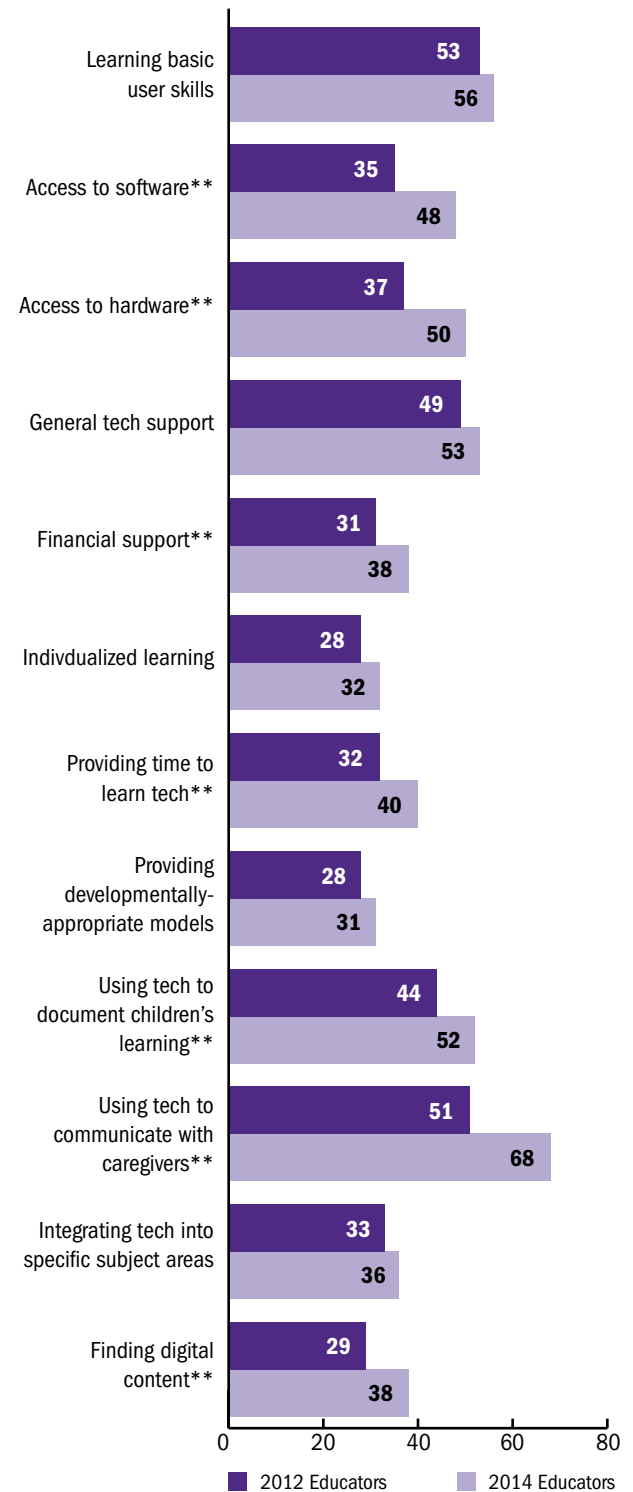
**Professional Development & Support.** Compared to 2012, significantly more educators in 2014 reported receiving professional development in educational technology (49 percent vs. 41 percent). However, there were no differences in the frequency of professional development reported in 2014 compared to 2012.

Compared to 2012, educators in 2014 generally felt more supported (Figure 5). Specifically, significantly more 2014 educators reported being somewhat or very supported in terms of financial support (38 percent vs. 31 percent), having sufficient time to learn how to use technology (40 percent vs. 32 percent), using technology to document learning (52 percent vs. 44 percent), communicating with parents/caregivers (68 percent vs. 51 percent), having adequate software (48 percent vs. 35 percent) and hardware (50 percent vs. 37 percent), and finding digital content (38 percent vs. 29 percent).

<sup>2</sup> In 2012, educators were only asked about general technology use, while in 2014, educators were asked to report age-appropriateness for TV/DVDs, computers, and tablet computers. In order to draw comparisons, responses to the three questions in 2014 were averaged to create an omnibus measure of age-appropriateness. The scale measures were also slightly different, such that the 2014 scale included more nuanced age categories (see Appendix), which were recoded to match the scale used in 2012 (see Wartella et al., 2013).

**Figure 5. Differences in the proportion of educators that agree or strongly agree that their program is somewhat or very supportive.**

\*\*p < .01.



