

## Edtech and AT: Two Technologies Converge



### In this Issue...

Educational and assistive technologies are steadily converging, presenting hard-pressed school districts with a growing opportunity to fund technology purchases that benefit all children. For students, convergence represents the technological evolution that has become their birthright. For teachers whose school days were spent in inclusion classrooms with children with disabilities – and who took state-mandated pre-service instructional technology courses -- convergence is another dose of the familiar, squared. For school districts and voters, convergence means a more muted approach to the allocation of tax dollars to classroom technology purchases. For parents of children with disabilities, convergence may result in the enhanced availability of the technology their children need in school and at home. This issue examines technological convergence, its benefits and the barriers to it as the former world passes into history and a new world continues to take shape.

### Terry Cavanaugh, Ph.D. Speaks

Today he's a visiting assistant professor at the University of North Florida's College of Education where he teaches undergraduate courses in educational technology, which he defines as the applied use of technology to improve or enhance teaching. As a

young student, however, he lost the vision in his left eye and was an undiagnosed dyslexic who was consigned for a short time to a special education class.

To Dr. Cavanaugh, edtech and AT have already merged into what he terms assistive educational technology, technology that serves a dual purpose depending on the needs of the individual student. Take a spell checker, for example. "For students without disabilities, a spell checker is an educational technology tool. For me, however, with my dyslexia-related spelling issues, a spell checker is assistive educational technology."

Dr. Cavanaugh's interest in edtech was spurred by his experience as a middle school science teacher. "My original plan was to become a science teacher," he says. "I'm certified by the State of Florida to teach biology chemistry, earth science, general science and physics in the middle school and high school. I'm also a certified media specialist."

He started teaching in the US Virgin Islands and returned to the US because to complete his certification. "I was very happy as a science teacher," he emphasizes.

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In college, he learned to program a computer with a program language called FORTRAN. "My handheld computer today is probably smarter than that mainframe was," he chortles. "In the early 1980s, when I was in the USVI, the only available computer course was in basic computer programming. I took that and bought my own Commodore 64 PC."

Technology and science were a perfect mix for him. "We were already using the available technologies and there were new tools coming out all the time." He began working with digital cameras as a way to improve his science teaching. "Students were writing horrible reports. In my physics class we had a strobe experiment in which a metal ball was dropped and the photo was taken with a Polaroid camera. I had to open the camera, enter a darkroom, turn on the strobe, drop the object in front of a ruler and take the photo. I ended up with a 3"X5" Polaroid photo. The photo was then run down to the copying room where it was blown up so that the image filled a sheet of paper and students could measure it."

One day his Polaroid broke. "I wanted to get it repaired but I was told, 'Nobody makes that camera anymore.' Meanwhile, I'd acquired a digital camera and had become proficient at using it. I wondered if it could replace my Polaroid with the digital. I could and did."

The first benefit was elimination of the need for a room that was totally black. "That was an important development," he notes, "because you do not want to turn high schoolers and middle schoolers loose in a room that is totally dark."

In search of a camera loaner program, Dr. Cavanaugh contacted Casio, a company that was then a leading force in calculators. "Casio had a calculator grant and a calculator loaner program. I visited the company's booth at a conference and they offered to lend me a calculator. I told the Casio rep, 'I don't want a calculator. I want a camera to use with my science classes.' I asked the rep if the company had a camera loaner program. He replied, 'We've never thought of a camera loaner program.' He said, 'Here, take the calculator grant.' I said, 'I don't want a calculator.' He responded, 'Fill out the grant form. Wherever you see the word calculator, change it to camera and we'll give you the grant.' It worked!"

Later, he and his wife, Cathy, while still teaching middle school and high school, decided to pursue advanced degrees in instructional technology. "My principal walked in one day and said, 'Terry, we just built a \$200,000 technology lab for shop and the shop teacher says he'll quit before he'll walk into that lab because it's full of computers. I know you have an interest in computers. Would you like to teach technology shop?' I taught it for three years."

In terms of AT, he recalls, "I think my own disabilities prompted my initial interest. The school where I was teaching was a center school for English for Speakers of Other Languages (ESOL) and for students with disabilities."

"I was already helping the ESOL and special ed teachers, because they did not have much of a science background. I helped adapt their teaching for special ed science classes. I was using those same accommodation methods in my own classroom because we were one of the exit classrooms for ESOL. My involvement with AT and special ed mushroomed from there."

A science teacher from 1981 through 1996 when he transitioned to college teaching, Dr. Cavanaugh earned his undergraduate degree from the University of the Virgin Islands, a Masters from the University of Central Florida and a Ph.D. in instructional technology from the University of South Florida. He has written six books on aspects of educational technology, including, most recently, *Literature Circles through Technology* (Linworth Publications 2006) and *The Digital Reader: Using eBooks in K-12 Education* (International Society for Technology in Education Publications 2005).

His major areas of research have been in the use of multimedia for the enhancement of instruction and the development of instruction focusing on the use of applying entertainment video to effectively teach science. His areas of interest also extend to the use of the Internet and World Wide Web for distance learning and the application to technology to TESOL, and assistive technologies.

Supporting our interview with Dr. Cavanaugh are resources to assist parents and others in understanding the ramifications of technology convergence. We also feature members of our Knowledge Network. The members spotlighted this month focus on various aspects of edtech/AT convergence. We invite you to contact these members for further information.

Please share this newsletter with other organizations, families and professionals who may benefit from it. We invite you to contact us at <http://www.fctd.info>. We welcome feedback, new members and all who contribute to our growing knowledge base.

# Assistive Educational Technology Takes Shape

**An Interview with Dr. Terry Cavanaugh,  
educational and assistive technology expert,  
College of Education and Human Resources,  
University of North Florida**

**Assistive Educational Technology.** It's a new name for a combination of two technologies – educational and assistive -- that will eventually become one, to the benefit of children with and without disabilities, parents and school districts. Dr. Cavanaugh believes it was he who coined the name for the new techno combo, if not the concept.

There are many subjective definitions for AT and educational technology. Dr. Cavanaugh's definition for AT, however, is anything but subjective. "I adhere strictly to the federal government's definition," he states. "AT is any device or product system, whether acquired commercially, off-the-shelf, modified or customized, that is used to increase maintain or improve functional capabilities."



Dr. Terry Cavanaugh

His definition of educational technology, however, is more subjective. "Edtech can be called educational technology or instructional technology. Instructional technology is research-oriented. Edtech stresses application. In general, both involve teaching with tools."

