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Summary

Technology is increasingly becoming a popular and effective instructional tool used by early childhood educators. Because of its popularity and potential to increase student learning, this article provides guidelines for early educators regarding the wise and intentional use of technology and offers specific examples of both educational and assistive technologies.

Keywords: early childhood education, technology for young children, educational and assistive technologies

Providing quality educational experiences for young children (ages birth to eight) is no longer a luxury; it is a necessity. Early intervention provides an essential foundation for children's learning and supports their cognitive, academic, motor, linguistic, social-emotional, and developmental growth (Adams 2011). Similarly, children's involvement in early childhood programs increases their educational progression and attainment, decrease their episodes of delinquency and crime, and improves their overall labor market success (Karoly, Kilburn, & Cannon 2005). However, not all programs yield optimal success. Consequently, teachers of young children are searching for evidence-based instructional practices that maximize student growth, respect the individual learner, parallel developmentally appropriate practices, and reflect national, state, and district standards.

In their quest for optimal, purposeful, and intentional instructional approaches, teachers of young children are exploring new instructional methods, curricula, and ways to collaborate with families, community resource personnel, and others who positively influence the child. Because there is no one single method or combination of instructional approaches that is appropriate for all children, teachers must be familiar with a wide range of various instructional methods to meet the diverse needs of children in their classroom. Clearly, good teaching and explicit learning objectives should guide the teacher's choice of activities and experiences (LaRocque & Darling 2008).

When used appropriately, technology supports good teaching. Technology can enhance children's learning, support peer and adult relationships, facilitate collaboration among and between educators and family members, and streamline student assessments (NAEYC 2012). Further, technology promotes equity and access by providing opportunities for all children to participate and learn, not just those from affluent backgrounds who have access

to technology at home (Cross, Woods, & Schweingruber 2009). With technology advancing and numerous position papers having been published by professional technology-oriented educational organizations, we provide a rationale for using technology with young children, provide guidelines for its use, and provide practical ways for teachers to use educational and assistive technologies in early childhood settings.

Early childhood education

In the United States, children from birth to age eight often receive care and education from various educational and care systems. For example, LaRocque & Darling (2008) noted that students who are typically developing may receive support from one or more of the following: parental or family care, family or home child care, group child care, preschool, four-year-old pre-kindergarten, and elementary school (kindergarten through second grade). In addition, young children with disabilities may receive education and care services through hospital settings, clinics, and early intervention services as mandated by The Education of the Handicapped Act Amendments of 1986 (P. L. 99-457, 1986).

These various settings are taking on a new look. Now, more than ever in the United States, we see children with and without disabilities learning side by side in early childhood inclusive educational settings. In 2006, for example, more than 44% of children ages three through five were served under the Individuals with Disability Act (IDEA) in an inclusive early childhood program at least 80% of the time (U. S. Department of Education 2008). In addition, we see changes in the way teachers present information, ways that children access information, and ways educational teams collaborate. For example, in preschools and other early settings, teachers are incorporating computers, tablets, multi-touch screens, interactive whiteboards, mobile devices, and electronic toys into daily learning experiences. Early childhood educators are also using email, skype, electronic assessment systems, smartphones, apps, social media, and digital portfolios to communicate and collaborate with family and educational team members regarding the child's progress. Because technology is increasingly becoming a staple in the education of young children, it is important to review guidelines for its appropriate use.

Wise uses of technology

In January 2012, leaders from the National Association for the Education of Young Children (NAEYC 2012) and the Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College (FRC) developed a position paper which guides early childhood professionals regarding the appropriate use of technology with young children. To summarize, leaders from these organizations recommended that early childhood educators:

- *Select, use, integrate, and evaluate technology in intentional and developmentally appropriate ways, attending to the appropriateness and quality of the content, child's experience, and opportunities for co-engagement.*
- *Provide a balance of activities for young children, recognizing that technology can be a valuable tool when used to support children's active, hands-on, creative, and authentic engagement with the world and those around them.*

- *Prohibit the passive use of technologies for children younger than two and discourage passive and non-interactive uses of technology with children ages two through five.*
- *Limit use of technologies for those two and younger to those that appropriately support responsive interactions between caregivers and children and that strengthen adult-child relationships.*
- *Carefully consider screen time recommendations for children birth to age five.*
- *Provide leadership in ensuring equitable access to technology for children and family members.* (p.11)

Collectively, these recommendations should cause early educators to pause and ask themselves if the use of technology will enhance their instruction within a developmentally appropriate framework. Clearly, technology should not replace activities such as creative play, physical activity, outdoor experiences, or social interactions. Therefore, early childhood educators should select and use technology if and when it promotes healthy development, learning, creativity, interaction with others, and social relationships. Table 1 provides a list of guidelines for teachers to consider when deciding whether or not to use technology in a lesson.