**Attitudes Towards Technology.** There were many significant differences in attitudes, with those in 2014 tending to have less positive attitudes compared to 2012 educators. Indeed, 2014 educators were more likely to disagree or strongly disagree that technology could improve individualized learning (14 percent vs. 9 percent), critical thinking skills (21 percent vs. 12 percent), higher order thinking (21 percent vs. 14 percent), and content knowledge (14 percent vs. 9 percent). However, 2014 educators were more likely to agree or strongly agree with the notion that technology can aid communication with parents/caregivers (90 percent vs. 83 percent).

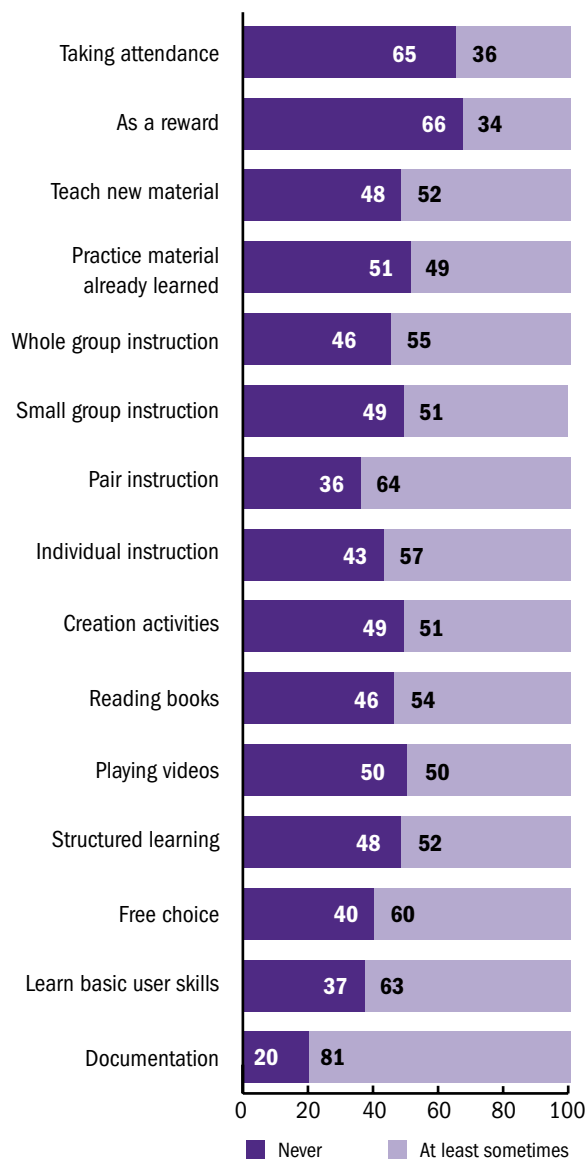
**Barriers to Technology Use.** There were few differences in perceived barriers to technology use between educators in 2012 and 2014. While significantly more educators in 2014 disagreed or strongly disagreed with feeling limited by a lack of appropriate digital content (51 percent vs. 46 percent), significantly more 2014 educators agreed or strongly agreed that they were limited by inadequate financial support compared to 2012 educators (28 percent vs. 19 percent).

**Findings: 2014 Respondents Only**

**How Educators Use Computers.** Educators in 2014 who reported having access to computers (N = 775) were asked how frequently they use computers for general instructional purposes (never, less than once a week, at least once a week). Almost half of participants (49 percent) reported using computers at least once a week, while 26 percent used them less than once a week, and 24 percent reported never using computers.

Educators with access to computers (N=775) were also asked how frequently they use the technology for specific purposes, such as documenting learning, for individual instruction, and for creation activities (never, sometimes, often, always; Figure 6). In many cases, approximately half of educators reported never using computers for the specific purposes listed. The one major exception was using computers to document children’s learning, where 80 percent of participants reported at least sometimes using computers for documentation.

