

# Encyclopedia of Diversity in Education

## Assistive Technology in Special Education

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For centuries, technological advancements have improved everyday life in our society. The accelerated use of technology in education has also enhanced instructional practices by allowing teachers to develop, monitor, and provide equal access to students. It is important to explore how the teaching–learning process is leveraged through technology. This entry describes the specific use of assistive technology in special education settings. It focuses on the U.S. legislation related to assistive technology, the selection of assistive technology for students, and some examples of high-tech devices. It concludes with an overview of challenges and opportunities for assistive technology in special education.

## Assistive Technology in Special Education Settings

Assistive technology increases the possibilities for individuals who have a wide range of intellectual and physical disabilities to be more independent and to interact in their social or educational environments. Assistive technology can be defined as either a device or a service. An assistive technology device is any mechanical item that can substitute for or enhance the function of a person with a physical or mental disability. Assistive technology devices can range from *low-tech* (e.g., pencil grips, highlighters, and color overlays) to *high-tech* (e.g., text-to-speech software, computers, and Braille readers). Also included are environmental controls such as pointer sticks and mobility devices such as wheelchairs. Assistive technology also can be defined as a service, which includes support that directly assists an individual with a disability in the evaluation, selection, purchase, or use of an assistive technology device.

Including assistive technology in educational environments can be integral in the development or attainment of learning for students with disabilities. Assistive technology (AT) is considered to be compensatory because the devices can be used to enhance the ability of a person who has an intellectual or a physical disability to independently do or perform a task at the expected level. Therefore, incorporating appropriate AT in general education [p. 176 ↓] classrooms can help keep students with disabilities involved in learning. Moreover, assistive technology can be considered a related service

comparable to audiology or occupational, physical, or speech therapy, if the device is necessary in helping the student to achieve her or his educational goals. Assistive technology also can provide access to the educational setting. For example, it may include transportation to and from school as well as access to facilities in the school building.

## Technology, Legislation, and Special Education

Over the past 3 decades, special education services in the United States have increasingly addressed assistive technology resources and services. At the forefront of this advancement are several federal laws that promote technology accessibility for individual with disabilities.

In 1973, federal legislation ensured that students with disabilities received basic civil rights by mandating access to buildings, services, and instruction through Section 504 of the Rehabilitation Act. These rights were expanded with the Education for All Handicapped Children Act of 1975, today reauthorized as the Individuals with Disabilities Education Act (IDEA) of 2004. Within the 2004 revision of IDEA guidelines, the responsibility to provide assistive technology services and devices for students who are eligible for special education services are outlined for school districts. In addition, the Technology-Related Assistance for Individuals with Disabilities Act of 1988 had an impact on providing necessary assistive technology to individuals with disabilities by defining assistive technology as both a device and a service. This law was passed to provide funding to support assistive technology development, dissemination of information about assistive technology, and training programs on assistive technology for individuals with disabilities. In 1998, the Assistive Technology Act replaced the original Technology-Related Assistance for Individuals with Disabilities Act of 1988. This reauthorization shifted from defining and acquisition of AT devices and services, to providing access to the general education curriculum for students with disabilities.

With the ever-increasing population of students with disabilities in general education, the aim of special education law is that school districts understand how to evaluate

the technology needs of a student, acquire the necessary devices, incorporate the technology with other related services a student may have, and provide training for the individuals directly involved with using or implementing assistive technology. With this understanding, students with disabilities can exercise greater control over their personal lives, leading to more independence to interact in academic and social settings.

## Making Assistive Technology Decisions for Special Education

Determining eligibility for assistive technology should be considered when a student receives special education services. To determine the assistive technology needs of a child, an assessment is conducted. This evaluation addresses the student's academic strengths and needs as well as social interactions with peers, teachers, and family members. This evaluation can be conducted by a school, an agency, or an individual consultant. During the assessment, the student should be in a familiar environment such as home, school, or community. Once the assessment is completed, and if the student is eligible to receive assistive technology, recommendations for a device are given based on the design, training, maintenance, repair, and cost of replacement of the device.