Table 1. Factors to consider when choosing technology for young children

Factors to be considered	Examples
Developmentally appropriateness	✓ Is the content presented age/developmentally appropriate? ✓ Does it allow children to engage in learning in a play-like fashion? ✓ Can it be customized to each child's need? (e.g., activity set for a child at an appropriate level, choice of language) ✓ Does it provide open-ended activities? ✓ Does it provide appropriate feedback? ✓ Does it have any potentially harmful effect related to the use of technology? (e.g., brightness of screen, screen time) ✓ Is the content free from any potential bias?
Curricular implication	✓ Does it allow children to expand their learning from previous lessons? ✓ Does it provide unique experience to learn certain content? ✓ Does it allow teachers to monitor/assess their learning progress?
Fostering social interaction	✓ Does it promote peer or teacher-child interaction? ✓ Is the location appropriate? (e.g., Does it allow better supervision? Is it easy for a child to access?) ✓ Will the physical setting facilitate social interaction? (e.g., Does it encourage a child to work with others?)
Child-friendly	✓ After initial instruction, can a child work independently? (e.g., start, select, end, and save activities) ✓ Is instruction or direction easy to understand? ✓ Does it allow children to explore content at their own pace? ✓ Does it allow multiple opportunities for success?

In other words, teachers need to be intentional regarding their use of technology. One way to be intentional is to be mindful of the developmental progression in children's use of and learning of technology. Typically this progression moves from exploration to mastery and then to using tools to accomplish other tasks (NAEYC 2012). Therefore, early educators need to initially plan purposeful activities which allow children to explore the use of technologies such as digital cameras, audio and video recorders, and printers. These instructional decisions support recommendations from leaders from the International Society for Technology in Education (2007) that by age five, children should have acquired basic skills in technology operations and concepts.

Many researchers seem to agree that most technology and media are inappropriate for children under two. However, preschoolers have different levels of ability to control technology and can master simple digital devices with adult mediation. Further, many school-age children can use devices and apps to make pictures, play games, record stories, take photos, or make books (NAEYC 2012). Clearly, the technology learning progression reflects the fact that young children are growing up at ease with digital devices that are rapidly becoming the tools of culture at home, at school, at work, and in the community (Lisenbee 2009).

Early educators also need to be cautious regarding issues regarding the use of technology. Admittedly, technology is effective only when it is used effectively. Some educators may be tempted to use technology for technology's sake, rather than as a means to an end. Technology should not be used for activities that are not educationally sound, developmentally inappropriate, or are ineffective, such as developing electronic worksheets for preschoolers (NAEYC 2012). Similarly, early educators should be aware of existing recommendations regarding the amount of screen time for young children. Screen time is the total amount of time spent in front of any and all screens such as television, digital video discs (DVDS), videos, computers, tablets, smartphones, handheld gaming devices, portable video players, digital cameras, and others (Common Sense Media 2011). Researchers from the American Academy of Pediatrics (2011) and the White House Task Force on Childhood Obesity (2010) discouraged any amount or type of screen media and screen time for children under two and recommended no more than one to two hours of total screen time per day for children over two. Therefore, early educators should be mindful of these recommendations as they plan screen time activities, and they should share such recommendations with family members.

Educational technologies

Early childhood teachers have numerous options available when choosing if, when, and how to use educational technologies in their classroom. Therefore, it is important to remember that first teachers should establish learning goals for the lesson or unit and then determine whether or not technology would enhance the desired learning outcomes (Jung & Conderman in press; McManis & Gunnewig 2012). Technology supports, but does not supplant, instruction or teacher judgment. In this section, we describe a few ways teachers can use technology to support various learning and social-emotional goals for young children.

Supporting mathematics

One way to use technology in supporting children's conceptual understanding of mathematics as well as problem solving skills is by using virtual manipulatives. Virtual manipulatives are interactive, web-based visual representations of dynamic objects (Moyer, Bolyard, & Spikell 2002). Virtual manipulatives enable as much engagement as physical manipulatives even though they are more abstract because they do not allow hands-on activities. Never-the-less, they eliminate some of the constraints of physical manipulatives (Durmus & Karakirik 2006) such as cost, storage, portability, clean-up, and safety, both in terms of sanitary issues and children swallowing, throwing, or misusing manipulatives. Two sources for virtual manipulatives include the National Library of Virtual Manipulatives website[1] and the NCTM Illuminations website[2].

