

Technology in Early Childhood Education

An Exchange Trend Report

by Chip Donohue

The use of computers and other digital technologies continues to rise in early childhood programs, and technology is being used as a tool for improving program quality in many interesting ways. In this *Exchange* Trend Report the focus is on innovative and effective uses of computers and technology for program management, classroom teaching, and professional development. The results of an online "Readers Survey" at ChildCareExchange.com are highlighted, and innovations for classroom teaching and eLearning are identified and described, to provide a snapshot of the most frequent and promising uses of technology in early childhood education.

Can you hear me now?

Our lives today are more like the "Jetsons" than "Ossie and Harriet." We routinely use high tech tools like cell phones, PDAs, personal computers, the Internet, e-mail, and digital cameras in our homes, at work, and in our classrooms. But cell phones that have built-in digital cameras that can send photos and receive text messages and e-mail via wireless Internet would amaze even George Jetson.

Acronyms like PC, CD, DVD, PDA, DSL, eBay, and .com, are part of our professional vocabulary right alongside ECE, DAP, ADA, and NAEYC. For better or

worse, technology has changed the way we manage finances, keep records, write newsletters, market programs, give presentations, teach children, and train teachers.

Not convinced? Count how many of these technology tools you have used in the past week:

- Cell phone
- PDA (Personal Digital Assistant)
- Personal computer
- Printer
- Scanner
- Internet
- Dial-up or high speed connection
- E-mail
- Instant Messaging
- Distribution list and/or Listserv
- Online discussion group
- Chat room
- Digital camera and/or video camera
- Recordable CD and/or DVD
- Direct broadcast satellite or high-speed digital cable TV
- Digital video recorder
- Other

Simply amazing! The question is not *if* we should use technology, but *how* and *why* we use technology to improve program quality, increase responsiveness to parents, and expand opportunities for professional development. When used effectively, technology tools can support and enhance

learning, teaching, documentation, program management, customer service, staff and parent communication, marketing, staff development, networking, and advocacy. Today, child care programs are using technology in many creative ways. For example, developing a web site for marketing and access to information, posting lunch menus on the web, distributing the newsletter electronically, sending digital photos of children to parents via e-mail, participating in listservs, online discussion groups and webcasts for networking and advocacy, and taking online courses. Simply amazing!

Low Tech/High Touch

Child care tends to be a low tech profession with a strong preference for high touch learning experiences. Most child care professionals, unlike the young children in their care, have come to computers as adult learners and can be resistant to using technology when face-to-face interactions and relationships are at the heart of their work.

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Some child care programs are making good use of computers and digital technology, but few are able to take full advantage of technology as a tool. The computers that some programs use were already obsolete when they were donated by parents years ago. More and more centers now have high speed connections to the Internet in the office or staff training room, but many others are using slower dial-up connections or have no Internet access at all. And, while the cost of technology has come down over the years, buying a new computer system and software, upgrading it every few years, and paying monthly fees for Internet access can be difficult or even impossible for some child care programs and professionals to afford.

Technology Tools for Management

Managing a child care program involves many complex tasks and daily challenges. To succeed in our digital information age, child care professionals need access to technology; technology training; opportunities for online learning and professional development; access to the wealth of information, resources, and services available on the Internet; and the ability to link electronically with parents, staff, and other child care professionals. Technology tools can make these tasks more manageable. But what tools do child care professionals use most often?

Responses to an online Readers Survey at the ChildCareExchange.com web site offers a glimpse into the ways technology is being used for program management. The goal of the survey was to research the extent to which child care centers have embraced technology for administrative and curriculum solutions. We were also interested in how widely new technologies such as security cameras, Internet communications, and digital cameras were being used.

The survey was completed by child care professionals in the United States and around the world who work in a variety of roles including center directors, owners, teachers, family child care providers, early childhood faculty and consultants, public officials, and advocates. The results are summarized in Table 1.

“Survey says . . .” The participants in this survey were most likely to use computers for administrative tasks, with financial management and accounting being the most common use. Database software for managing information and records was also an important use. Computers with educational software were used in the classrooms by 63% of the participants, and games and entertainment software were used in classrooms by 42% of the survey participants.