The Individuals with Disabilities Education Act of 2004 specifies that state and local agencies must consider whether a child needs AT devices and services. However, minimal guidance is offered on determining how the services should be provided. Consequently, the SETT model created by Joy Smiley Zabala, Education Tech Points created by Gayl Bowser and Penny Reed, Has Technology Been Considered? created by Antonette C. Chambers, and the Unifying Functional Model created by J. F. Melichar and A. Edward Blackhurst—all AT decision-making models—have helped schools and families identify effective AT services and/or devices. The components of these service delivery models include evaluation, device selection and purchase, implementation, and ongoing evaluation. Each of these models has had significant impact on the design and delivery of assistive technology devices and services in schools. Unfortunately, none of the [p. 177 ↓ ] models has a sufficient research base to be considered fully valid or reliable.

It should be noted that deciding on an appropriate AT device is only the beginning of an ongoing process. That is, the types of devices used by students may change depending on the student's age, ability, and the environment. Whenever changes occur, families or educators of students with disabilities need to reassess the AT needs of that individual. Therefore, understanding the strengths and limitations of assistive technology models are essential.

## Examples of High-Tech Devices

School teams, such as the individualized education program (IEP) teams, are required to consider assistive technology services and devices that will support students academically and socially. An increasing number of AT devices have been developed and utilized by educators to support students who have difficulty with reading, writing, math, or organization skills. High-tech devices are one of two types of assistive technologies that make learning manageable for students.

Computer software is a high-tech innovation that has been widely used by students with disabilities, improving their academic performance. For example, speech-to-text or speech recognition software allows the user to operate a computer by speaking. The user speaks into a microphone and the system converts the spoken words into electronic text on an output device such as a computer. This specialty software program is useful for individuals who have difficulties with written language or limited mobility with their hands. Other types of software programs such as text-to-speech offer comparable support by allowing the user to listen to printed text that is read aloud.

Adapted hardware, such as Braille note-takers, are a type of high-tech assistive technology device for students who have limited or no vision. These devices have Braille keyboards that can be used to enter information into an output system such as a computer. The information can be translated using the built-in speech synthesizer or Braille display, or printed on a Braille or ink-print printer. Other high-tech devices that assist with vision include screen readers, screen enlargers, magnifiers, large-type books, audiobooks, light boxes, and scanners.

Students who are nonverbal or who cannot speak clearly may benefit from using augmentative alternative communication (AAC) devices. These devices give voice to the thoughts of students through symbol systems, communication boards, programmable switches, electronic communication devices, speech synthesizers, recorded speech devices, or communication enhancement software.

## Conclusion

Technological advancements create many opportunities to reshape learning experiences for children. Assistive technology enables educators to create an interactive learning environment and increase the potential for academic success for students who have disabilities.

Although there has been a strong push to get technology into the hands of teachers and students, many obstacles to implementation still exist, and AT has not found wide acceptance in many classrooms. Failure to integrate technology into classrooms can be the result of teachers believing that AT is a peripheral supplement rather than an integrated mechanism to enhance student learning. Further, in spite of the widespread availability of assistive technology, misunderstandings about the compensatory use of the devices still exist. For example, a teacher's disposition may be a barrier if she or he considers a student's performance without an AT device more valuable than that of a student who successfully uses a device. Additional barriers include availability of financial resources, hardware and software issues that arise during instruction, absence of technical support for schools or teachers, time restraints, and lack of sustained teacher professional development in the use of assistive technology.

In spite of limitations, assistive technology is designed to create a user-friendly environment for students who receive special education services. With this technology, students are able to be more independent in the classroom environment, make choices, solve problems, participate in daily classroom activities, learn, practice social skills, and communicate their needs, wants, and ideas in their classrooms and in the broader school community. Technology is nudging instruction beyond conventional approaches. Integrating technology in instruction requires teachers to link the technology to best practices in order to maximize student participation and success. Therefore, there is a

continued need to [p. 178 ↓ ] understand how these tools can best support learning for students with disabilities.

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See Also

- [Digital Divide, Digital Learning, and Equal Access](#)
- [E-Learning and Underserved Students](#)
- [Inclusion and Inclusive Practices in Special Education](#)
- [Students With Disabilities, Accommodations for in Testing](#)

#### Further Readings

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