To use virtual manipulatives, teachers should make them available to children as one of their possible tools as they explore problems (Bahr & deGarcia 2010). Some children may need to physically touch and hold manipulatives while others either do not need the physical act of using manipulatives, do not enjoy using the computer or lack technology experience, or have an aversion to touching certain items. For example, some children with autism ingest nonedibles, and others are tactually defensive (Gargiulo & Metcalf 2010). Virtual manipulatives can be used in any type of instruction accessible to technology such as learning centers, whole group instruction using the interactive whiteboard or other computer-based device, or in small groups. Our experience is that children benefit from preteaching and teacher modeling if they will be using a new site, feature, or skill with virtual manipulatives.

Teachers can also use various types of mathematics software to support mathematical understandings for young children. Typically, mathematics software includes a series of mathematics activities or games designed to teach particular mathematics concepts. Several researchers have reported positive effects of mathematics software on children's mathematics learning (e.g., Clements & Sarama 2007; Jung, Hartman, Smith, & Wallace 2013; Räsänen, Salminen, Wilson, Aunio, & Dehaene 2009).

One specific application of using mathematics software involves developing early geometry concepts in young children. Typically, teachers provide children with pattern blocks and ask them to fill in the outline of a puzzle using math manipulatives. Many young children are unable to complete this puzzle because they have limited ability to apply geometric actions, such as turning, sliding, and flipping (Clements, Wilson, & Sarama 2004). Also, children find composing shapes to cover the outline (e.g., two trapezoids can cover an outline of a hexagon) even more challenging because they often see each shape as a whole and are unable to see relationships among shapes (Clements et al. 2004). However, establishing a similar task on a computer screen using the software program Building Blocks (Clements & Sarama 2008) helps children become more aware of such geometric actions because they have to choose those actions in order to move the pattern blocks on the screen (Sarama 2004). To accomplish this, teachers would introduce the geometry task, explain to children how to move shapes in different ways on the screen, monitor their activities, ask questions, and provide support, if necessary. Teachers could also encourage children to express how shapes can be moved and what they look like after

[1] http://nlvm.usu.edu/en/nav/grade_g_1.html

[2] http://illuminations.nctm.org/Search.aspx?view=search&type=ac&gr=Pre-K-2

they are moved. If some children are unable to fully explain the motions (e.g., using a finger to show the movement of a shape), teachers can introduce geometry vocabulary terms by rephrasing the children's actions to introduce geometry terms in contexts (e.g., "Did you just turn the triangle and slide it inside this square?")

Unfortunately, not every mathematics software product is considered developmentally appropriate. For example, drill-and-practice software may be effective only in developing rote mathematics skills (e.g., counting, memorizing number facts). Therefore, those programs should be used rather sparingly and only after children have developed conceptual understanding of the intended skill. While choosing mathematics software, teachers consider its content strength (e.g., in-depth learning of important mathematics content) as well as other features such as use of developmentally appropriate, language, color, animation, pacing, and respectful and encouraging feedback to the child for correct and incorrect responses.

Supporting early reading skills

Early childhood teachers can use technology in many ways to expose children to literacy, support emergent literacy skills, and instill an appreciation for literacy, which are all important early learning standards. For example, a teacher may choose to (a) read a story in traditional print form, (b) present the book as an interactive e-book using an electronic device, (c) have children listen to books using taped materials with voice that reads digital text with synchronized highlighting of the text, or (d) any combination of these approaches (NAEYC 2012). The choice depends on the instructional intent and the class composition. Students with vision or hearing issues, for example, may not be able to sufficiently see pictures or hear a story presented by the teacher in a traditional print format and enlarging the print or providing the book in braille for one or two students may not be feasible or may isolate them socially from the group. However, the teacher could introduce the book using an interactive whiteboard that enlarges print and pictures by presenting the title, characters, and doing a walk-through of the book, and then the children could access the book in various ways based on their needs and learning preferences, and finally all the children could gather as a group for discussion. Providing children choices and presenting information in various accessible formats reflects the tenets of both universal design for learning (UDL) and differentiation (Gargiulo & Metcalf 2010).

