



Research-to-Practice Brief

THE USES OF TECHNOLOGY TO SUPPORT EARLY CHILDHOOD PRACTICE: PROFESSIONAL DEVELOPMENT AND INFORMAL LEARNING

Over the past two decades, the use of technology in early care and education settings has steadily increased, growing out of the recognition that technology may be used to improve program practice and, ultimately, **children's learning and development**^{1,2,3}. Unfortunately, little is known about the effectiveness, function, and requirements for technologies that are available to early childhood programs. Prompted by this gap in knowledge and the increasing prevalence of technology in early childhood settings the Administration for Children and Families (ACF) Office of Planning Research and Evaluation (OPRE) sponsored The Use of Technology to Support Early Childhood Practice project. Its goal was to provide a detailed review of the knowledge base related to the use of technology to support the practice of early childhood practitioners who work directly with children and families. The review examined the uses of technology in three Topic Areas of interest to ACF/OPRE: 1) Instruction and Assessment; 2) Parent, Family and Community Engagement (PFCE); and 3) Professional Development and Informal Learning.

This brief describes how technology may directly support early childhood practitioners' "formal" professional development (e.g., through in-service programs or training on product-specific implementation and enrichment) and informal learning (e.g., independent learning and peer collaboration) for practitioners (Topic Area 3). In addition, the brief describes barriers to and **facilitators of practitioners' effective use of technology to support early childhood practice**. This brief is purely descriptive of the technologies that are currently available and makes no recommendations or endorsements of individual technologies, products, or programs.

METHODS

This review utilized the following three research methods:

- *Web-search to identify common and cutting-edge uses of technology*
- *Academic database search to identify literature that evaluates the impact of products or programs using technology*
- *Interviews with 16 early childhood and technology experts (i.e., researchers and developers)*

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This brief describes how technology may support early childhood practitioners' professional development and informal learning.



WHICH TECHNOLOGIES ARE BEING USED TO SUPPORT PROFESSIONAL DEVELOPMENT AND INFORMAL LEARNING?

We identified 23 technologies that early childhood practitioners are currently using to support their professional development and/or informal learning. **Professional development technologies provide practitioners with on-demand access to training materials (e.g., video exemplars, online resource libraries), enable one-on-one virtual coaching sessions using video conferencing or recordings, and allow remote access to courses, trainings and webinars. Practitioners also have greater access to their colleagues through the use of social media networking technologies, practitioner-generated resource exchanges, and forums and blogs.** Two of the most commonly used technologies are video and webinars. Of the professional development technologies, video had the strongest evidence base, while webinars have not been evaluated in terms of their effectiveness for professional development. Please scroll over each technology in the list for more information about the technology, including whether it is used for formal professional development (PD), informal learning, or both, and examples of its use by practitioners and/or coaches/trainers.

- Audio
- Blog
- Forums
- Online Courses
- Online Documents and User Guides
- Online Modules
- Online Peer-to-Peer Interactions
- Photo or Video Sharing
- Product Training and Implementation Videos
- Telephone Conference
- User Resource Exchanges
- Video Exemplars
- Webinars
- Alternative Social Networking Sites
- Video Conferences
- Audio Self-Reflection
- Case-based Hypermedia Resource
- Common Social Networking Sites
- E-mail Feedback from a Coach or Trainer based on Video Review
- Multi-media Feedback from a Coach or Trainer based on Video Review
- Online Reliability Exercises or Tests
- Video Self-Reflection
- Web-Mediated Coaching

Technology provides early childhood practitioners with on-demand professional development opportunities and connects practitioners with peers to facilitate informal learning and sharing.

Note: Our review did not address concerns regarding the confidentiality or security of data (e.g., video recordings submitted via a web interface as part of a remote coaching session).



We identified 50 products or programs that early childhood practitioners are currently using to support professional development and informal learning. [Products and programs](#) that support professional development and informal learning are divided into four technology categories: video-enabled professional development; online coursework; social media networking; and other forms of technology. Clicking on the hyperlink above will open a webpage that links to a table of sample products and programs that utilize these technologies, as well as external links to product or program websites.