Edtech, he explains, "consists of the tools we use for teaching, which means that there are a lot of tools. Computers are a major edtech tool but they are far from being the be-all and end-all. I'd include audio, audio tape, for example. One of the earliest technologies used for education was writing. So, to me, writing is a form of educational technology, although I accept that most people would not view it that way. It's a tool we use."

Dr. Cavanaugh calls assistive technology a "whole life" technology "because AT can encompass every aspect of an individual's life. Instructional technology, on the other hand, focuses on learning only."

There are overlaps and differences between AT and edtech, Dr. Cavanaugh notes. "The differences involve how one responds to the question, 'Will the technology be used for home and personal functions or for school?' Even though the user may have to use the technology at school, the technology may not necessarily be used for learning."

A wheelchair, for example, "has to be used at school but does not have a learning aspect. This is a tool an individual uses to gain mobility and therefore coincides with the 'whole life' concept and would be categorized as AT. The converse would be, 'I have to read a book for school and I have vision difficulties and need to have the book read aloud to me so I can understand the content.'" Such a device, he declares, would be categorized as instructional technology.

## Assistive Educational Technology

"The complexity of the categorization criteria is why I created the cross-term, 'assistive educational technology,'" Dr. Cavanaugh explains. "These are devices students use to make it possible for them to function. The devices that fall into my category depend on an individual's disabilities."

Dr. Cavanaugh is blind on one side and is dyslexic. "Spelling therefore is a problem for me. If I hadn't been living in today's society, with the technology that's available, there is no way that I'd have been able to earn a doctorate. My spelling difficulties would have eliminated me early on from consideration. I have tools that I use that help me. These tools can be as basic as a word processor with spell check capability, which, for me, is assistive educational technology."

For non-dyslexic students, however, "the spell check may be just another useful device that makes life a little easier."

For those students, Dr. Cavanaugh adds, a spell checker qualifies as educational technology. "For me the spell check is assistive educational technology, which is the melding of the two concepts. It's terminology that makes sense and is useful if the difference in viewpoint is not important. To a certain extent the difference isn't there. It doesn't exist."

Dr. Cavanaugh was not diagnosed as dyslexic until his mid-30s. "Before that recognition occurred, the technology I was using was educational technology that I had been using as assistive without realizing what I was doing. The way technology is evolving demonstrates that educational or assistive technology – or assistive educational technology – will be used by students whether or not a disability is involved. Ultimately, the disability aspect will no longer matter. The issue of disability fades in importance as universal acceptance and use of a particular device is achieved."

## The End of Budget Battles?

The accelerating evolution of the convergence trend may soon impact the willingness or ability of school districts to purchase AT for the few and edtech for the many. When the two technologies in fact converge and merge, will some of those budgetary boundaries and the funding contentiousness they produce be erased? Dr.

Cavanaugh thinks so.

“We see that trend with computers. The computer is in a classroom for students to use. It’s a necessary tool for the 21st century. Yet you’ve just put in the students’ hands one of the greatest assistive technology devices ever built.”

“When I’m teaching pre-service teachers, we talk about alternative keyboard input. For less than \$100 they can pick up a copy of Dragon [voice input] software. In no time, that machine will type 80 words per minute with 80% accuracy, which is better than many of these teachers can do with their own hands.”

“Speech recognition software was initially developed just for a small population, mainly attorneys and doctors. Today, it’s recognized as an effective AT device and is now becoming a basic part of the operating system. Dragon has evolved from being perceived as a specialized tool to AT to a device with general application by the larger population. This is a trend that is becoming more and more pronounced, especially for the cognitively disabled.”

“Kids use Dragon because it solves their problems. To them, Dragon is just another application.”

### Classroom Technology Becomes More Assistive

Classroom technology aspires to attain “normal” status, Dr. Cavanaugh claims. “We’re seeing more and more technology move through the system. The technology is trying to become regarded as ‘normal.’ That technology includes AT.”



Studies show, he points out, that in the average school, 5% of the population has been found to have a cognitive disability. Yet when formal analyses are conducted, the number rises to 10-15%. “That means that 5-10% of the school population is unaware that it is cognitively disabled. Which in turn means that these undiagnosed students will be using the tools that are available just because those tools exist.”

These students, he adds, can ask the question, “Am I attracted to technology just because I enjoy technology or am I attracted to it in part because the technology solves some of my problems and makes my life somewhat easier?” He cites the Windows operating system as an example. “It’s steadily becoming more assistive. Windows has a big push underway to try and make its OS the most user-friendly and disabled-accessible possible.”

Speech input and output is built into the current version of Windows, Dr. Cavanaugh explains. “It’s very easy to change it to

low vision systems. For our students with vision issues, we can encourage them to use this. Our other students may also discover this to be a useful tool.”

“If you put in a color filter you can improve the reading skills of students with dyslexia. This can be accomplished with glasses or by adjusting screen color. You can do that now on the Web by using your own cascading style sheet so that if you are in Internet Explorer, you can tell it to go to a Web page and it will use your colors and fonts.”

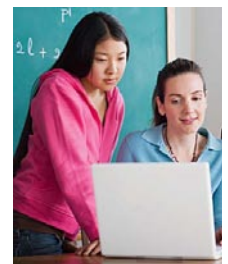
### A Zero Sum Gain?

There are some who insist that the more schools invest in AT for a few students, the less they have available to invest in edtech for the school population at-large. Dr. Cavanaugh disagrees with the zero-sum gain theory. “There are various categories that are used for criteria: technology can be personally necessary, developmentally necessary or instructionally necessary. A device that is personally necessary is purchased just for the individual and is therefore removed from the rest of the population. Think again of the wheelchair concept. A wheelchair is for a single student and only that student. It won’t be used by anyone else. However, technology that is developmentally necessary or instructionally necessary can be used by other students.”

If it’s determined that a student with a reading disability can be developed beyond that disability, “a device with speech output can be employed to help that student overcome a disability and develop beyond the state where the student has to be read to.” Ultimately, he adds, that student may no longer need the device because her reading has improved sufficiently to enable her to read alone to herself. Then that device, that tool, becomes available for use by other students.”

### Teacher Prep: the End of Isolation

Teacher readiness to employ edtech or AT in a classroom environment varies from state to state, county to county and district to district depending on the quality of pre- or in-service training received, Dr. Cavanaugh says. “We sometimes have educational quandaries. Classroom size reduction is one of those quandaries, a classic Catch-22.”



California and Florida each mandated reduced classroom size, but when California reduced its class size educators realized that there were not enough teachers to accommodate the additional classes. “So the state put unqualified or uncertified teachers in the classrooms,” Dr. Cavanaugh recalls. At one point half of the special ed classrooms in California were staffed by non-certified teachers, he notes, although the teacher shortage has since been

largely rectified. “That’s a situation where a teacher may not be performing well because he/she was unprepared for special ed teaching, a lack of preparedness that impacts AT issues.”

