

# Use of Assistive Technology for Children with Special Need

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## ABSTRACT

Children with disabilities experience different forms of exclusion, which may cut them off from health, education and social services, and limit their participation in family, community and society. This isolation can have lasting effects on future employment opportunities and participation in civic life. In this chapter, we provide the theoretical framework that focuses on Assistive technology, its advantages and also focuses on the types of assistive technology for children with special need.

## 1. Introduction

Children with disabilities experience different forms of exclusion, which may cut them off from health, education and social services, and limit their participation in family, community and society. This isolation can have lasting effects on future employment opportunities and participation in civic life. Supportive services and technology can enable children with disabilities to take their place in society and contribute to their family and community. Assistive technology includes products and related services that improve the functioning of people with disabilities. It can be instrumental for children's development and health, as well as for participation in various facets of life. These include communication, mobility, self-care, household tasks, family relationships, education, engagement in play and recreation. Assistive technology can enhance the quality of life of both children and their families

## 2. Meaning of Assistive Technology

Assistive Technology is redefining what is possible for people with a various range of cognitive, print, and physical (abilities) disabilities, be it in the home, classroom, workplace and community. Assistive Technology is enabling all individuals, including those with disabilities to be more independent, self-confident, productive and better included in everyday life, education, employment and living.

Assistive Educational Technology (AET) is the theory and practice of design, development, utilization, management, and evaluation of processes and resources that are used to increase, maintain, or improve functional capabilities of individuals, with or without disabilities, for learning (Cavanaugh, 2000).

I.D.E.A., the Federal Special Education law, provides the following legal definition of Assistive Technology : "Any item, piece of equipment or product system... that is used to increase, maintain or improve the functional capabilities of individuals with disabilities. Under I.D.E.A. assistive technology devices can be used in the educational setting to provide a

variety of accommodations or adaptations for people with disabilities.

The law defines Assistive Technology Service as: "Any service that directly assists an individual with a disability in the selection, acquisition or use of an assistive technology device".

Rehabilitation Engineering and Assistive Technology Society of North America (RESNA, 2000) has identified twelve different areas where assistive technology can be used; all twelve apply in some way to the educational setting. Of the twelve, four areas are that would have a major impact in any school situation, including: Work Site Modifications, Instructional Material Aids, Seating and Positioning Aids, and Sensory Aids. The other assistive technology application areas are Aids for Daily Living, Communication and Augmentative Communication Tools, Environmental Control Systems, Leisure Time or Recreational Adaptations, Mobility Aids, Prosthetics and Orthotics, and Vehicle Modifications.

## 3. Types of assistive technology

According to CAST (1998), in order to reach learners with disparate backgrounds, interests, styles, abilities, disabilities, and levels of expertise, the educational materials should be flexible and adaptable for all learning styles. Through the use of assistive technologies, like text-to-speech software programs, teachers can provide tools that assist all students in their endeavors.

Assistive Technology can be anything home-made, purchased off the shelf, modified or commercially available which is used to help an individual perform some task of daily living. The term Assistive Technology encompasses a broad range of devices, from "low-tech" pencil grips, slant boards and picture schedules, to "high tech" solutions such as:

- **E-Books and Apps** - There are Apps for accessing digital books such as Voice Dream and iBooks, as well as many free e-book and audio book options. Read text books for school or books for pleasure. Apps can be utilized with accessibility features such

as Voice-Over, text to speech, Zoom/ Magnification, Highlighting, Definitions, Annotations, Font style and color selection, large text, etc.