WHAT ARE THE BARRIERS TO PRACTITIONERS’ EFFECTIVE USE OF TECHNOLOGY?

Based on the findings from the expert interviews, early childhood programs face many common obstacles to effective uses of technologies to support instruction and assessment, PFCE and professional development and informal learning. The most common barrier to successful implementation is staff technological literacy. Other common barriers include lack of access to technology resources, Lack of support from administrators for the use of technology, limited funding for new technologies, and lack of time to learn and use the technology.

Barrier	Description
Technological literacy	Practitioners with limited knowledge about the technology, familiarity with the technology, understanding of how to use the technology (both conceptual and procedural), and comfort using the technology, have difficulty using technology to support practice.
Access to technology resources	Inadequate access to reliable (i.e., working) technology, quality software, up to date technology (both hardware and software), and broadband Internet access can severely hinder technology use.
Administrators' support	When administrators do not support or are ambivalent towards use of technology, practitioners are either not inclined to use the technology or are unable to do so successfully.
Funding	Technology is costly. Many early childhood programs lack sufficient funding to make such significant investments in technology.
Time	Practitioners have difficulty finding time to learn to use a new technology and then use the technology during an already busy work day.

WHAT ARE THE FACILITATORS TO PRACTITIONERS’ EFFECTIVE USE OF TECHNOLOGY?

Experts continually highlighted the critical role early childhood administrators play in **either encouraging or hindering practitioners’ use of technology**. Frequently nominated strategies to encourage successful practitioner use of technology include providing practitioners with adequate resources, training, and technical support, leading by example, and recognizing high performing staff. Providing adequate professional development, training and technology support services are two of the most commonly mentioned facilitators for successful implementation and, thus, solutions to the common barrier of limited technological literacy among practitioners.

Early childhood administrators play a critical role in either encouraging or hindering practitioners’ use of technology.

Facilitator	Description
Access to technology	When practitioners have access to contemporary, reliable technology, they are more likely to be familiar with it and feel comfortable using it.
Professional Development/training	Quality professional development allows practitioners to be more knowledgeable and feel more comfortable using technology.
Understanding benefits to practice	Observing a peer use a technology, or obtaining guidance from a coach can help practitioners understand how and why a technology can benefit their practice.
Technical support	Availability of a resource that can assist practitioners when they inevitably run into an obstacle using the technology facilitates continued technology use.
Administrators' support	Support in the form of adequate funding for the purchase, maintenance and updating of requisite technologies; encouragement to attend trainings and professional development sessions; modeling positive attitudes toward technology use; and recognizing staff who use technology well leads to high levels of practitioner fidelity of technological implementation.

WHERE CAN I FIND ADDITIONAL INFORMATION ABOUT TECHNOLOGIES THAT SUPPORT EARLY CHILDHOOD PRACTICE?

This brief is part of a larger series of materials generated by The Use of Technology to Support Early Childhood Practice project. Click on the hyperlinked text below to access the following materials:

- [Use of Technology to Support Early Childhood Practice Project Information](#)
- [Research Snapshot](#)
- [Executive Summary](#)
- [Full Report](#)
- [Instruction and Assessment Brief](#)
- [Parent, Family and Community Engagement \(PFCE\) Brief](#)

¹ Barron, A. E., Kemker, K., Harmes, C., & Kalaydjian, K. (2003). Large-scale research study on technology in K–12 schools: Technology integration as it relates to the National Technology Standards. *Journal of Research on Technology in Education*, 35(4), 489–507.

² Diamond, K. E., Justice, L. M., Siegler, R. S., & Snyder, P. A. (2013). *Synthesis of IES research on early intervention and early childhood education*. Washington, DC: National Center for Special Education Research, Institute of Education Sciences. Retrieved from <http://ies.ed.gov/nceser/pubs/20133001/pdf/20133001.pdf>. Retrieved from <http://www.flextherapistceus.com/material/Early%20Childhood%20Intervention%20and%20Education%20Research.pdf>

³ National Association for the Education of Young Children., & Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College. (2012). *Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8.*, 1–15. Retrieved from http://www.naeyc.org/files/naeyc/file/positions/PS_technology_WEB2.pdf

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