If the instructional intent is to support phonological awareness or vocabulary, teachers may choose to present children's books as digital text with dictionaries or activities, which have shown to improve phonological awareness, word-reading skills, and vocabulary knowledge for kindergarten and first-grade readers (Korat 2010). Other researchers working with younger children have indicated that presenting high-quality children's books on computers with multimedia supports, such as the text being read aloud expressively with simultaneous highlighting of the words being read, helps children attend to and later recognize words from the text as well as increase their vocabulary (Bus, Verhallen, & De Jong 2010).

Writing skills

Teachers have many options for using technology to support the writing skills of young children. For example, children can use a digital camera to create digital journals and story books. Further, individually, with a partner, or with teacher support, children can create

multimedia books containing scanned images of their drawings and audio files of themselves telling the story (Wang et. al. 2008). These approaches provide a personalized approach to writing, integrate reading and writing skills, and help children become more comfortable with using multimedia for learning.

Recently, teachers have used tablet technology in early childhood classrooms to support reading and writing skills (McManis & Gunnewig 2012). Using tablet technology, children can create their picture books easily and quickly. Unlike traditional ways of creating books, technology can scaffold children's story making by allowing them to create their stories (e.g., tablet applications, such as StoryKit and Tapikeo HD). If tablet technology is unavailable, teachers can use software like Microsoft Photo Story 3. Although young children are capable of using tablet technology (Couse & Chen 2010), teachers still need to actively engage children by asking questions, assisting them in organizing their ideas, and providing technological support if necessary (e.g., recording sounds). Also, teachers and children can share the electronic stories with family and other team members to document the child's growth in various literacy skills.

Children can also use concept mapping software such as Kidspiration (Inspiration Software) to depict ideas and concepts and place them in relation to one another pictorially during the writing process. These tools allow children to create webs and other schematics that visually represent their understanding of a topic (Murphy, DePasquale, & McNamara 2003). The first step of mapping is helping children to brainstorm ideas about their chosen writing topic. This step helps children retrieve prior knowledge, provides an informal assessment for the teacher, so he or she can clarify misconceptions, and is an important early step in the process approach to writing (Mather, Wendling, & Roberts 2009).

Supporting science knowledge and understandings

Early childhood teachers can use various technologies to support science understandings. The internet provides numerous resources for exposing children to early science concepts. For example, TrackStar[3] helps educators organize and bookmark Websites for use in their lessons. TrackStar is a national database where educators can search for a track of annotated Website addresses (URLs) by keyword, author, theme, or standard. Each frame has a box at the top of the screen where educators can enter child-friendly directions to facilitate independent exploration and work (Murphy, DePasquale, & McNamara 2003).

In addition to the internet, teachers can use various technologies to help children meet science standards associated with expressing wonder and curiosity about their world, making meaning from experience and information, and recording information from observations-all important early science standards (NGSS Lead States 2013). For example, during a unit on bones, fossils, and dinosaurs, children can use magnifying glasses, digital microscopes, and child-friendly cameras to observe details from various perspectives while digging for bones in a classroom dig site. Children can then save and print magnified still images from their camera or use the Kid Pix drawing software feature on the classroom computer (Wang et. al. 2008). These technology applications allow children to return to their observations for fact-finding, compare findings with others through visual

[3] http://Trackstar.hprtec.org

displays and discussions, and use child-friendly science tools to apply many of the science processes.

Teachers of young children can also use a virtual field trip (VFT) to support children's science learning. As the name implies, a VFT is technology-based field trip that allows children access to learning sites or artifacts without taking actual visits (Klemn & Tuthill 2003). Although a VFT should not replace traditional field trips, the former can be an alternative option for the latter which is often restricted by several practical factors such as expense, safety, distance, site availability, and weather conditions (Martin & Seevers 2003). Teachers can use pre-developed VFT sites that are already available on various internet sites. For example, some websites allow children to observe animals via prerecorded videos or live stream (e.g., Smithsonian National Zoological Park website, Discovery education website). In these videos, experts share information about animals, such as their physical characteristics, habitats, and modes of survival, which often provide more in-depth learning for children. However, when using pre-developed sites, teachers must consider how the website's content would serve their main instructional purposes. In addition, the content of some websites may be too complex or advanced for young children. To ease such concerns, teachers can preview the site or even create their own VFT for children by using software programs, such as PowerPoint, MS words, web-authoring software, and video conferencing technology (Kirchen 2011).

