Enhancing What Students Can Do

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Assistive technology devices can help students with special needs fully participate in the classroom.

As a result of the reauthorization of the Individuals with Disabilities Education Act in 2004, students with disabilities, with few exceptions, are expected to meet the same high academic standards as students without disabilities in a general education setting. Moreover, school districts are required to provide reasonable accommodations to help students with disabilities achieve this success.

Appropriate accommodations can include the use of assistive technology devices. Thirty years ago, fewer than 100 such devices were commercially available. Today, more than 29,000 assistive technology devices exist for individuals with disabilities and for aging adults (Bausch & Hasselbring, 2004). Too often, people think of these devices in terms of expensive laptop computers and sophisticated software. In fact, assistive technology includes a wide variety of devices that range from low-tech pencil grips (25 cents) to high-tech augmentative communication systems ($2,500) as well as services provided by assistive technologists, occupational therapists, speech therapists, and physical therapists.

Promoting the Positive

Over the years, the area of assistive technology has experienced a shift in focus. The medical model, which used to be the preferred perspective in the field, emphasized what an individual could not do. A recent model that emphasizes what individuals can do represents a far better approach. The Human Function Model, described by the University of Kentucky Assistive Technology Project (2002), places assistive technology in its proper perspective, as an external support that can enhance an individual's ability to function within the environment. The National Assistive Technology Research Institute, housed at the University of Kentucky, organizes the different kinds of assistive technology and services into seven categories that define an individual's needs.

Existence

Functions associated with existence are those that are necessary to sustain life.

These include feeding, eliminating, bathing, dressing, grooming, and sleeping. Students can use such special devices as button hookers, sock helpers, and combs with long handles to perform a variety of tasks. In science lab, students may use liquid-level indicators, mounted measuring cups, or nonslip mats for better control during experiments. Weighted forks, knives, and spoons, along with plates and bowls with lips, would be appropriate in the inclusion classroom during holiday celebrations, food-related multicultural activities, and classroom lunches. Special education services for preschoolers and children with severe disabilities may focus on teaching the students how to use these devices.

Communication

The communication category includes the functions of oral and written expression, visual and auditory reception, internal processing of information, and social interaction. Students who have difficulty in this area may have specific learning disabilities in language, communication disorders, emotional/behavioral disorders, traumatic brain injuries, or other health impairments. Communication aids include single-message switches, speech synthesizers, telephone amplifiers, hearing aids, tape recorders, picture systems, and sophisticated augmentative communication devices, such as the Chat PC, Go Talk, or Tech/Speak.

Devices such as these can help include students with disabilities in the classroom culture. For example, a single-message device (Big Mac or Little Mac) or single-button device (Chickadee) can help a nonverbal student participate in attendance-taking activities by enabling the student to respond directly to the teacher. Students with communication disorders can use the Chat PC, a programmable communication system that translates text to speech, to communicate with teachers and peers. A personal FM system (the Easy Listener) helps clarify speech for students who are hard of hearing; the teacher wears a transmitting device, and the student wears a receiver. The system helps direct the voice and reduces background noise that may interfere with classroom discussion.

Speech-language pathologists and audiologists generally diagnose and prescribe the use of augmentative communication devices. Special educators and general educators can receive training to use these devices in an inclusive classroom setting.

Body Support, Protection, and Positioning

Some individuals need assistance to maintain a stable position. For example, students who are wheelchair-bound may need extra supports (braces, pillows, belts, and harnesses) to keep their bodies properly aligned. Book supports that attach directly to the wheelchair are also available. A variety of seating alternatives are available for students who benefit from controlled movement during the day. These include the balance wedge and Move ‘n’ Sit, both of which promote active sitting.
Adjustable height and tilt tables can also help. Physical therapists and medical personnel initiate and provide support services in this area.

Travel and Mobility

Activities in this category revolve around navigating the environment and include crawling, walking, using stairs, and transferring from wheelchair to chair. Students with disabilities can often participate actively in school activities when accommodated with wheelchairs designed to climb, lift, and transfer. Specially designed and equipped wheelchairs, lifts, mobility canes, walkers, and adapted tricycles can provide needed support. Physical therapists and orientation and mobility specialists, such as those who provide mobility training for children who are blind, are helpful resources.

Environmental Interaction

The environmental interaction category includes functions associated with the activities of daily living, such as turning on a light or waking up to an alarm. Various assistive devices can change the environment to be more responsive to individual student needs. These include switches for controlling computers, adjustable chalkboards and desks, touch screens, and Braille labelers. For example, individuals with limited use of their arms and hands can use a foot mouse to navigate the computer or a grabber to reach shelved items. A vibrating alarm clock can help a student remain on task without disturbing his or her classmates. Students who are color-blind or otherwise visually impaired can benefit from using a color identifier, a handheld device with speaking capabilities that, when placed on an object, speaks the color. Teachers can also use this tool with preschoolers and young English Language Learners to help them identify colors. A bar-code scanner with talking capabilities can help visually impaired students identify bar-coded items in a kitchen, library, or classroom. Assistive technology specialists or orientation and mobility specialists often provide help with environmental adaptations.

Education and Transition

Functions in this category involve those associated with school events, therapies, and rehabilitation services. These include assessment, various classroom activities, creative and performing arts, and transitions to new environments. Assistive tools may include tests on tape, audio books, talking calculators, or typoscopes. Typoscopes help direct and control book reading by highlighting selected words on the page. Computer software programs record text (Dragon Naturally Speaking, Microsoft Office); read text (Kurzweil, JAWS); enlarge text (Zoom Text, Microsoft Office); and organize text (Inspiration, Kidspiration). Pencil grips, slant boards, colored paper, and reading pens can help students produce high-quality work. Talking globes and talking dictionaries in the classroom help students work
independently. Special education and general education teachers, speech-language pathologists, school psychologists, and other support personnel may provide direct services in this area.

**Sports, Fitness, and Recreation**

This category includes functions associated with group and individual play, sports, games, hobbies, and productive use of leisure time. A wide range of equipment can facilitate the participation of students with disabilities in physical activities. These students no longer have to sit on the sidelines watching their classmates play.

Teachers can make use of several devices in this area. Balls with bells and Braille playing cards are suitable for visually impaired students. Card and paper holders and switch-activated spinners encourage independent turn-taking in cooperative-learning groups and recreational activities. Special wheelchairs are designed to encourage active participation in such activities as basketball and tennis; other devices are adapted for snow skiing, water skiing, and biking. The services of an adapted physical education professional are a valuable resource in this area.

**Let Me Do It Myself**

Assistive technology can mean the difference between a student actively participating in the classroom or being an outside observer. Magan, a 1st grader with cerebral palsy, typed the following note to her teacher using her computer equipped with a personalized keyboard: “I like people to show me how to do things, then let me do them myself.” This is the true value of assistive technology.

**References**


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