**Figure 6. Proportion of 2014 educators who reported never or at least sometimes using computers in specific ways.**

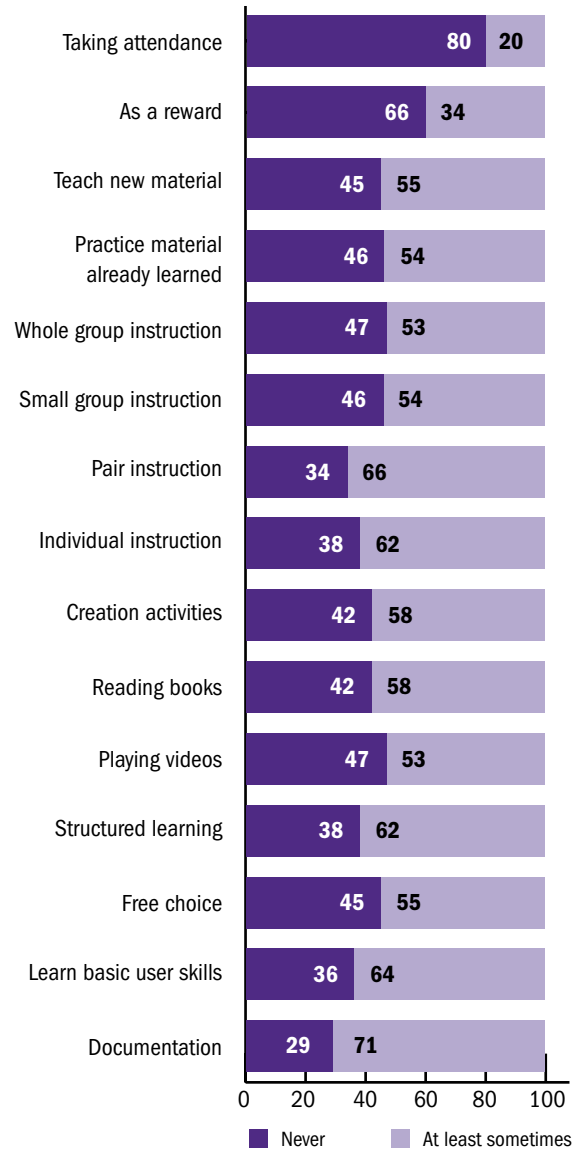


Totals may not equal 100 due to rounding.

**How Educators Use Tablet Computers.** Educators in 2014 who reported having access to tablet computers (N = 521) were asked how frequently they use tablet computers for instructional purposes in general (*never, less than once a week, at least once a week*) as well as how frequently they use tablet computers for specific purposes (*never, sometimes, often, always*). The majority of participants (58 percent) reported using tablet computers at least once a week, while 22 percent used them less than once a week and 21 percent reported never using tablet computers.

Regarding specific tablet computer uses, the majority of educators reported never or sometimes using tablet computers for all types of use (Figure 7). As with traditional computers, the one exception was using tablets to document learning, where nearly half (48 percent) of educators reported often or always using tablets in this way.

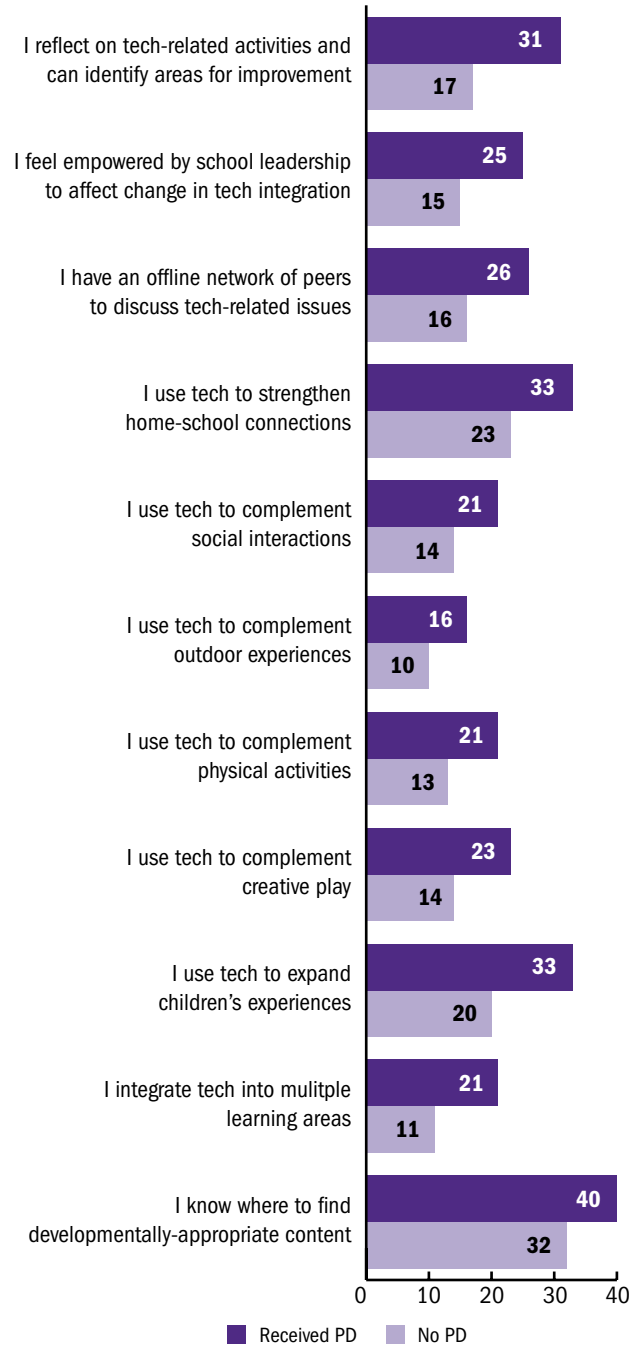
**Figure 7. Proportion of 2014 educators who reported never or at least sometimes using tablet computers in specific ways.**