A few interesting patterns emerged from the survey responses when we looked at years of experience, program type, and program size. For example, the more experience people had in the early childhood field, the more likely they were to use computers and other technology tools in their programs. Early childhood professionals who had 10-20 years of experience were more likely to use computers and technology than those who were new to the field, or those who had been in the field over 20 years. Interestingly enough, those with 20 or more years of experience were more likely to use computers than those who were new to the field or who had less than 3 years of experience. Given that the most experienced professionals have had to learn to use computers as adults, one might have expected the younger and less experienced professionals who have grown up with computers to be more computer savvy.

We also looked at the use of technology in 16 different types of programs

including an independent non profit center, multi-center non profit system, independent for profit, multi-center for profit chain, family child care, public school operated, church-housed, employer-sponsored, hospital-based, campus, government/military, resource & referral agency, NGO, and consulting/training agency. Overall, the use of technology was very similar across program types, with the use of computers for accounting work being the most frequent response for every type of program.

The type of program that had the highest level of computer use in every category was the multi-center for profit chains, and

Table 1
Technology in Child Care
n=1341

Computer Uses	%
Accounting	87
Student Records.....	64
Classroom – educational software.....	63
Classroom – games and entertainment software	42
Parent Communication	
Web site for promotion for new parents	47
Web site for current parent information.....	20
Via fax.....	11
Via e-mail.....	27
Center newsletter sent to parents via e-mail ...	11
Staff Communication	
Via e-mail.....	35
Cell phone when away from center.....	53
Internet Access	
High-speed (DSL or cable)	58
Low-speed (Dial-up)	30
Purchasing over the Internet	
Orders books and music	57
Orders curriculum supplies	52
Orders classroom equipment.....	47
Video Camera & Digital Camera	
Video of the classroom for parent conferences.....	11
Video teachers in action for staff training.....	16
Digital photos of children to share with parents	56
Security Systems	
Video cameras in classrooms.....	13
Electronic security system for off hours.....	32
Buzzer system for monitoring access	36

the level of use was considerably higher in almost every category. Clearly, the multi-center for profit chains have embraced technology, are using it the most frequently, and have effectively integrated it into program management, communication, purchasing, documentation, and security.

Family child care programs tended to have the lowest level of use; but even so, more than half of the providers who completed the survey used the computer for accounting work; and using computers with educational software, to maintain student records, and for ordering books and music over the Internet were also identified as the most frequent uses. Half of the providers also indicated that they had high-speed Internet access from their homes, which was comparable to other types of programs.

The size of the program indicated by the total licensed capacity and number of employees was also examined for similarities and differences. Not surprisingly, the larger centers (both in numbers of children enrolled and number of employees) were more likely to use all of the technology tools.

While the use of computers and technology continues to increase each year, the results of the Readers Survey only describe the most frequent uses among early childhood programs and professionals who already have access to the Internet and were able to complete the survey online. The overall level of use and variety of technology applications in all early childhood programs is likely to be lower in most categories than we found in this sample. However, the picture that emerges from the survey responses is that computers and technology are being used in every type and size of program, especially for accounting, record keeping, and in the classroom. Computers and other technology tools can now be found in many child care programs and family child care homes, and

they are being used in ways that best meet the needs of each program and the technology skills of the program administrator.

A child care program managed by a computer-literate administrator clearly has an advantage in our highly technological age; and the positive impact on program quality, the staff, children, and parents make an investment in computer technology and training a smart business decision. But effective use of technology in early childhood programs is still limited by issues of access, affordability, and technological literacy.

Technology Tools for Teaching

Computers have been in early childhood classroom since the early 1980s. As with technology tools for program management, the question of computers in the early childhood classroom is not if, but how and why we use them. To learn more about the successful integration of computers into the early childhood classroom and curriculum, visit the *NAEYC Technology and Young Children Interest Forum* (www.techandyoungchildren.org). There you will find a wealth of resources and Internet links related to best educational practices for technology use in early education, research, and strategies for funding technology, as well as a technology information exchange and Internet tips.

