INCLUDING ASSISTIVE TECHNOLOGY IN THE STANDARD CURRICULUM

By Cynthia Warger

Assistive technology (AT) is defined as any item, piece of equipment, or product, whether acquired commercially, off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of individuals with disabilities. (P.L. 101-407, The Technology Related Assistance Act of 1988).
The 1997 reauthorization of the Individuals with Disabilities Education Act (IDEA) emphasizes the importance of technology and the need to share cutting-edge information about advances in the field. The law requires that assistive technology devices and services be considered for all children identified as having an exceptional education need. These amendments mark a significant shift in how educators view assistive technology - which previously had been viewed almost exclusively within a rehabilitative or remediative context. Now, within the context of planning individualized education plans (IEP), technology is being considered as a viable tool for expanding access to the general education curriculum. However, there is still much work to be done to ensure that IEP teams consider the maximum benefits of technology use.

Considering Assistive Technology in the IEP

The new requirements in IDEA '97 to consider assistive technology devices and services for all students with disabilities create a massive task for school districts. Already, special educators across the country are reporting an increased number of referrals for children with mild disabilities in which the issue is access to the curriculum and productivity once in the curriculum. School-based professionals are finding that the "fix-it" approach taken with traditional assistive technology applications is not appropriate for these new types of technology referrals. More often than not, instructional issues are at the heart of these referrals--they require educators to start with the curriculum and then ask how tools might assist students in achieving the outcomes.
Thus, school districts are searching for tools that they can use to ensure that IEP teams meet the intent and the spirit of the law. To assist school districts with this goal, Gayl Bowser and Penny Reed have developed the Education TECH Point system, which educators can use as a tool to develop effective assistive technology delivery systems. The TECH Point system offers educators a strategy for identifying specific points in the planning process where AT should be considered. The TECH Points are:

- Initial referral question
- Evaluation questions
- Extended assessment questions
- Plan development questions
- Implementation questions
- Periodic review questions

At each point, questions are posed which reflect issues that must be addressed. The TECH Point structure provides a way to effectively organize and monitor AT utilization while enabling programs to tailor activities to match each student's needs.

State Level Support for AT

States can support local education agencies in meeting these new requirements to consider assistive technology in each child's IEP. To ensure that technology benefits children with disabilities, states need to implement policies and practices that support its effective use. Louis Danielson, Director of the Division of Research to Practice at OSEP, suggests that state directors of special education put into place a clear policy on assistive technology that includes:

- A statement of desired AT outcomes
- Policies for delivering AT services
- Staff development and technical assistance policies
- Verification that the technology plan includes research-based practices
- Mechanisms for interdisciplinary involvement
- Policies for purchasing, using, and managing equipment
- Strategies for obtaining adequate funding
- Strategies for communicating these policies

Promoting Access to the Curriculum: Promising Practices

As a result of the new law, technology is increasingly being recommended to help students with cognitive disabilities achieve in a challenging curriculum. Technology that supports students in accessing the curriculum does not need to be expensive or complicated to make a difference in learning. Both low tech and high tech applications have been used successfully to ensure students' success in the general education curriculum. What do we know about the positive benefits of using technology in academic subject areas to help children with disabilities achieve to high standards? The following research-based applications have been selected to show how technology is being integrated into curriculum and instruction to support a wide range of student abilities.

Enhancing Literacy Goals

Michigan State University researcher Carol Sue Englert has developed a web-based curriculum for elementary students with mild disabilities that enhances literacy learning, particularly writing. The web site called TELE-Web (which stands for Technology-Enhanced Learning Environments on the Web) serves as a literacy development environment. The web site provides tools that help students develop performance abilities in reading and writing, in addition to independent learning skills.

TELE-Web is set up in the classroom as four central environments--writing room, reading room, library, and publishing room. In each environment, students are able to receive cognitive and social support. The following example shows how TELE-Web was integrated into a fourth grade unit on castles:

- TELE-Writing Room. A KWL (what I know, want to know, have learned about) activity on castles; retelling stories in one's own words; creating cognitive webs; play writing; story writing.
- TELE-Reading Room. Castle spelling words; castle chat.
- TELE-Library. Internet search on castles; castle word-sort; email to people knowledgeable about castles in Poland and Scotland.
- TELE-Publishing Room. Stories for editing and comments; journal of castle life contrasts.

Preliminary research suggests that with TELE-Web children are more motivated to write and that they are writing longer and more descriptive stories.

Improving Access to the Science Curriculum

Judy Zorfass at the Education Development Center, Inc., in Massachusetts is finding that technology tools can be integrated into challenging science curriculum and instruction to ensure access for students with disabilities. Zorfass' Project ASSIST (All Students in Supported Inquiry-Based Science with Technology) brings together teachers, science specialists, special educators, and technology specialists on a regular basis to plan, act, and reflect upon student learning in science, in inclusive classrooms, supported by technology.

To support educators in talking about children's science learning, Zorfass and her colleagues created an action reflection process. The team cycles--and then re-cycles--through these phases:

- **Plan activities.** During the planning phase the classroom teacher and the specialists develop a lesson containing clear science learning goals. The lesson is related to the science standards, includes modifications for students with disabilities, and is supported by technology where appropriate.
- **Implement instruction.** The teacher implements the lesson, however, some of the team members also participate. Their role is to closely observe and gather data on children's responses to the lesson, as well as assist with instruction when appropriate.
- **Reflect on progress.** The reflection phase occurs soon after the lesson. Each team member shares the data he or she has gathered regarding student learning. The teacher and the specialists describe, interpret, and reflect on the students' work as it relates to the criteria that have been set.

For more information about Project ASSIST, check out Zorfass's web site at: http://www.edc.org/FSC/ASSIST/.

Improving Concept Development in Mathematics

John Woodward of the University of Puget Sound in Washington has been studying how technology can be integrated into mathematical problem-solving activities to provide access to students with cognitive disabilities.

Unlike traditional math story problem lessons where students read a problem in text and are expected to calculate answers, Woodward uses computer-based

spreadsheet programs in conjunction with real-life problems. Spreadsheets are an excellent tool because they model or provide visual representations of the problem, crunch the calculations--which is a tedious turn-off for many youngsters, but especially true for students with disabilities--and thereby focus the students' attention on understanding the mathematical operations in a real-life context. Spreadsheets free students, who heretofore had difficulty with math, to keep asking questions, to continue analyzing the visual representations of the data, and eventually to use their higher level thinking skills to formulate conclusions. Woodward has successfully field tested numerous lessons using his research-based approach. For a look at selected lessons, check out his web site at http://www.ups.edu/community/tofu/.

Elements to Consider in Implementing Technology

- Locate equipment where instruction and learning are taking place.
- Technology needs to be in the classroom and accessible to the child.
- Select low tech applications whenever possible.
- Integrate the use of technology into lessons in a purposeful and meaningful way.
- Have the same equipment used in the classroom available in the child's home to promote continuity of learning, if possible.
- Offer training and technical support to classroom teachers initially. When the technology is available in the home, provide training to family members
- View the initial fiscal and human resources as an investment that the child will continue to benefit from in subsequent years. Don't reinvent the wheel each year--when possible use the technology that is already in place.

Conclusion

The potential of assistive technology to improve and enhance the lives of individuals with disabilities is virtually unlimited. Now, with the help of current Federal laws, assistive technology will provide more children with the opportunity to maximize their learning in a challenging curriculum.

Resources

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