### Technology Use by Professional Development

Educators who received pre- or in-service professional development in educational technology were more likely to agree or strongly agree that they could select, use, integrate, and evaluate technology tools in the classroom (Figure 8). Of note, professional development had a major impact on whether educators could integrate technology into multiple learning areas of the classroom (21 percent vs. 11 percent), whether they could use technology to expand children’s experiences beyond the classroom (33 percent vs. 20 percent), use technology to strengthen home-school connections (33 percent vs. 23 percent), and reflect on technology-related activities and can identify areas of success and ideas for improvement (31 percent vs. 17 percent).

**Figure 8. Proportion of educators who agree or strongly agree about their use of technology by whether they had received pre- or in-service professional development (PD) training specifically in educational technology.**



## Discussion

Findings from the 2014 survey provide a new understanding for how the digital media and technology environment in early childhood is quickly changing. Since the release of the NAEYC/Fred Rogers Center position statement in 2012 and findings that only 25 percent of 2012 survey respondents were familiar with the statement, now twice as many early educators (52 percent) report being familiar with the statement. This suggests that the position statement is permeating the field, though work still remains on creating greater awareness and communication about the statement to ensure all educators are aware of it.

Along with increased awareness of the position statement, there have been large increases in access to newer technologies. In just two years there has been a two-fold increase in educators' access to tablet computers, suggesting mobile technology and more personalized devices are not just a K-12 phenomenon but are being used in early childhood education as well. Further, educators from all program types and serving students from all socioeconomic levels had increased access to tablets.

Of particular note is the lack of change in frequency of using technology in the classroom. Despite increased access to tablet computers, 2014 educators were not using the devices any more often than 2012 educators. There were slight decreases in TV/DVDs and digital camera use, accompanied by decreases in access to these devices. One plausible explanation for this is that tablets may be taking the place of more traditional technology. Since tablet computers can mimic what these older technologies do (e.g., children and educators can watch videos and take pictures on tablets just as they would do with TV/DVDs and digital cameras), tablets may be replacing the need for TV/DVDs and digital cameras in the classroom.

Interestingly, TV/DVD access did not decrease for home-based providers, who have historically used this technology at higher levels than other types of childcare programs. As such, TV/DVDs may be so ubiquitous in home-based care that newer devices are not affecting the predominance of TV/DVDs in these environments.

Further, when it comes to age-appropriateness, 2014 educators believed TV/DVDs should not be used until children were at least 3 years old, whereas computers and tablet computers were believed to be appropriate as early as 2.5 years old. This suggests that with the advent of newer technologies, these educators are considering TV/DVDs to be even more age-inappropriate at young ages, especially compared to computers and tablet computers.

Despite increases in professional development and perceived levels of support, attitudes toward the value of technology for early childhood education slightly declined from 2012 to 2014. This may be a reflection that with increased exposure to technology, educators gain a more realistic view of the potential that technology has to aid learning, along with discoveries that some types of technology may actually be a hindrance to their classroom practices. In other words, their expectations did not meet the reality. Indeed, educators are bound to experience unforeseen challenges and difficulties that do not necessarily align with the hype over the potential and promise of educational technology.

Alternatively, even though more early childhood educators in 2014 reported receiving professional development specifically in educational technology, there were no increases in frequency of professional development. As such, decreased attitudes may also be a result of training and support. While 2014 educators said they felt more supported in general, the majority of specific support items had to do with external characteristics, such as access to hardware and software and financial support, or educators' technology use, such as documentation and communicating with parents/caregivers. There were no increases in support for more student-centered uses of technology, including individualized learning and developmentally appropriate models, which are two key aspects of training specifically related to improving the quality and effectiveness of technology integration.