Today, he believes that new teachers are more prepared to deal with students with disabilities than were their predecessors. “I teach an alternative certification class and some of my students are career changers. They’ve been out of school for 20 years and in other professions. They’re surprised to hear that they will have students with disabilities in their class. In the time they’ve been gone, the age of isolation, when students with disabilities were neither seen nor heard, ended.”

Back then, he explained, students with disabilities were shunted off to the side. “I know this from personal experience. When I was going blind I was put into special education. Suddenly I was in a situation where I never left the classroom. I didn’t change classes and the expectations for what I was supposed to accomplish changed a lot.”

“The new teachers have gone to school with these kids their entire lives. They know that the kids with disabilities might need a device and, so what? These incoming teachers do not regard AT as a form of cheating. They know that that’s what Bobby or Sally needs in order to do their work.”

“We talk about the second finger callus in my pre-service classes and whether or not the student has one. People who write a lot with a pencil will develop a callus on the second finger of their writing hand. If those people type instead, the callus disappears. The point is, no matter how one writes, the work is still being completed. All that changes are the conditions.”

The students need a keyboard instead of a pencil or a pen, he notes, because they are not proficient enough with a pencil, or they’re too good with a pencil. “I had a student whose writing was never perfect enough for him. So we handed him a writing keyboard. The letters came out the same every time. He was quite happy and got all his work completed on time. He needed an alternative way of writing in which he did not have to deal with his physical imperfections. The other students in his class are fine with that – and they want a keyboard too! Their hands were cramping from writing too much with a pencil. Your hands can cramp from writing too much on a keyboard as well, and that’s when a voice input system comes in handy.”

Educational technology courses are now a requirement of many state colleges of education. In Florida, completion of such courses is a state mandate: All teachers must take a course in educational technology in order to gain admission to a public college of education. Other states have similar edtech requirements, making

teachers better prepared for the use of educational technology, Dr. Cavanaugh points out.

“Assistive technology is usually a component of those classes. That’s something I’ve seen as well, albeit with a lot of variation. The AT component can consist of a guest speaker who talks to the class for one day about AT. In other cases, AT is spread throughout a program so students get to see AT in several applications.”

“The problem we have, though, is that, realistically, teachers teach the way they themselves were taught. If their teachers never integrated educational technology into the courses they took, then those teachers, when they finally leave a college of education and begin their classroom experience, may lack a sufficient foundation in classroom technology. That’s a situation we’re striving to improve: to make sure that our teachers in training have good experiences with edtech, AT and technology in general by pairing them with other teachers who use technology.”

“We try to make sure that educational technology is integrated throughout the entire program at our college of education. We try to accomplish the same goal with assistive technology. I go into English as a Second Language classes and into the literacy classes. I work with those teachers about ways to integrate AT and edtech into their classes.”

For in-service teachers, “it’s up to the school districts as to how much exposure to edtech and AT teachers get. That exposure, he explains, is often determined by district size, which can vary dramatically. “The school district I’m in has 200 schools, but the district just to the west of us has about five schools. Our tax base is big, which enables us to bring in technology. Their tax base is a fraction of ours.”

### **Edtech Trends That Benefit Special Needs Students**

Several trends in educational technology are likely to benefit students with disabilities, Dr. Cavanaugh says. Those trends include:

- The increasing willingness and ability to place the appropriate devices into the hands of all those who need them
- An increase in online activity among teenagers that now outpaces the time spent watching TV
- An increase in the use of communication technologies
- An end to the era of isolation in schools and other areas of society

“While you’re driving and traveling in seeming isolation, however, you can see others talking on their cell phones and text messaging and you know for sure that isolation has ended. Our communities are not the same as before the advent of modern communication devices, when communities consisted of people in physical

proximity. Today's communities are determined by association."

"I heard recently that the average teenager now maxes out his/her online buddy list. When the buddy list concept was created, it was never anticipated that a buddy list, which consists of up to about 550 names, would ever be maxed out. What's amazing is that the teenagers interviewed for this survey were able to talk about each of their 550 cyber 'buddies.' I asked myself, 'Do I know 500 people in my community, not including my students?' Among the people I work with and those I can talk about, describe and do things with, how many are there? Certainly not 550 or a number even remotely close to 550, but these kids can do it."

"I grew up in an age of isolation where I might know 25 people if I was lucky. Everything I did at work I did by myself. The modern view is quite different. I see that as being relevant to home and work situations for students with special needs because their disabilities do not matter in terms of their ability to function in a virtual community."

"Here's how these communities work. Last summer I was sitting in a movie theater. The movie was Napoleon Dynamite and it hadn't begun yet. I was 30 minutes early. Three kids came into the theater, saw that it was nearly empty and pulled out their cell phones. They text messaged their friends and sat down to wait. Within 20 minutes, the theater was half full with kids who had communicated with each other, 'Hey, let's go to the movies. The theater's empty!'"

He sees virtual communication as a trend that impacts the entire population. "Even kids with special needs are active participants in this trend. If you're a kid with special needs and it takes you an extra 10 minutes to respond to an email, nobody notices because no one expected you to respond in 10 seconds. You're communicating and you're part of the community."

This movement away from isolationism also represents a physical change, he continues. "I saw a study which explained that today's teenagers' brains are wired differently than ours were. Therefore, we can't have some of the same expectations that our learning styles and systems will be repeated in this generation."

"The environment for these kids has changed and a change in environment does affect neural pathways, which is a physical change." Unfortunately, this high level of community is not universal, he explains. "Some locales have it and others do not. Yet as high as ours generally is, there are countries that surpass our digital community: Japan and England to name just two. In these countries text messaging has been a prime form of communication for years. The preferred method of communication between parents and teachers in England is email."

## Overcoming Barriers of Perception

To many, the use of edtech and AT continue to be perceived as cheating. "Edtech and AT are not forms of cheating," Dr. Cavanaugh declares. "I encounter many who feel that both forms of technology assistance are in fact cheating. 'You've just made it easier,' they'll say, or 'The kids don't have to memorize any more.'"

"I was working with a group of elementary teachers recently who were so concerned that students would lose handwriting skills because they are no longer as proficient at cursive. I asked myself, 'When was the last time I had to write in cursive?' and 'When was the last time I hand wrote a letter?' The answer: I don't handwrite letters anymore and haven't for maybe 5-10 years. I haven't written in cursive for at least that long because my handwriting is terrible. Instead, I use email. Part of the issue is recognizing that this is how things are done for a large chunk of the populace. It's not cheating."