- **Free Text-To-Speech Software** – If you simply need just Text-to-Speech while navigating online or typing a paper, there are MANY free options, such as Natural Reader and Chrome extensions.
- **DAISY Audio Players** – There are several DAISY audio players available, such as the Bookport Plus, PlexTalk, and VictorStream. These audio book players are accessible to individuals who are Blind or Visually impaired, as well as those with print disabilities due to a physical or cognitive disability, such as TBI or Dyslexia.
- **iPad and iPhone Apps** – Apps for Learning, Apps for Communicating, Apps for Magnification and Screen Reading, Apps for Navigating, Apps for organization, studying, reminding, and scheduling; Apps for all subjects- and the learning is engaging and interactive.
- **QR Codes and Bar Codes** –QR codes can be utilized to identify anything from books, to clothing, to food- anything you want to identify can have a QR code created for it.
- **Digital Magnifiers and Magnification Software and Hardware** - Software to magnify your computer screen, invert text colors, increase mouse and cursor sizes. Hardware to Magnify Documents and Books, magnify the Whiteboard or Chalkboard to be able to see instruction, Take photos to study later, screen reading built-in, and more options for individuals who are Visually impaired, or losing sight over time.
- **JAWS** Screen Reader -for individuals who are Blind and need screen reading and keyboard shortcuts to access the internet, email, and other computer applications for communication, research, and learning.
- **Live Scribe Smart Pen** –Excellent for brief note taking and studying. Utilized by students who cannot take notes and listen/ comprehend/ process simultaneously, as well as those with spelling or grammar issues, and physical access issues to handwriting. Bookmark important references, upload visual of notes to computer as well as the audio, share notes and audio with others quickly, add to notes later as you listen to audio.
- **Refreshable Braille Displays** – utilized by individuals who are Blind and Read Braille. Access all information on the computer, iPad, or iPhone by connecting to a refreshable Braille display, and having instant, real-time, refreshing Braille to access the information that is presented.
- **Communication Boards** – and Schedule Boards, for individuals to communicate, and to utilize for behavior

management, daily schedules, and organization. Communication boards can be hand-made with symbols or photos, and can also be digital and incorporated on an AAC device for communication.

- **Mind Mapping, Brainstorming** – Many software programs and Apps such as Popplet, Inspiration, and Fact-Mapper in Read and Write Gold offer the ability to brainstorm ideas, outline, and create visual templates and study guides to use for writing a paper, creating a project, or studying for a test. Others may use the tools for preparing for a meeting, or to use as a presentation visual.
- **Adjustable Monitors and Keyboards** - Adjustable monitors, keyboards, keyboard trays, large-font keyboards, adjustable tables and chairs, modifications and adaptations to wheelchairs and mobility equipment. All aspects of equal access should be considered for a student or individual.
- **Adjustable and Large Font Keyboards** – Keyboards with trays that raise and lower, Large Font Keyboards with easy to see keys, one-handed keyboards, keyguards and guides for the iPad and AAC devices.
- **Switch Access** – For Individuals with limited physical access. If an individual can consistently move one part of their body- their chin, a finger, a knee, a toe, their head etc., they can use an adapted switch to access the computer, an iPad, an AAC device for communicating, and other devices such as a phone or appliances.
- **Track Balls and Track Ball Mice** – There are many types of trackball mice or joystick options for mouse control, for individuals with physical access challenges, who may not be able to use a standard computer mouse. Trackball mice are also used for ergonomic purposes, to avoid strain.
- **Augmentative and Alternative Communication (A.A.C.)** – Eye Gaze Access to a Computer. AAC devices may be touch-screen or eye-gaze activated. Eye-gaze can also be utilized for computer access and environmental controls, in addition to communication and personal choice.

#### 4. Benefits of Assistive Technology

Today many people with disabilities are breaking barriers through the use of technology. For some individuals with disabilities, assistive technology is a necessary tool that enables them to engage in or perform many tasks. The availability of assistive technology devices and services enables some individuals with disabilities to:

- \* have greater control over their own lives;
- \* participate in and contribute more fully to activities in their home, school, work environments,
- \* and in their communities;
- \* interact to a greater extent with non-disabled individuals;

- \* otherwise benefit from opportunities that are taken for granted by individuals who do not have
- \* disabilities (Hosmer, 1995)
- \* Increased self-motivation
- \* Increased independence
- \* Integrated and required participation
- \* Accountability
- \* Expanded learning and life experiences
- \* New opportunities for interactions and communication
- \* Changed vision of potential by adults, peers and child (Sheets and Wirkus, 1997)

important. Assistive technology is a wide-ranging educational tool that is growing in its use and importance, and is required for consideration for all students classified with any form of disability and must be included on that students individual education plan (IEP). Assistive technology tools can allow access to information and activities that otherwise are inaccessible. An added benefit is that the tools can also make information and resources more available even to those who don't have a disability or have not yet been identified as having a disability.

## 5. Conclusion

As the education of all students occurs more frequently within the standard classroom in the inclusion environment, the concepts of teaching and learning that incorporate assistive technology approaches and accommodations become more

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