Trends to watch in technology tools for teaching young children can be easily summed up — digital technologies and the Internet. Teachers are rapidly expanding the use of digital cameras and digital video cameras, scanners, printers, and recordable CDs as tools for documentation. And digital photos can be sent to parents via e-mail, and used to create an electronic portfolio for children and their parents. Teachers are also using the Internet as a resource for curriculum ideas and research, taking chil-

dren on virtual field trips, and as a powerful tool to help children explore ideas and access information. The uses of digital technologies and the Internet in the classroom are as open-ended as the imagination and creativity of the teacher.

Another trend is the focus on assistive technologies and the provision of inclusive child care. *Tech for Tots*TM (www.uscuap.org) is one example. The University of Southern California University Affiliated Program (UAP) at Children's Hospital Los Angeles has developed a comprehensive awareness level training for use in teacher education and professional training. The program focuses on the value of assistive technology for children with disabilities and addresses concerns about children ages birth to three being underserved with assistive technology. For other examples and a wealth of resources, visit the NAEYC Technology and Young Children web site web and explore the *Technology Use to Benefit All Learners* section on the *Best Educational Practices* page.

There have been a number of successful strategies for addressing access issues by bringing computers to the children. One model that I had the chance to experience first hand is the *Cherry.bytes* children's laptop mobile lab (www.apple.bytes.co.nz/). KinderCare Learning Centres (New Zealand) support young children in developing skills in using computers as a creative resource and learning tool by ensuring the children have access to computers. *Cherry.bytes* is an innovative concept in mobile computer classroom technology, where staff are trained specialists working alongside young children and computers in specially modified vans that bring technology directly to the children and programs. Specifically designed for preschoolers, the program challenges and empowers children, captures their interests, encourages problem solving and social interactions, and supports

their passion for lifelong learning. The future looks bright for technology in early childhood classrooms, but again, we have to pay close attention to access issues. If working with computers is beneficial for young children, then we need to make sure that all children have the experience and hands-on learning that will help them use computers as tools for learning throughout their lives. And we must be sure to provide training and professional development so that teachers feel confident and competent, and excited about the possibilities. Teachers need time to play, explore and discover, and integrate these experiences with their knowledge of developmental theory and research, and to understand how technology can best enhance children's early learning.

Reflections and Visions

The use of computers and technology in early childhood education has grown each year, and the ways in which technology tools are used to manage and improve programs and enhance children's learning have expanded dramatically. The trend will continue for the foreseeable future; but equity issues of access, affordability, and the need for computer literacy for early childhood teachers and faculty will remain as significant barriers for many early childhood programs and professionals. As a field we have an opportunity to harness these new technology tools to make a

real difference for the young children, parents, and families in our care if we work together to overcome the barriers, and share our best practices with one another. I'm excited about the possibilities and can't wait to see what new tech tools and toys will become available, and the creative ways we will use them in our early childhood programs. *Can you hear me now?!*

Technology Resources

Microsoft® Office XP: A Training Manual for Early Childhood Administrators (2003) by Tim Walker, Technology Coordinator, Center for Early Childhood Leadership at National-Louis University.
www.nl.edu/cecl

NAEYC Technology and Young Children Interest Forum. www.techandyoungchildren.org

"Buyer's Guide to Educational Software," *Child Care Information Exchange*. (2003, July). p. 73. www.ChildCareExchange.com

Coming in 2004! *The Technology Toolbox* by Chip Donohue and Tim Walker. An ongoing series of one page tip sheets on how to effectively use technology including e-mail, listservs and discussion forums, and tools for professional development and training, networking and advocacy, management, parent communication, and customer service.

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See more of Technology in Education Early Childhood Learning on Facebook. Log In. Forgotten account? or. Create New Account. Not Now. Technology in Education Early Childhood Learning. Education. CommunitySee all. 1,396 people like this. gration of technology Interactive media refers to digital. and interactive media in early childhood programs is built upon solid develop-mental foundations, and analog materials, including soft-ware programs, applications (apps), broadcast and streaming media, some childrenâ€™s television programming, and early childhood.Â This statement is intended primarily to provide guidance to those working in early childhood education programs serving children from birth through age 8. Although not developed as a guide for families in the selection and use of technology and interactive media in their homes, the information here may be helpful to inform such decisions. NAEYC and the Fred Rogers Center do not endorse or recom-mend software, hardware, curricula, or other materials. 1.