He admits, however, that this is a difficult issue for some individuals to get their arms around. "We know now that students write 20% better if they use a machine rather than a pencil. Some will say, again, 'That's cheating.' Others will say, 'We're allowing students to write with a tool with which they're most familiar. Their structure is better. So let them use the machine.'"

In other words, he continues, students can still write papers, but they won't use a pencil. Instead, they'll use a keyboard. "But they are still writing. It's cheating when they plagiarize and pull a passage directly from the Internet. Using the Internet isn't cheating; what's important is what you do with it."

"It's about awareness and acceptance," he remarks. "My mother has vision issues. She was writing something on the computer recently and I changed the screen resolution and boosted it so that her word processor was running at 125%. She loved it. I explained to her what I had done. 'Will it print at 125%?' she asked. I told her no, it wouldn't, it would print like it always has. Her response? 'I have to change it back.' And she proceeded to change it back to 100%, which again made it more difficult for her to read. It's about acceptance. Many individuals are not at the point of acceptance yet vis a vis edtech and AT."

He asks, "Is there a significant difference between listening to an unabridged audio and reading the same book on the page? Some insist that the difference is huge. My response is, 'Prove it.' I'll ask how it's different. The reply usually is, 'They're not seeing the words.' And I'll say, 'When you see the words, don't you hear them?'"

“Let’s remember that when books were first turned into movies, there were naysayers then too. When books were turned into audio, there was disapproval because, it was said, those who listened to books were no longer using their brain. When music videos first appeared, there were those who disapproved of them because ‘Now you’re not imagining what you wanted to imagine for the music.’”

In other words, he adds, “every time there’s been a technological advance there has been disapproval in some quarters. It happened when TV became ascendant over radio and far earlier, in the mid-15th century, when Gutenberg created the first printed book.”

At the time, he explains, all schools were church-associated. The first printed book was the Bible, the famed Gutenberg Bible. It took hundreds of years before the Bible was allowed in school as a printed book. During those centuries every student who attended school had to write his own bible. Copying the Bible was part of the curriculum. The activity did not involve analysis or the use of the information that was gained from this work. It was just copying, which is not a worthwhile endeavor.”

In the same vein, he continues, “I’ve heard from a number of English teachers that visually oriented students who watch the movie portrayal of a book they’re reading in class miss a lot because the book is edited down for the screen and the screen version therefore doesn’t match the print version. What we’ve seen, though, is that popular movies sell books because they pique kids’ interest and in fact encourage reading.”

### **Gentle Dissuasion: the Eyeglasses Example**

How can naysayers be dissuaded from their conviction that the use of edtech and AT is cheating? Dr. Cavanaugh insists that the example of eyeglasses can prove to be an effective dissuasive device.

“Many of those who decry the use of AT and edtech do not regard the use of eyeglasses as cheating, but that was not always the case. In the beginning, eyeglasses were known as ‘cheaters.’ People thought that their use was a form of cheating. There was an old movie where one of the characters was being convinced to wear glasses to go shooting but he refused because using eyeglasses, he was convinced, gave him an unfair advantage. The character was finally tricked into wearing glasses and he acknowledged that they were a big improvement over his naked eye.”

Still, he concedes, there’s a sizeable segment of the population, including individuals in the education community, who persist in regarding the use of any tool as cheating. “You can extend that anti-cheating concept to any number of modern conveniences

that we now take for granted, like the telephone: ‘Did you use the phone instead of walking over to talk to me? Yes? That’s cheating.’ It’s a silly argument. Yet, silly or not, it remains a barrier that must somehow be surmounted.”

“We see a lot of this intransigence in education because education in general is undergoing big changes. An important aspect of education’s future is a decreasing emphasis on memorization. Nevertheless, many teachers and others continue to believe that rote memorization ought to retain its prominent place in the curriculum. The counter argument is that our goal as educators is to get students to understand or analyze or be able to discuss, not just memorize.” Memorization, he predicts, will probably be consigned to the same historical dustbin where book copying resides.

### **A Legislative Remedy?**

Is there a legislative remedy for this conflict?

“You can pass a law that makes edtech or AT a required option, or an accepted option. That was the goal for AT. The law – IDEA -- was passed that said AT had to be considered for every student’s IEP. But what if the person who’s considering AT doesn’t know anything about AT? Then that person can consider and say, ‘It’s not needed.’”



Recently, he recalls, some researchers have found that “If we increase the font size of text, 90% of students’ reading errors will disappear.” Is increasing the font size cheating? None of the teachers thought so, Dr. Cavanaugh says. “Instead of printing in 10-point type, we should print in 14-point type if we want the students to be able to see what they’re reading and therefore make reading easier and more productive. I then suggested that using a larger font would result in the need to use more paper. The teachers weren’t so enthusiastic about that (what with paper budgets).”

“So I suggested, ‘Let the students read it on the screen and have them decide the font size.’ Consequently, many of us are hoping that the \$100 laptop project comes to fruition soon. The project would put a computer device and reading device into the hands of every student. Each device would have a book reader built in so that each student can adapt the font size to her own need. That way we can get people to stop thinking that a book is a book only if it consists of sheets of paper between two hard covers. Those pieces of paper don’t solve the problem for everyone.”

There are more than one million books available at no cost on the web, he points out. “Just install book reader programs. The books show quite well on the screen. The user can boost the font size. All of this can be done and is being done and it is not cheating.”

As tools become more and more common and as schools use them the notion of cheating will fade away, he insists. "My students had never thought of having their books turned into audio books. But now that iPods are so common, students now like the concept of converting books to an audio format so they can be listened to or they will listen as they read, which some students find improves their comprehension. That's not cheating."

### **Pioneering States: Blazing a Trail with Lending Libraries**

Several states, he notes, are doing particularly well in their use of edtech and AT. "The Wisconsin Assistive Technology Initiative (WATI) is exemplary as is the Assistive Technology Educational Network (ATEN) in Florida. Both of these projects have lending libraries for AT devices as part of their programs."

"Some AT devices can be expensive and are non-returnable. If a device does not work out for a student, it cannot be returned. The device is too personal to be returned, or the company won't permit a device to be sent out, used and then returned because the manufacturer produces the device in limited quantities and the cost is high."

Both of the forementioned AT programs maintain lending libraries of equipment and technology, Dr. Cavanaugh says. "They also use lending libraries to help provide training for others in order to increase awareness."