Relatedly, a third to half of 2014 respondents reported never integrating computers or tablet computers for activities related to student learning, such as creation activities, individualized learning, free play, or learning new material. Instead, the large majority of educators reported primarily using computers and

tablets to document learning, suggesting they may not have sufficient training and support to use the technology in more dynamic ways. Further, while 2014 educators who received professional development were more likely to select, use, integrate, and evaluate technology tools in the classroom, the proportion of educators who agreed or strongly agreed that they could do these activities was still less than half.

Overall, while more educators are familiar with the NAEYC/Fred Rogers Center position statement, it is clear from this report that early childhood educators require more professional development and support to enact developmentally-appropriate and intentional uses of technology in the classroom. There is also a strong need for more professional development and support specifically aligned to helping educators use technology for student-centered practices and across the curricula in new and innovate ways. With continued increased access to newer devices, it is essential that training and professional programs be aligned to meet the needs of educators and support them in not only understanding how to use technology, but in how to effectively integrate it into the classroom and create quality technology-supported learning environments for all children.

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The author or editor of 12 books and approximately 175 book chapters, research articles, technical reports, and research papers, Dr. Wartella is currently coprincipal investigator on a 5-year multi-site research project entitled: "Collaborative Research: Using Educational DVDs to Enhance Young Children's STEM Education" (2013–2016) from the National Science Foundation. She also is coprincipal investigator on a National Science Foundation grant entitled "Media Characters: The Unhidden Persuaders in Food Marketing to Children" (2013–2016).

Dr. Wartella serves on the Board of Trustees of Sesame Workshop and the National Educational Advisory Board of the Children's Advertising Review Unit of the Council of Better Business Bureaus and the Kids Advisory Board for the Public Broadcasting System. During 2006–2007 she was the Inaugural Fellow of the Fred Rogers Center. A fellow of the American Academy of Arts and Sciences, she is a member of the American Psychological Association and the Society for Research in Child Development and is the past president and fellow of the International Communication Association. Wartella was lead author for the October 2010 report, *Technology in the Lives of Teachers and Classrooms*, and the October 2013 report, *Technology in the Lives of Educators and Early Childhood Programs*, published by the Fred Rogers Center.

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**Michael B. Robb, PhD**, is director of Digital Learning and Research at the Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College. He manages the continued development and ongoing refinement for one of the Center's signature programs, the Fred Rogers Center Early Learning Environment™ (Ele), and advances the integration of the National Association for the Education of Young Children/Fred Rogers Center position statement on technology and young children in early education. Dr. Robb has been involved in issues surrounding media and children for over a decade. He has published research on the impact of electronic media on young children's language development, early literacy



outcomes, and problem solving abilities in a variety of academic journals, including *Child Development*, *Infant and Child Development*, *Archives of Pediatrics and Adolescent Medicine*, *British Journal of Developmental Psychology*, and *Developmental Review*. He previously served on the Academy of Television Arts and Sciences Children's Programming Peer Group. Dr. Robb has also supervised community educational outreach efforts for KCET/PBS, helping parents and teachers to make the most of quality children's programming. He was the recipient of the Academy of Television Arts and Sciences Foundation Fred Rogers Memorial Scholarship, awarded to students for research on the relationship between children's use of media and learning. Dr. Robb holds a PhD and MA in Psychology from University of California, Riverside, and a BA in Child Development from Tufts University.

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## Appendix: 2014 Survey

1. What is the age of children you work with? Please choose all that apply.

- Infants
- Toddlers
- Preschoolers
- Early elementary school children
- Other
- Kindergarteners
- (please explain):

2. If you work with children of more than one age group, please choose the one you work with the most. Please think of this age group when completing the survey and answer all questions pertaining to this age group.

- 0 to 2 years, 11 months
- 3 to 5 years, 11 months
- 6 to 7 years, 11 months
- 8 years or older

**First, we'd like to better understand your general attitudes toward teaching young children.**

3. How much do you agree or disagree with the following statements with regard to your early childhood classroom/program?  
(*Stipek's Traditional Pedagogy Scale*, (-) reverse coded)

**1 (strongly disagree), 2 (disagree), 3 (neither disagree nor agree), 4 (agree), 5 (strongly agree)**

Children who begin formal reading and math instruction in preschool will do better, academically, in elementary school.

Worksheets and workbooks are a good way for children to master academic skills such as math and reading.