Supporting social and emotional development

Technology also has the potential to promote social and emotional development in young children. Researchers have found that young children display greater collaboration skills and positive social interaction when they use technology (e.g., Gimbert & Cristol 2004; Hyun & Davis 2005; Lim 2012; Wood 2001). For example, Lim (2012) examined the patterns of children's social interaction in the computer area and found that children gained knowledge through different forms of social interaction, such as examining different perspectives and negotiating to find a better solution. However, teachers should not interpret these research findings to mean that the presence of technology will always facilitate positive social and emotional development. Using technology to support children's social and emotional development requires teacher's ongoing supervision and profession judgment about what and how technology will be used in their classrooms. For example, placing more than one chair for each computer often sends children a message that they are welcome to work together in the area. In some early childhood classrooms, teachers require children to use headsets whenever they work on computers. Although this is effective for certain tasks, it may also minimize opportunities for children to work collaboratively with peers and others.

Jung and McMullen (2012) found that technology facilitated active social engagement for preschool children, including English Language Learners (ELL). In this study, technology became a facilitative learning tool for ELL by increasing children's understanding of specific content (e.g., names of two dimensional shapes) and their confidence in expressing themselves. To use technology as an effective tool for ELL, teachers must consider whether the content is ELL-friendly (e.g., the use of children's home languages and open-ended activities to allow children to explore content at their own pace). Taking time to analyze the content and features is time well spent.

Fostering classroom environment

Teachers can also use technology to foster a warm and welcoming learning environment for children. One way of doing this is by including digital photographs of children and their families. Tomlinson (2003) emphasized that the classroom decor influences the learning mood and can support or deter student's need for affirmation, contribution, power, purpose, and instructional challenge. Similarly, Partnell and Bartlett (2012) noted that teachers can foster healthy self-images in their children through digital documentation by digitally recording children's work samples and video clips of their learning process (e.g., through one and one interviews about the child's work). Clearly, while documenting children's work and showing interest in what they are doing, teachers affirm that each child is a valued member of the classroom. By digitally archiving children's works, early childhood teachers can create learning e-portfolios to assess and demonstrate children's progress (Wang et. al. 2008).

The location of the computer is also a factor that influences the learning environment. In Jung and McMullen's study (2012), for example, preschool teachers relocated their computer from a corner of the classroom to a central area, hoping for better supervision and more child social interaction in the computer area. Not only did the new location invite more children to the area, but it also provided teachers with more opportunities to interact with children, ask questions, and provide guidance, as necessary.

Assistive technologies

In addition to educational technologies, largely due to the increase of inclusive settings, early childhood educators are increasingly using assistive technologies (ATs) in their classrooms (Campbell, Milbourne, Dugan, & Wilcox 2006). Researchers define AT as "any item, piece of equipment or product system, whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of individuals with disabilities" [IDEIA 2004, 20 U.S. C. § 1401 (251)] as well as "any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device" [IDEIA 2004, 20 U.S. C. 1401 § 602 (2)].

Teachers and researchers often describe ATs as low-tech, mid-tech, and high-tech (Assistive Technology 2009). Low-tech technologies are inexpensive, require minimal student, teacher, or parent training, and typically do not require hardware or software programs. Some examples of low-tech technologies include raised-lined, colored, or grid paper, velcro, graphic organizers, pencil grips, highlighters, or an individualized laminated cue card.

Mid-tech devices are low to moderately priced and still easy to operate. Some examples of mid-tech devices include audio books, electronic dictionaries, specialized calculators with large displays or speech outputs, or amplifying systems (Access to Learning 2012).

In contrast, high-tech technologies are more expensive, involve more equipment, and require training by users (Assistive Technology 2009). Some examples include mouse emulators (e.g., trackballs, head sticks, touchscreens, and eye gaze systems) which allow students with physical disabilities to select letters from an onscreen keyboard; text-to-speech software which enables a computer to speak digital text, and various proofreading, word-prediction, speech recognition, and talking word processors (Access to Learning 2012).

Because there are thousands of available ATs, teachers should be aware of resources to research available low, mid, and high tech technologies. For more information on specific products, AbleData[4] provides a searchable database of nearly 40,000 AT products, including everything from low-tech to high-tech devices. This federally funded, non-commercial service also offers fact sheets, a telephone hotline, and links to disability-related organizations.