Many states have AT organizations, he adds, but not all organizations have lending libraries. Having one, however, means that citizens statewide need to be aware of its existence and utility. "So that when, for example, a talking box is needed for a child, instead of spending the money for an 8-button device rather than for a 6-button device – because there is no awareness of which would actually be most effective for the child – a lending library can be employed to let the child discover which is best by actually using the device. If the device has too few or too many buttons it can then be exchanged for another that may be more appropriate. When it's been determined which model is best, that's when the purchase decision is made. That's an effective method for making sure a child has the right device for the right cost."

### **Message to Parents: Be Aware of Options**

What can parents and parent advocates do to support the use of technology in school? According to Dr. Cavanaugh, "Many parents I've come across are not even aware of their options. They're still mired in the expectations of their own generation. Getting parents to go to visitation centers is a great thing. There they can get a fuller idea of what devices are available either in person or online."



Making sure the students have and use the technology at home is a good way to support the use of technology in school, he points out. "Some students are allowed to use a device in school but not at home because the device cannot be brought home. In other words, the device was purchased for use in school, which is fine, but in the purchasing process no one thought to get a second device for home use."

Parents, he notes, should make sure that when a child has a need for technology that the need is communicated to the child's teacher. "I've seen that fall through too many times."

All teachers are supposed to show up for IEP meetings "but I can attest, from my own experience, that that does not always happen."

If a child needs a device, he declares, "let the child use it and don't make an argument about it. Again, having and using that device, that tool, is not cheating. Some parents tell their child, 'You're going to have to do thus and so task in the real world so you'd better learn to do that now, without cheating.' Isn't it also the law technology may also be accessible when in the workforce?"

"Learning and accepting are not easy for most parents. There are so many technology options out there for parents to become aware of and to consider. It seems that there is a new option every week, or there's a new integration of the technology. I got a message from HelpText™ yesterday. HelpText provides speech, word prediction, home phone support, speechmaker and pronunciation tutor software. HelpText has recently put its software on a U3 (flash key) drive. The software no longer has to be installed on every computer. Now you just put it into your computer when it's needed. The child is provided with a key that can be used on any computer. Before, the parents or school would have had to pay hundreds of dollars for the software and installation. The child can now take the key wherever he wants."

### **Public Policy Issue #1: Technology Use in Schools**

In Dr. Cavanaugh's opinion, the major convergence related policy issue to be addressed is the use of technology at schools. "After spending many billions of dollars, teachers should be using technology, parents want to see the teachers using it and teachers need to be persuaded to use it. We're now seeing that many of the standards are changing to include technology. The U.S. follows the International Society for Technology in Education (ISTE) standards for students, teachers and administrators. A number of states have incorporated that into their teacher requirements. As students use the edtech, the edtech provides the assistive tech."

There are accompanying issues, such as high stakes testing with AT, he notes. "A number of states that have high stakes testing do not

allow use of AT devices, which defeats the kids who have been using these devices each day in class. They know how to get the answers but we've now made them change from their standard writing device to a pencil. They are not effective in using that pencil."

"That's a legislative issue that demands a legislative solution," he observes. "Legislators don't necessarily recognize the variation that exists in today's school population. From an historical viewpoint, what's the average age of a politician? What was his/her schooling experience? Often there is little connection with today's technological, school and family realities that have changed drastically in a generation. For example, in the new census, we are asked how many homeless students we have. We now have to provide services for homeless students. How? Nobody had to think about that a few years ago. It hasn't been thought about because it's not in our experiential background."

"I do a lot of work with distance education that, to me, is a form of assistive technology. If I don't have to show up and move around, maybe that will be easier for me. In which case distance technology can be an assistive technology and not just an educational technology."

"At a national conference I was speaking on a topic close to my heart. My specialty is now reading, books and access and I was talking about libraries and asking how the distance learning schools are providing library access. I said, 'If you're thinking this through, consider this: If you're now going to be a certified high school for distance learning, how are you going to deal with free and reduced student lunch population? How will you be providing this student, who is classified as needing a free lunch, with what he/she needs?'"

"They looked at me in shock. They'd never thought of this. They'd never thought about what they'd do about lunch. They thought, 'It's not our job; the student is at home.' Yet if they are now a school legally providing a free lunch is the school's job."

"The point is, it takes awhile for legislation to catch up. Florida has the FCAT [Florida Comprehensive Assessment Test]. When the FCAT first appeared there were no accommodations for students with disabilities. Now there's a long list of allowable AT and accommodations. What do you do when students are being tested for reading comprehension? What do you do with the blind kid? Will there be Braille? Yes? Then the test will have to be released ahead of time in order to create a Braille version. Test makers will either have to do that or change the rules."

"Usually a wall is hit and a parent stands up and says, 'You're asking this child to do what? You want him to use a pencil, but

he has no hands. You're not allowing him to use his pencil holder. You're either going to have to allow the pencil holder or some other appropriate accommodation.' That's when legislators become very aware of the new variety of kids in school today. These kids can do quite well, but they need assistance. That's a policy issue."

"The International Reading Association is encouraging the integration of technology in education because they know that the students, when they use technology, do 20% better on the test."

"Now that all teachers are required in most states to take an instructional technology course, more people, more professionals, are thinking about instructional technology. It doesn't necessarily help them when they first get into a high stress classroom environment, but hopefully they'll remember what they learned and start using it in conjunction with AT for the benefit of all the kids. The approach constitutes assistive educational technology, a concept that will shape the future for all children, their parents and schools."



## RESOURCES

### Articles

#### **On the Go: What Consumer Products Can Do for You (If You Know Where to Look?)**

National Center for Technology in Education - 2006

"Before you pick up your wallet to go shopping for a new technology, look in your backpack to see what consumer products you already own. These common products may already have built-in assistive technologies – you just have to know where to look." According to the NCTE authors, although desktop-based computer technology continues to play a major role in the education of students with disabilities, consumer electronics are emerging with the power to change the way in which students, their parents and teachers think about mobile learning tools like cell phones, personal digital assistants (PDAs), and held-held MP3 players, all of which can act as assistive technologies.

Because more and more students are adept with the standard technologies in cell phones, PDAs and iPods, educators are incorporating these technologies into the classroom, the authors explain. "Research in the field has shown that electronic and information technology can be used by students with disabilities to contribute to their independence, productivity, and participation in academics and careers." With the new National Instructional Materials Accessibility Standard (NIMAS), the authors add, "more materials will be made available in digital format, increasing accessibility. A national task force of disability scholars and advocates has envisioned increased independence for persons with disabilities through technology; the more portable the device, the greater the range of environments in which they will be able to learn and participate."