Preschool teachers should make sure their children know the alphabet before they start kindergarten.

Basic skills should be the teacher's top priority.

Practicing letters and their sounds is the best way for children to learn to read.

Children should be given formal instruction in number skills, even if they show little interest in them.

Children should work silently and independently on seat work.

Teachers should emphasize the importance of quality in final products.

If a child is not doing well in kindergarten, time should be set aside every day after school to practice school work.

It is important for preschool children to become good at counting and recognizing numbers.

Giving rewards and extra privileges for good performance is one of the more effective ways to motivate children to learn.

Formal instruction in math- and reading-related skills should only be given if children want it. (-)

School work should not be graded in the early elementary grades. (-)

Teachers should not emphasize right and wrong answers. (-)

Teachers should allow children to opt out of activities. (-)

4. How much do you agree or disagree with the following statements with regard to your early childhood classroom/program?  
(*Stipek's Child-Centered Pedagogy Scale*)

1 (strongly disagree), 2 (disagree), 3 (neither disagree nor agree), 4 (agree), 5 (strongly agree)

Children learn best through active, self-initiated exploration.

Curricular areas should not be taught as separate subjects at separate times. (-)

Having children experiment with writing through drawing, scribbling, or inventing spelling is a good way for children to develop literacy skills.

Homework should not be given in kindergarten.

Young children learn math best through manipulating concrete objects.

Teachers should not permit a child to leave an activity or task before finishing it. (-)

The enthusiasm and interest children have in a task is more important than how well they can do it.

It is important for children to follow exactly the teacher's plan of activities.

Even four- and five-year-old children should be told whether their work is correct or incorrect. (-)

During the time a teacher is presenting a lesson, children should not be allowed to interrupt or to relate personal experience.

**Next, we are going to ask you about your access and use of technology in your early childhood classroom/program.**

5. Please indicate how often you use the following technologies in your early childhood classroom/program for instructional purposes. ("Instructional purposes" is defined by the teacher using technology with students to reinforce a curricular goal. Examples include using the Internet to view a YouTube video related to an in-class discussion, taking and sharing digital pictures, or using an iPad to create art.)

0 (never – i.e. if you have access, but don't use it.), 1 (less than once a month), 2 (once a month),  
3 (several times a month), 4 (once a week), 5 (3 to 4 times a week), 6 (daily), 7 (N/A, i.e. you do not have access)

A TV/DVD player

A laptop or desktop computer

Internet

A digital camera or video recorder

A SmartBoard or interactive whiteboard

A Smartphone, such as an iPhone, Galaxy S4, Motorola Droid

A Kindle, Nook, or other e-reader

A tablet computer, such as an iPad, iPad Mini, Nexus, or Kindle Fire

Assistive technologies (e.g., Braille embossers, speech-to-text synthesizer, speech recognition software, electronic pointing devices, or other technologies used to make adaptations for children with special needs)

6. How confident are you at using the following technologies with children in a developmentally appropriate way?  
By “developmentally appropriate,” we mean using technology that takes into account the age, interests, and abilities of each child as well as his/her developmental stage.

**1 (not confident at all), 2 (not very confident), 3 (neutral), 4 (somewhat confident), 5 (very confident)**

A TV/DVD player

A laptop or desktop computer

Internet

A digital camera or video recorder

A SmartBoard or interactive whiteboard

A Kindle, Nook, or other e-reader

A tablet computer, such as an iPad, iPad Mini, Nexus, or Kindle Fire

A Smartphone, such as an iPhone or Android.

Assistive technologies (e.g., Braille embossers, speech-to-text synthesizer, speech recognition software, electronic pointing devices, or other technologies used to make adaptations for children with special needs)

7. Please list up to three of the most frequently used computer software (e.g., JumpStart) or online programs (e.g., RazKids, PBS Kids, ABCmouse) children use in your classroom/program.

8. How often do you use a laptop/desktop computer in the following ways?

**0 (never), 1 (sometimes), 2 (often), 3 (always)**

To help children learn basic user skills

During free choice time, where children can choose any software to play with

For structured learning activities, where children only do a specific activity on the computer

For playing videos

For children to read books

For creation activities, such as having children draw and write/audio record what they draw

For children to take learning assessments

Taking attendance on my laptop/desktop computer

For documenting children's learning

For individual instruction

For small group instruction

For whole group instruction

9. Please list up to three of the most frequently used tablet computer apps children use in your classroom/program.

10. How often do you use a tablet computer in the following ways?

**0 (never), 1 (sometimes), 2 (often), 3 (always)**

To help children learn basic user skills

During free choice time, where children can choose any app to play with

For structured learning activities, where children only do a specific activity on the tablet computer

For playing videos

For children to read books

For creation activities, such as having children draw and write/audio record what they draw

For children to take learning assessments

Taking attendance on my tablet computer

For documenting children's learning

For individual instruction

For small group instruction

For whole group instruction

11. How much do you agree or disagree with the following statements regarding technology use in your classroom/program?

**1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5 (strongly agree)**

I know where to find developmentally appropriate media (e.g., apps, games, websites, TV).