The decision whether a student with a disability requires an AT is made on a case-by-case basis by members of the child's educational team, which includes the parents or other caregivers. Parents and other caregivers can provide invaluable information regarding fitting, customizing, and adapting the technology to the child. While discussing the child's needs, team members need to agree that the AT is educationally necessary for a student to benefit from his or her educational program. During this discussion, team members should consider factors such as the child's ability to use the device, cost, portability, use in the classroom, research regarding the AT, and the amount of training needed by teachers, family members, or paraprofessionals to support the child.

If team members agree that the child needs an AT, the name or type of the child's AT is included in his or her Individualized Family Service Plan (IFSP) or Individualized Educational Program (IEP). Further, team members should periodically (e.g., at least annually) review the child's AT needs as those needs change based on the child's growth and development as well as new curricular requirements. Team members should also be mindful that simply providing AT equipment to the child is insufficient for supporting his or her access and enhanced engagement (Sandall, Hemmeter, Smith, & McLean 2005), but rather the end goal is for the child to be able to use the device independently and be fully engaged as part of everyday routines and natural environments (Horn & Kang 2012).

Because it would be impossible to list or describe all possible ATs, in this section, we highlight selected examples of ATs. These categories are not exhaustive but rather are intended to suggest some possibilities when working with young children.

- Communication Tools – Some children have expressive language issues. They may have been born with little or no speech, have disabilities, such as Autism, that affect their expressive language skills, or have developmental issues that affect their expressive language. These children benefit from and can communicate with the use of various assistive technologies that support communication, often referred to as augmentative and alternative communications (AAC). AAC is used to supplement or replace verbal speech and compensates for limited communication skills by integrating symbols, devices, techniques, and strategies to enhance or encourage communication (Schlosser & Sigafoos 2006). These devices range from low-tech options such as photographs or symbols to high-tech options such as speech-synthesized devices (Horn & Kang 2012) or the Picture Exchange Communication System (PECS).
- Computer Access – Often due to fine or gross motor issues, some children need mouse alternatives such as a touch screen, a trackball or joystick, a sip-and-puff system, an electronic pointing device such as eye gaze, nerve signals, or brain waves, or alternative keyboards (Types of Assistive Technology Products, n.d.). These adaptations allow children with a variety of physical disabilities to learn and play independently.

[4] http://www.abledata.com/

- Adapted toys – Play is an important form of learning for children, and play can be compromised for children with physical issues. At least a dozen researchers have shown that children younger than a year old with a variety of types of disabilities, such as cerebral palsy, severe or multiple disabilities, physical disabilities, and intellectual disabilities, can learn to operate switches to activate toys (Campbell et. al. 2006). Switches typically require some movement from the child such as a head turn, head movement, leg movement, or touch. Using switches to activate toys or games allow students with disabilities to enjoy free choice activities, be in charge of their learning and "fun", and participate with others.
- Mobility aids – These supports help stabilize a child's position (e.g., sitting or standing) and allow the child to be more independent in learning and recreational activities. Examples of mobility aids include leg braces, platform walkers, manual or power wheelchairs, self-propelled walkers, and recreational vehicles like scooters.
- Sensory supports – These include a variety of ATs for students who have sensory issues, such as hearing or vision impairments. Examples in this category include screen readers, screen enlargers, magnifiers, audiobooks, Braillers, scanners, hearing aids, frequency modulation (FM) units, and close-captioned television or movies.
- Computer-based instructional supports - Numerous software programs and apps provide access to printed materials and support learning for students with and without disabilities. Examples in this category include text to speech or speech to text software and word prediction programs. Word processing and writing tools allow children to express themselves, free from the fine motor demands of forming letters. For many children these tools make the physical act of writing less frustrating (Murphy et. al. 2003).

In summary, ATs offer children with disabilities opportunities to participate in social, recreational, leisure, and educational activities and develop independence and self-advocacy skills. In the classroom setting, using technology (educational or assistive) helps all students access critical learning standards within an inclusive environment that respects individual differences.

Concluding thoughts

Technology is an important part of our life. As such, children are being exposed to various technologies even before they enter school. Technology is also becoming a natural component in classrooms across the country, including settings with young learners.

Early childhood classrooms are rapidly changing as classrooms become more diverse. To that end, teachers are seeking ways to design optimal learning environments to help all children meet critical learning standards. They are aware that they need new and effective ways to help all children access information, think critically, and work collaboratively. Technology is one tool to help learners meet these goals. However, teachers must choose and use technology wisely if they desire to create environments where children are engaged with learning and remain excited and motivated about learning.

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