In addition to the increase of accessibility through mobile technology, the incorporation of AT-like applications in everyday consumer electronics "leads to greater access and options for users. Some mobile technologies duplicate applications available on desktops and laptops, while others capitalize on the unique attributes of handheld devices."

<http://www.ldonline.org/article/9705?theme=print>

#### **Educational Technology**

Encyclopedia of American History - 2006

"Since 1990, educational technology has undergone rapid changes, with a significant impact on historical research and learning. For example, CD-ROM (compact disc-read only memory) systems and historical databases have altered the storage and use of information in classrooms," the dictionary text reads.

The definition continues, "CD-ROM technology allows the compilation of immense amounts of text, illustrations, audio, and video on interactive videodiscs. The centerpiece is a laser-based device similar to a compact disc player that plays back information stored on the videodiscs, which look just like the music CDs that have been popular for years. The videodiscs themselves can record sound and store texts, still photographs, and video programs. Each disc holds as many as 108,000 distinct pictures, half an hour of film, or literally hundreds of thousands of pages of text. The content of these videodiscs, which may include an encyclopedia or audiovisual display, are displayed on a television monitor or computer screen. Users can move in almost infinite ways through menus, tables of contents, and detailed, cross-referenced indexes. CD-ROM technology has profound implications for data storage and general use as a reference tool for scholars and students."

However, the authors caution, "New technology such as CD-ROM and on-line services will not prove a panacea for all that ails American education. For instance, like all information systems, the quality of data input on a CD-ROM determines the quality of the disc. Critics argue that it is difficult for a CD-ROM, even if well constructed, to act as a textbook. They maintain that the medium cannot present sequential text, study exercises, and comprehensive lesson plans in portable form (the spread of laptop computers and small personal data assistants in the early 2000s may solve the portability dilemma). Furthermore, the educational value of any new technology hinges on the ability of teachers to use it effectively. At present, many teachers still lack necessary training. Student use of the Internet also raises questions about how to prevent access to inappropriate materials."

<http://www.answers.com/topic/educational-technology>

#### **IBM Interfaces Provide Access to Advanced Features in Software Programs**

IBM - 2006

In mid December, IBM announced that it had developed software interfaces that will make it easier for assistive technologies to provide those with disabilities access to advanced features in software programs such as editing functions, hyperlinks, charts and menus. These features, the company says, can be found in rich browser applications based on DHTML, AJAX, and WAI-ARIA, and desktop applications based on the OpenDocument Format.

The new application program interfaces, designed for Windows and dubbed IAccessible2 by IBM, have been accepted by the Free Standards Group, which will develop and maintain the interfaces as an open standard, available for all to use. Freedom Scientific, GW Micro, IBM, Mozilla Project, Oracle, SAP, and Sun Microsystems back the technology and will help develop

it as an industry standard or use it in products with which they are associated.

[http://www.marketwire.com/mw/release\\_html\\_b1?release\\_id=194626](http://www.marketwire.com/mw/release_html_b1?release_id=194626)

### **Success for All Students: Leaving No Child Behind in the Digital Age**

By Cindy L. Richardson

T/TAC Training and Assistance Center  
College of William and Mary - 2002

Writes Ms. Richardson, "One of the greatest challenges facing educators in inclusive classrooms is differentiating and delivering instruction for students with varied abilities and experiences in a way that enables all students to succeed in the general curriculum. While technology and digital resources have made their way into classrooms, many educators have yet to take full advantage of the richness of these supports. Often technology is seen as a separate activity that has been forced upon educators, instead of a universally designed tool that can catapult student learning and achievement when effectively integrated into the curriculum."

Technology been identified as a critical component for ensuring that no child is left behind, she writes, because "computer or digital technology is the one universally designed curricular tool that can be customized to support the needs of a diverse student population." She adds, "The traditional curriculum, consisting primarily of textbooks, worksheets, teacher lectures and paper-pencil tests, leaves many students unable to engage with the material. Indicative of a 'one size fits all' philosophy. The rigidity of such an approach almost guarantees that only a small percentage of students will grasp and apply knowledge to the extent educators desire using traditional instructional methods and materials."

Implementation of the following concepts, the author insists, may prove helpful to educators constrained by limited time and resources when integrating technology into the universal design of the curriculum:

- Talk with or observe other educators who are already experiencing success with integrating technology into the curriculum.
- Develop a detailed plan of how the technology and activity selected will support the identified curricular objectives.
- Show one or more examples of what a successfully completed project might look like before introducing a project or assignment to students.
- Model. Use a single computer attached to a large-screen projection unit to teach students every skill they need to know to complete their project successfully. With the class, complete an assignment from start to finish to demonstrate effective ways of organizing, developing, and creating a

project.

- Use cooperative learning strategies while still maintaining individual accountability.
- Develop and share with students a timeline for all project segments so that the project continues to move forward in a timely manner.
- Identify offline activities to supplement technology in the event that it becomes unavailable before or during a scheduled activity, or when groups have to rotate their use of the computer.

<http://web.wm.edu/ttac/text/articles/assistivetech/nclbdigital.html>

### **E-Text Resources from West Ed RTEC**

RTEC Exchange

Regional Technology in Education (RTEC) Consortia - 2004

The RTEC (Regional Technology in Education Consortia) Exchange includes lists of resources for using electronic text in the classroom and links for finding electronic texts to include in curriculums. The Exchange includes a list of texts for young children as well as historical documents, adapted books and other information including curricula and Universal Design for Learning (UDL) resources.

[http://rteceexchange.edgateway.net/cs/rtecp/view/rtec\\_sub/94](http://rteceexchange.edgateway.net/cs/rtecp/view/rtec_sub/94)

### **iPod Helps Special Needs Students Make the Grade**

Apple Computer - 2006

This article details the use of iPods and the associated software, GarageBand, to create audiovisual aids for students who require test readers. "On test days, Louisa-Muscatine third-grader Samantha used to have a pretty tough time. A Special Education student, she needed the services of an onsite para-professional to read the questions aloud to her, in an entirely different classroom. Now Samantha can grab an iPod, put on her headphones, scroll through the menu to find her test, and get to work. By listening to the test questions as she sees them on the iPod screen and on her paper, Samantha and several of the school's other students with special needs are beginning to work more independently. At the same time they've increased their self-esteem, and have found a way to join the mainstream of education."

For educators looking to use iPod or other mobile technology in the classroom, this article provides policy advice and related resources. In addition to the audio testing process, the article spotlights advantages that iPod use has provided for teachers and special education students: the audio reader provides study reinforcement; students no longer have to be tested separately from their peers and are able to test independently.

<http://www.apple.com/education/profiles/louisamuscatine/>

### **It's About T.I.M.E. (Technology Improving the Methods of Education)**

By Willie Ennis III and Shannon Mocanu  
TechLearning - 2004

The writers cite research studies indicating that technology-enriched classrooms improve higher-order thinking and social skills and that group-based learning assists students in the integration process. Addressing instructor concerns that technology integration into the classroom means more work, the authors demonstrate 1.) How to use the technology as a teaching tool and 2.) Technology integration does not mean more work for the teacher once skills needed to implement it are developed.

<http://www.techlearning.com/shared/printableArticle.php?articleID=18902862>

### **From Policy to Practice: Achieving Equitable Access to Educational Technology**

By Patricia Hendricks, Lisa Wahl, Judith Stull, Julie Duffield  
Information Technology and Disabilities E-Journal - 2003  
The article describes the adoption at the federal and state levels of Section 508 of the Rehabilitation Act and summarizes the legislative background and responses of a number of states. The authors survey K–12 implementation and examine Maryland's approach to educational technology access. Section 508 of the Rehabilitation Act requires access to the Federal government's electronic and information technology and details standards for accessibility of technology and technology-based products. Although these standards were originally designed for federal government agencies, some state legislatures and local agencies have subsequently required compliance with Section 508. Specifically, this federal legislation has prompted education agencies to consider access within the educational environment. For example, Maryland passed legislation that would provide students with disabilities the same access as their peers to technology-based instructional materials. The Mid-Atlantic Regional Technology in Education Consortium (MAR\*TEC) was asked by the state of Maryland to assist in the implementation of its forward-looking decision. Specifically, MAR\*TEC considered the evaluation of instructional software. Special attention is paid by the authors to MAR\*TEC's response to Maryland's challenge: Develop an online toolkit for instructional software evaluations. In a concluding section the authors provide the rationale for a cohesive national approach to implementation of Section 508.

<http://www.rit.edu/~easi/itd/itdv09n1/hendricks.htm>

### **Computer Based Reading Instruction for Young Children with Disabilities**

By Yeunjo Lee, Cynthia O. Vail  
Journal of Special Education Technology - 2005  
Lee and Vail explore the value of computer-assisted intervention in reading for students with disabilities. This study has

value for educators trying to build instructional reinforcements through new technology and for those interested in the implications of computer assisted instruction. The researchers concluded that computer based reading instruction has benefits for students with disabilities and that this trend reflects the few studies that have used computer programs to teach reading skills. The authors note that that "multimedia do not inherently provide UDL, which can be achieved only by appropriate instructional design;" and "the change in a student's performance is the result of instruction . . . not the use of the media per se."

<http://jset.unlv.edu/20/JSETv20n1.pdf>

## **GUIDES**

### **Alternate Access Technology Overview**

Special Education Technology-British Columbia (SET-BC) 2005  
This web-based training module features webcasts and demonstration training videos that show how people with disabilities can access computers for education, employment and communication. The module provides an overview of alternate access technology options for students with disabilities. The presentation highlights important considerations for planning and matching technology to student needs, abilities, goals and expectations. Features of different categories of access technologies, including software and operating system adaptations, keyboard and mouse alternatives and switches and scanning are described. The webcasts and videos are complemented by a resource guide entitled "Alternate Access Technologies: A Guide for School-Based Teams."

[http://www.setbc.org/setbc/access/access\\_roadshow.html](http://www.setbc.org/setbc/access/access_roadshow.html)

### **Breaking Down Barriers: K-12 and Beyond**

PACER

Meeting the Challenge, Inc. - 2004

This training packet contains a booklet, poster and CD-ROM providing information for parents, students and educational staff about accessible electronic and information technology. The materials may be ordered as a Parent Guide or as a K-12 Guide.

The brochure contains definitions of electronic and information technology as well as statements from user testimonials. The poster depicts accessible educational information technology. The interactive CD provides copious resources. CD content features video examples of accessible educational technology and resource links along with accessibility options for both the physical and electronic environments. For further information, contact:

Breaking Down Barriers: K-12 and Beyond  
PACER - Simon Technology Center  
Phone: (952) 838-9000

<http://www.pacer.org/stc/eud.htm>

## Using Accessible Technology: A Guide for Educators

Microsoft Press - 2005

This 47-page guide provides information about accessible technology initiatives and resources that are available to educators.

This guide includes:

- A discussion on the importance of accessible technology.
- Case studies that describe accessible technology initiatives.
- Information about accessibility features and assistive technology products that will help individuals with specific disabilities.

<http://www.microsoft.com/enable/education/guide.aspx>

## Classroom Technology News and Publications

Buzzle.com - 2006

This website contains comprehensive listing of educational technology-focused articles and publications.

[http://www.buzzle.com/chapters/education-and-higher-learning\\_classroom-networks-and-technology\\_news-and-publications.asp](http://www.buzzle.com/chapters/education-and-higher-learning_classroom-networks-and-technology_news-and-publications.asp)

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## KNOWLEDGE NETWORK MEMBERS

### EdTech Associates



EdTech Associates was founded on the vision that every child should have the opportunity to develop a foundation of 21st Century learning skills. The organization believes that accessible technology, universally designed software, and digital curriculum materials are essential in removing barriers to learning and in creating 21st century classrooms where every child can acquire reading, learning and information and communication technology skills to succeed in school and in life.

EdTech Associates serves schools, school districts, community and national organizations, parents and companies invested in teaching, learning and youth. Their services cover four main areas: (1) technology consulting for education; (2) assistive technology consulting for learning disabilities; (3) professional development; and (4) presentations, workshops and seminars.

Assistive technology consulting services are offered to help parents, individuals and schools select and use available technologies to support students with learning disabilities, dyslexia, and language and learning difficulties. The company offers both assistive technology evaluations and training services for students with learning disabilities. When choosing the right piece of AT for individual students, they strive to look at every aspect of the child's educational experience.

The six hours of onsite consultation offered to schools and school districts can include various training opportunities, AT programs for students, and help in the usage of the devices. Their consultations are available annually or monthly.

In addition to training and consultation services, EdTech Associates offers professional development opportunities. Their programs are designed to the standards outlined under No Child Left Behind for High Quality Professional Development. The programs are organized to give staff members the skills and understanding to use accessible desktop and online tools to support diverse learners in the classroom. The four professional development opportunities they offer are called Tools for Learning, TEAM with Technology, Technology for Diverse Learners, and Kurzweil 3000.

Recently, EdTech Associates has implemented three one-day workshops: Tools for Literacy: Removing Barriers, Empowering Learners, Achieving Results; Science Tools for Learning; and Math Tools for Learning

For more information on EdTech Associates, please contact:  
EdTech Associates  
4 Arrow Lane  
Amherst, NH 03031  
Phone: (603) 424-4534  
<http://www.edtech-associates.com>  
Contact: Kathleen H. McClaskey, M.Ed., President  
Email: [khm@edtech-associates.com](mailto:khm@edtech-associates.com)

### The Consortium for School Networking

The Consortium for School Networking serves as a voice in education technology leadership. Their mission is to serve as the national organization for K-12 technology leaders who use technology strategically to ultimately improve teaching and learning. CoSN works to provide products and services to support and nurture leadership development, advocacy, coalition building, and awareness of emerging technologies.



CoSN directs their efforts to a mix of education and technology leaders, policy makers, and influential individuals from the public and private sectors. Their target audience includes key technology leaders from school districts and state education agencies.

The organization has developed three main strategic goals that underlie their work: (1) Enable district technology leaders to increase their knowledge and skills within CoSN's Framework of Essential Skills of District Technology Leaders; (2) Empower K-12 technology leaders to participate actively as key members of their organizations' leadership teams; and (3) Develop the capacity of technology leaders who aspire to accelerate strategic and system-wide uses of technology in their districts.

In addition to their strategic goals, CoSN focuses on four main areas. The first of these is leadership development. The organization provides programs, reports, analysis tools, and professional development resources designed to improve the capabilities of school leaders at the national, state and local levels to ensure that information technology has a direct and positive impact on student learning.

CoSN focuses on advocacy by maintaining a voice in policy formation and implementation to ensure that law and policy at the federal level serve the interests of all students. It also supports member advocacy efforts at local, regional and state levels.

CoSN understands the importance of coalitions and continually works to strengthen the skills behind coalition building.

CoSN actively cultivates partnerships and collaborative efforts with other organizations, government agencies and the private sector as a means to improve access, equity and professional development around the use of technology in schools.

Finally, CoSN focuses on emerging technology. As new technologies are made available to schools and educators, leaders need information and tools on how to integrate these technologies to create the best learning environments for their students and teachers. CoSN strives to stay on top of emerging technology trends and designs frameworks to help school leaders ask important questions, evaluate options and make informed decisions.

For more information on CoSN, please contact:  
The Consortium for School Networking  
1025 Vermont Avenue NW, Suite 1010  
Washington, DC 20005  
Phone: (202) 861-2676 Fax: (202) 393-2011  
<http://www.cosn.org>  
Email: [info@cosn.org](mailto:info@cosn.org)

### Technology Leadership Network

The Technology Leadership Network (TLN) is part of the National School Board Association (NSBA). TLN is a membership organization that strives to foster a team approach to technology decision making. Their services are aimed at bringing together a school district's board with school administrators and the district technology team as a means to identify best technology practices and make well-informed technology decisions. To that end, the Network offers members access to resources, professionals, and opportunities such as an annual Technology and Leadership Conference focused on the needs of district leadership teams. Hundreds of sessions and exhibitors convene to address the most critical issues and opportunities in educational technology.



Members also benefit from site visits. Each year, TLN schedules three district site visits, each designed to showcase educational technology at work. These onsite visits can offer technology teams a valuable hands-on perspective.

Other resources provided to members include technology implementation plans, teaching strategies that integrate technology, professional development programs, approaches for community involvement, and searchable databases. Members also become part of the TLN e-mail group and receive TLN's publications: Technology Leadership News, Scholastic Administr@tor, various Special TLN Publications, and NSBA's Legal Clips.

For more information on the Technology Leadership Network, please contact:

Technology Leadership Network  
c/o National School Boards Association  
1680 Duke Street  
Alexandria, VA 22314

Phone: (703) 838-6722 Fax: (703) 683-7590

[http://www.nsba.org/site/page\\_micro.asp?TRACKID=&CID=82&DID=214](http://www.nsba.org/site/page_micro.asp?TRACKID=&CID=82&DID=214)

Contact: Gene Broderson, Director- [gbroderson@nsba.org](mailto:gbroderson@nsba.org)

### Assistive School Systems Educational Technology Services

The mission of the Assistive School Systems Educational Technology Services (ASSETS) is to provide services in assistive technology assessment, training and advocacy for individuals with disabilities, promoting choice, education and meaningful career opportunities. Their goal is to increase the capabilities of individuals with disabilities, to provide a foundation for greater physical, emotional and intellectual freedom. By fostering independence through AT, ASSETS hopes to improve the quality of life, participation in community activities and contribution from everyone, regardless of ability.



ASSETS offers client services that include installation and customization of hardware and software. The organization offers technology instruction for students, parents and caregivers. They also help families select the right technology for each individual and provide them with purchasing assistance. Finally, they offer progress tracking and reporting.

The ASSETS staff aim to give students with disabilities enhanced access to the general curriculum as well as increased access to the community. Their AT training and education programs for educators are designed to build competency over time.

ASSETS' services for school administrators fall into four areas: (1) assistance in choosing products and managing vendors; (2) installation and customization of hardware and software; (3) instruction for teachers, parents, students and caregivers; and (4) progress tracking and reporting mechanisms to allow a proactive approach to continued success.

For more information on ASSETS, please contact:  
Assistive School Systems Educational Technology Services  
P.O. Box 30351  
Achushnet, MA 02743  
Phone: (508) 992-3128 Fax: (508) 996-8553  
<http://www.assets-inc.org>  
Contact: Jean K. Des Roches, President

Email: [info@assets-inc.org](mailto:info@assets-inc.org)  
**inTASC (Technology Assessment Study Collaborative)**



inTASC (Technology Assessment Study Collaborative) is a non-profit research group that works collaboratively with schools, educational agencies, and businesses to conduct research and development on a variety of issues related to technology and assessment. They bring together researchers who have examined various aspects of technology and assessment in schools over the past decade to focus on new questions and issues that arise from the field.

inTASC does not develop research studies and then seek schools to participate in research activities. Instead, schools, educational agencies, and businesses approach inTASC with their own ideas and/or questions that require systematic research to address. The research conducted by inTASC is developed, conducted, and often disseminated in collaboration with their education and business partners.

inTASC believes that advances in educational technology coupled with growing demands to document impacts on teaching and learning requires a dual focus on instructional uses of technology and applications of technology to new forms of assessment. inTASC hopes that this dual focus will enable it to provide research-based information to schools and educational leaders about the impacts of educational technology, and to produce new forms of assessment that capitalize on the powers of computer-based technologies that are more sensitive to the types of learning enabled by educational technologies.

For more information on inTASC, please contact:

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