I know how to accommodate the physical classroom environment for different technology tools.

I integrate technology into multiple learning areas of the classroom.

I use technology to expand children's learning experiences beyond the classroom (e.g., videos, virtual field trips).

I use technology to complement creative play.

I use technology to complement physical activities.

I use technology to complement outdoor experiences.

I use technology to complement social interaction.

I use technology to strengthen home-school connections.

I have an offline network of peers with whom I feel comfortable discussing technology-related issues.

My program has a clear technology policy that addresses appropriate selection of and access to technology, digital privacy and etiquette, and digital equity.

I feel empowered by school leadership to effect change in technology integration.

I reflect on technology-related activities and can identify areas of success and ideas for improvement.

12. Where do you think the primary place should be for children to learn how to use a laptop or desktop computer?

At home

In an early childhood classroom/program

A balance between home and school. Both environments share some responsibility.

13. Where do you think the primary place should be for children to learn how to use a tablet computer?

At home

In early childhood classroom/program

A balance between home and school. Both environments share some responsibility.

14. What is the earliest age you think is appropriate to introduce children to TV/DVDs in an early childhood classroom?

0 to 1 year, 11 months old

2 to 3 years, 11 months old

4 to 5 years, 11 months old

6 to 7 years, 11 months old

8 years or older

Not appropriate in early childhood education

15. What is the earliest age you think is appropriate to introduce children to laptop or desktop computers in an early childhood classroom?

0 to 1 year, 11 months old

2 to 3 years, 11 months old

4 to 5 years, 11 months old

6 to 7 years, 11 months old

8 years or older

Not appropriate in early childhood education

16. What is the earliest age you think is appropriate to introduce children to tablet computers in an early childhood classroom?

0 to 1 year, 11 months old

2 to 3 years, 11 months old

4 to 5 years, 11 months old

6 to 7 years, 11 months old

8 years or older

Not appropriate in early childhood education

**The following questions regard technology integration into your early childhood classroom/program.**

17. Please indicate how much you agree or disagree with the statements with regard to your early childhood classroom/program.

**1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5 (strongly agree)**

Technology can improve documentation of children's learning.

Technology can improve individualized learning.

Technology can improve my ability to communicate with parents and other caregivers.

Technology can help to develop children's critical thinking skills.

Technology can help to develop children's higher-order skills.

Technology can help to develop children's content knowledge.

Technology is useful for assisting children with disabilities.

Technology is useful for social interactions among children.

Technology is useful for online professional development.

Technology tools should be used as part of everyday practice.

Technology is useful for supporting dual language learners.

18. Please indicate how much you agree or disagree with each statement.

**1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5 (strongly agree)**

Technology use is limited by insufficient or lack of technical support.

Technology use is limited by insufficient or lack of training.

Technology use is limited by insufficient or inadequate software.

Technology use is limited by insufficient or inadequate hardware.

Technology is limited by insufficient or inadequate financial resources.

Technology use is limited by the unreliability of technology.

Technology use is limited by my lack of time to learn technology.

Technology use is limited by my lack of time to use technology in my early childhood classroom/program.

Technology use is limited by my lack of comfort with technology.

Technology use is limited by the lack of parent approval of technology in my early childhood classroom/program.

Technology use is limited by my school/program's policy that prohibits technology use.

Technology use is limited because I am unsure of how to make technology relevant to subject areas.

Technology use is limited by technology changing too fast.

Technology use is limited by children's inability to appropriately use technology.

Technology use is limited by a lack of appropriate digital content for my students.

Technology use is limited by program evaluators/evaluations—e.g., the Early Childhood Environment Rating Scale (ECERS)—that deduct points for screen time.

**In this section, we ask questions about the pre-service and in-service professional development you receive(d), as well as current support for integrating educational technology into your early childhood classroom/program.**

19. Have you ever received pre- or in-service professional development specifically in educational technology? (y/n)

20. How often does your early childhood classroom/program offer any in-service professional development on technology?

Never

Less than once a year

Once a year

Several times a year

Once a month

Two to three times a month

Weekly

21. Listed below are characteristics of professional development for educational technology. Please indicate how you would characterize the support you receive from your school/program for each statement.

**0 (no support offered), 1 (very unsupportive), 2 (somewhat unsupportive), 3 (neither unsupportive or supportive), 4 (somewhat supportive), 5 (very supportive)**

Integrating technology into specific subject areas

Learning basic user skills (e.g., how to turn device on/off, how to use word processing software, how to use email account, how to upload/download pictures and/or videos)

Technical support

Financial support

Providing sufficient time to learn how to use technology

Providing developmentally appropriate models for using technology with children

Documentation of children's learning using technology

Children's individualized learning with technology

Using technology to communicate with parents and other caregivers

Providing adequate software

Providing adequate hardware

Helping you find and navigate available digital media resources and content (e.g., online videos, interactives, games, apps)



22. When looking for digital resources, I most often go to:

Website(s)

Colleague(s)

Librarian

Tech specialist

Parents of children in my classroom/program

23. In March 2012, the National Association for the Education of Young Children released a policy statement on the use of technology in early childhood education. How familiar are you with this statement?

0 (not at all familiar)

1 (somewhat familiar)

2 (moderately familiar)

3 (very familiar)

24. Please indicate whether or not you have viewed any of the following materials developed and provided by the National Association for the Education of Young Children and available at [www.naeyc.org/content/technology-and-young-children](http://www.naeyc.org/content/technology-and-young-children). Please select all that apply.

Archived webcast presentation discussing the technology statement

Examples of effective technology use with young children

Articles describing how technology could support early learning

Other (please explain):

None of the above

**Next, we are interested in gathering some demographic information.**

25. Are you Female\_\_\_? Male\_\_\_?

26. What is your age?

27. What is your race/ethnic background?

White, non-Hispanic/non-Latino

Hispanic/Latino

African-American

Asian

Native American or Alaskan Native

Hawaiian Native or other Pacific Islander

2 or more races

28. What is your family annual income level?

Less than \$10,000

\$10,000 to \$20,000

\$21,000 to \$30,000

\$31,000 to \$40,000

\$41,000 to \$50,000

\$51,000 to \$60,000

\$61,000 to \$70,000

\$71,000 to \$80,000

\$81,000 to \$90,000

\$91,000 to \$100,000

\$101, 000 to \$110,000

\$111, 000 to \$120,000

\$120,000 to \$130,000

\$131,000 to \$140,000

\$141,000 to \$150,000

More than \$150,000

29. What is your highest level of education?

Some high school or less

High school graduate (diploma or GED certificate)

Some college, no degree

Associate's degree

Bachelor's degree

Some graduate school work, no degree

Master's degree

PhD or EdD

30. How many years have you been in the teaching profession?

31. How would you best describe the economic level of the group you serve? (check one)

Low-income

Lower-middle income

Middle income

Upper-middle income

Upper income

**The next set of questions ask about the type of early childhood education program in which your work.**

32. Do you work in an Early Head Start or Head Start program? (y/n)

33. Which best describes the type of program in which you work?

Family childcare (eg. care for children in your home)

Preschool or childcare managed by a for-profit or non-profit organization (e.g., organizations such as the local YMCA, Bright Horizons, United Way, a local child advocacy center, stand-alone Montessori preschool programs, etc.)

Preschool or pre-kindergarten program within a public school

Preschool or pre-kindergarten program within a private school

Do not work in a childcare program

34. Is the organization that runs your center:

For-profit

Non-profit

35. Is your program run by a religious school? (Answer 'no' if your program uses space within a religious institution but is not considered part of the institution's religious programming.) (y/n)

36. Which best describes your job title?

Home-based childcare provider

Classroom teacher

Classroom assistant teacher

Classroom Aide

Center director

School principal

Other (Please explain):

37. In what type of community is your program located?

Urban

Rural

Suburban

38. What is the zip code of your school/program?

**Finally, we are interested in your opinion on technology in early childhood.**

39. How much do you agree or disagree with the following:

1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), 5 (strongly agree)

*Technology and interactive media are tools that can promote effective learning and development when they are used intentionally by early childhood educators, within the framework of developmentally appropriate practice, to support learning goals established for individual children.*

Please explain:

41. Did you take this survey in 2012? (y/n)

Additional Comments:

