



Maximizing Technologies to Serve Students with Special Needs

Executive Summary

Since 1975, with the passage of the Education for All Handicapped Children Act (later renamed the Individual with Disabilities Education Act, or IDEA), U.S. public schools have been required to provide a “free, appropriate education” to all children with disabilities, delivering it in the “least restrictive environment” possible.

At present, approximately 6 million children are now in special-education programs. The most recent data available (for the 1999–2000 school year) indicates that U.S. public schools spent \$50 billion on the delivery of special-education (SPED) curricula and services.

Global Schools Executive Exchange, January 2012 Guest List

- Wake County Public Schools, NC
- Mooresville Graded School District, NC
- Watauga County Schools, NC
- Fulton County Schools, GA
- Memphis City Schools, TN
- Shelby County Schools, TN
- Round Rock ISD, TX
- Paradise Valley USD, AZ
- Osceola County School District, FL
- Lake County Schools, FL
- Oxford Community Schools, MI
- Utica Community Schools, MI
- Walled Lake Consolidated School District, MI
- Katy ISD, TX
- Anoka-Hennepin ISD, MN
- St. Paul Public Schools, MN
- Rockwood School District, MO
- St. Louis Public Schools, MO
- Parkway School District, MO
- Milpitas USD, CA

As districts struggle to meet the needs of students with an extensive range of learning disabilities, they must stretch every dollar to its fullest. Mindful of this imperative, Cisco once again assembled a group of the country’s most esteemed school administrators and educators (see sidebar) during the January 2012 Global Schools Executive Exchange. Supported by Cisco® TelePresence® and Cisco WebEx® technologies, the participants exchanged real-life success stories.

In this paper, the education thought-leaders share their perspective on the potential of technology tools to support students with learning disabilities. This document illustrates how the various districts have been able to effectively address the needs of SPED students, and create dramatically improved academic outcomes.

Key Issues in Serving Learning Disabled Students Through Online Tools*

- Student motivation and engagement and providing student support
- Coordination with students’ local school district and getting students’ records
- Deficiency in curriculum
- Lack of proper parental support and involvement
- Lack of staff and lack of time
- Difficulty in identifying students

*This list was generated from an April 2011 survey of International Association for K-12 Online Learning (iNACOL) Membership conducted on behalf of the National Center for Learning Disabilities.

Success Story: Anoka-Hennepin

The Anoka-Hennepin School District (AHSD) is the largest in northern Minnesota, with 38,000 students attending classes at 40+ school sites scattered across a 172-square-mile region. Although the district’s special-needs students comprise just 12 percent of the student population, funding for their programs and services consumes one-fourth of the AHSD’s annual operating budget, with expenses increasing 6 percent each year.

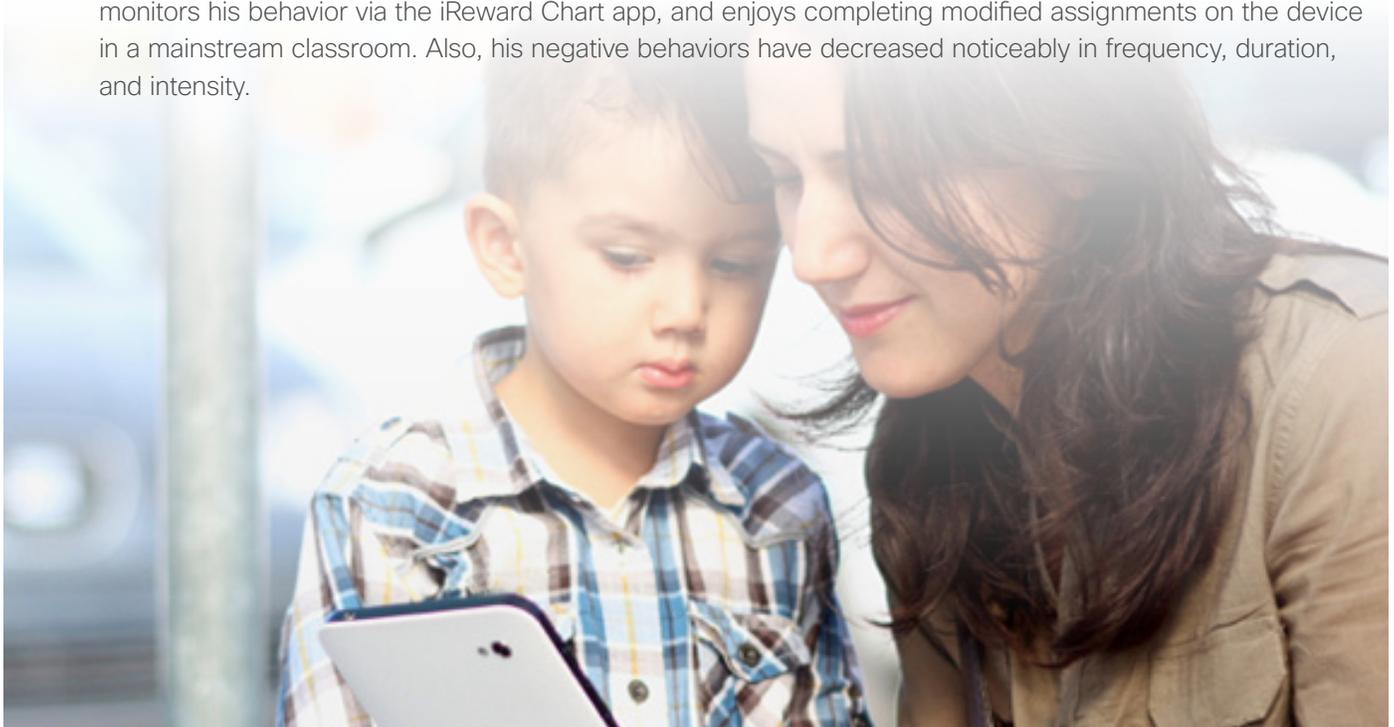
Despite these financial constraints, the district is approaching 24/7 support for its special-needs students, who have a host of learning challenges. The common denominator: Innovative applications delivered via an iPad enable differentiated learning inside and outside of the classroom, engaging students and encouraging independent interaction. The caveat, Superintendent Dennis Carlson noted, is identifying the appropriate tool for the child.

The 2011–2012 school year marked the second year of AHSD’s Special Education Mobile Device Innovative Projects initiative, in which technology integration projects were proposed and identified through an application process led by the district’s SPED Assistive Technology Team. Seven mobile device projects were implemented districtwide with students at various grade levels, all of whom have a range of learning disabilities. In virtually every instance, the results included:

- More motivation
- More time on task
- Fewer refusals to do work
- Decreases in acting-out behaviors
- Improved communications

Carlson and his staff showed videos that documented the most notable successes of the mobile device initiative. These included:

- A middle school student with significant cognitive delays had been on a conditional behavior plan, and was extremely difficult to engage in instructional activities. Since receiving a mobile device, the student has dramatically increased his participation in classroom activities, and his challenging behaviors have decreased.
- At another school, middle school students with the same cognitive delays were given iPads with Proloquo2Go (cost: >\$200). Their teachers report that the application is intuitive, and the students have been successful in navigating the features on their own.
- A fourth-grade student is selectively mute; prior to receiving an iPad she had not spoken to any of the adults at school, and only rarely spoke to one or two students. Now she readily talks to her SPED teacher, her SPED para-educator, and her peers in the resource classroom. In one instance, she recorded herself reading a book using the StoryKit “electronic storybook” application for her iPad.
- An autistic fourth-grader had refused to be placed in a mainstream class, acting out in a very disruptive fashion (hitting, kicking, biting, spitting, and so on), and needing constant adult supervision. Just as his IEP team was preparing him for a transition into a Setting III program, the student was given an iPad. Now he monitors his behavior via the iReward Chart app, and enjoys completing modified assignments on the device in a mainstream classroom. Also, his negative behaviors have decreased noticeably in frequency, duration, and intensity.



Throughout the A-H district, speech language pathologists are using iPads to document student engagement, intervention effectiveness, and speech language efficiencies in planning therapy. Additionally, teachers of the deaf or hard of hearing and blind or visually impaired students are testing the effectiveness of various applications on iPads and iPod Touch devices, gauging their impact on fine motor skills, speech, and language. Currently the teachers are checking out the iPads for six-week trial periods, targeting specific goals and objectives.

“In almost all areas we’ve seen improvements in learner-based outcomes,” Carlson said. “Students find that navigating through applications is pretty intuitive on an iPad, so it doesn’t take long for them to start to move forward. Some teachers are commenting that their mainstream students are very interested in what the special-ed students are doing with their iPads, so that’s a very positive sign as well.”

Carlson saw first-hand what the implications are of the use of engaging technology tools by students with learning disabilities. Visiting a classroom, he watched as a student raised his hand and volunteered to go up to an interactive whiteboard and solve a math problem. Carlson assumed the child had no disability until later, when he questioned the teacher.

“She said ‘he’s really autistic; this is the only class where he’ll do that,’” Carlson said. “This is the kind of thing we get to see all of the time. Our district spent \$4 million on smart-boards last year. But the input we’re getting from parents of learning-disabled children is ‘please, put iPads into our kids’ hands.’”

Connecting with Cisco

The Anoka-Hennepin district is also using Cisco technology to affect student outcomes. Recently, AHSD elementary special-education consultant Jennifer Babiracki became one of nine U.S. educators selected to participate in the 2011–2012 Brazil Administrator Exchange Program. Babiracki received a fellowship from the U.S. Department of State, which will be used to provide short-term professional development for American and Brazilian teachers, and connect students in both the countries.

In 2008, schools in Brazil were mandated to educate all students, regardless of ability levels. But teachers received minimal training in disability awareness and using research-based instructional practices. Now, staff and parents of children with special needs from two Brazilian schools will complete online training and coaching sessions via Cisco WebEx to increase their knowledge and skills. Autism resource specialists from Anoka-Hennepin will provide the training and coaching.

WebEx technology will support the district’s Classroom Connections initiative as well: Two AHSD classrooms will be connected with two classrooms in Brazil to build their cultural competencies and learning opportunities.

iPads Engage and Support Special-Needs Students

In the Milpitas Unified School District, in Northern California, iPads are in use in special-education classes. One student in particular is challenged by severe autism and physical disabilities and is incapable of verbalizing. His speech pathologist created “language boards” on the child’s iPad, which contain various words in icon format. By pointing to the words as a means of communication, the child has become empowered to go out into his community and take the bus, shop, eat in restaurants, and enjoy a more normal life than ever before.

“He can go to the grocery store and find items on his list,” noted Dr. Michelle Dimas, one of the district’s speech pathologists. “If he can’t find something, he can go to a stranger and ask for assistance. When he finishes a field trip, he comes back and writes an essay about his experience using his language board. And he loves to tell jokes! It’s been really fun watching him learn, and watching him reaching out to other people.”

In the past, the same student displayed disappointment when his papers were corrected. But after his parents purchased Dragon speech-recognition software for use on his iPad, those episodes were greatly reduced. “Dragon really helped him with the process of writing,” Dimas said. “It’s become much less a case of ‘oh no, I have to do it again,’ which has been really nice.”

Dimas revealed an unexpected benefit of her creation of the language board for her student: Her higher-functioning students (many of whom have Asperger syndrome) became engaged by the process, and offered their assistance.

“They asked why I wasn’t using a language board for them, and I explained that the boards would be used for a student who can’t speak. They said ‘we can make boards for him,’ so we had a whole discussion about what someone in that position might need to do. The kids with Asperger’s ended up putting together content to help the students with autism communicate more effectively. That was pretty amazing.”

Standard Tools in Apple’s iOS Facilitate Learning

- Voiceover
- Text-to-speech
- Zoom
- Screen magnification
- Keyboard shortcuts
- Cursors
- Dictionaries
- Spelling and grammar check
- Speech recognition
- iChat

Technology Enables and Empowers

Internationally acclaimed assistive technology researcher Marshall Raskind, Ph.D., is the former director of research and special projects at the Helen and Charles Schwab Foundation. Raskind and his team have evaluated a wide range of adaptive technologies and online learning tools to determine their relevance and value in instructing the learning-disabled. The researchers confirmed that several technologies continue to offer promise. But the key to using such tools effectively is to take the individual, the technology, and the context into consideration.

“There’s no such thing as ‘one size fits all,’” Raskind cautioned. “In many cases, what may be a blessing for one student could be a disaster for another.”

Raskind’s findings were strongly endorsed by Matthew Wicks, vice president for strategy and organizational development at the International Association for K-12 Online Learning (iNACOL), and a member of the National Center for Learning Disabilities’ Professional Advisory Board. Wicks believes that online learning has the potential to be the same “major disruptive force” (for the positive) for students with learning disabilities that it has been in mainstream pre-K-12 education. “All the rules have changed,” Wicks said. He added that in two recent pilot programs, the use of online learning assessments and other data-gathering tools has greatly improved the caliber of education that can be offered to special-ed students.

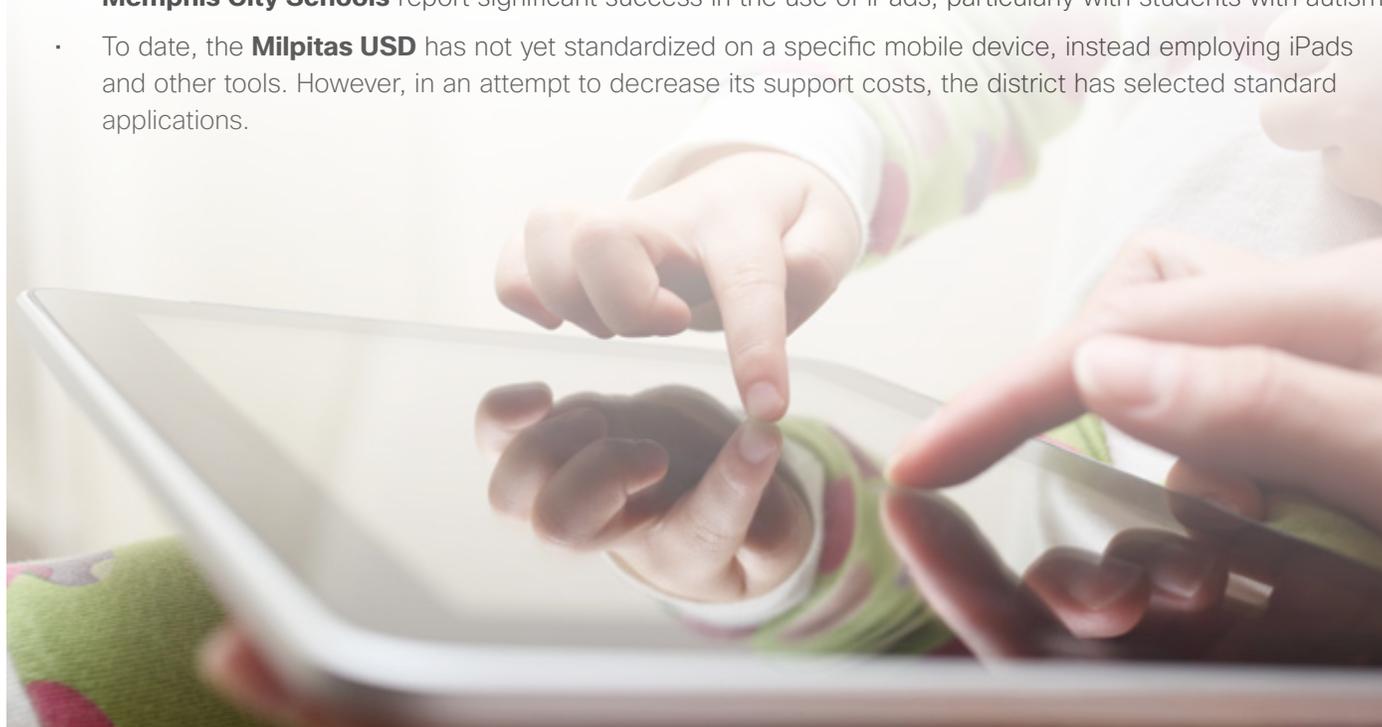
“Teachers were able to identify academic gaps and create personalized learning plans for all students. When needed, teachers also were available for in-person assistance,” Wicks said.

Roundtable Discussion: Highlights and Challenges

One of the highest-value segments of each GSEE conference is the roundtable discussion in which all school administrators share best practices. During the January 2012 conference, there was firm consensus among the district representatives on the use of the following technology tools.

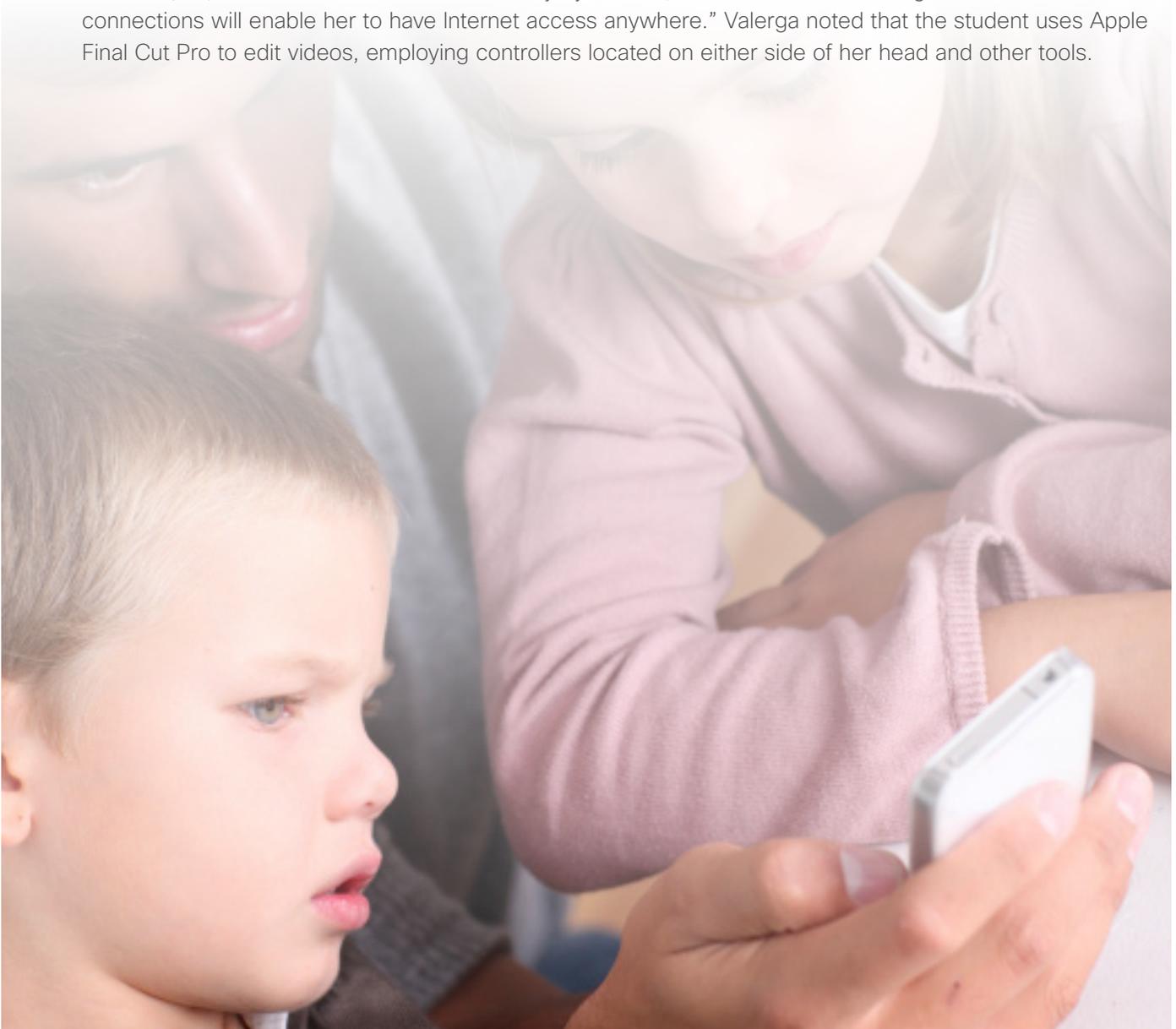
iPads

- **Paradise Valley School District** (PVSD) (AZ) has deployed at least 2000 iPads, which are used for student instruction as well as professional development opportunities for teachers. “We have over 600 tutorials we use for professional development,” said Director of Technology Jeff Billings. “With our iPads we can offer instruction to staff, students and families; we expect many requests.” PVSD is evaluating the integration of iPads with Cisco TelePresence. Billings also listed several inexpensive applications (such as ShowMe, SplashTop and Doceri Remote) that convert an iPad into an interactive whiteboard.
- At a high school recently constructed in the **Watauga County School District** (NC), a 1:1 initiative was launched that included 1500 laptops for students in grades 9–12, and a smaller set of iPads for students with severe physical and/or cognitive impairments. Associate Superintendent Dr. Scarlet Davis reported that since the inception of the 1:1 initiative, the school has achieved the highest attendance rate in the district, and was recently recognized for having the eighth-highest graduation rate in the state of North Carolina. In just three years, the graduation rate has increased from 66 to 87 percent. Davis believes that technology has a lot to do with the improvement. “When we decided to implement a 1:1 program, we were serious about every student having an individual computing device, no matter what special learning needs they had,” Davis said. “We kept our promise and fulfilled our commitment. Many students with special needs use the laptops, but some of the most impaired use iPads, which has made a huge difference in their communication abilities. The students love the apps, and now prefer online learning to traditional measures. Another equalizer in the 1:1 initiative is that regular education students do not view learning-disabled students as ‘different’ because they have alternative devices, but rather as ‘cool’ since they are the ones that received the trendy iPads.”
- **Wake County Public Schools** (NC) use a number of iPads, for both learning-disabled and mainstream students. The district has deployed a large group of smart-boards as well.
- **Memphis City Schools** report significant success in the use of iPads, particularly with students with autism.
- To date, the **Milpitas USD** has not yet standardized on a specific mobile device, instead employing iPads and other tools. However, in an attempt to decrease its support costs, the district has selected standard applications.



Other Technology Tools

- **Katy Independent School District** (TX) has deployed Verizon Incredible II smartphones, which they refer to as Mobile Learning Devices (MLDs). Said CIO Lenny Schad: “The biggest thing about the MLDs is that they tap into differentiated learning for all students, not just the learning-disabled. We’ve seen huge benefits and outcomes from their usage, and unprecedented results with our LD kids.” Schad added that the use of the devices has prompted increases in test-scores in math, science, and reading.
- In the **Walled Lake Consolidated School District** (MI), a variety of tools are in use. These include Flip cameras, which enable the modeling of social skills, along with speech-to-text applications, and a large database of books (which are used with screen-readers) for learning-disabled students.
- **Round Rock ISD** (TX) has implemented a number of technology-rich classrooms, supported by interactive whiteboards, tablets, and document cameras. “The boards and tablets have made a huge difference because they’re multisensory, and students have no reservations about using them,” said Mary Jo Humphreys, director of instructional technology. “And with the document cameras, teachers can videotape students to capture examples of appropriate and inappropriate behaviors, right in the classroom.”
- With the popularity and success of mobile devices among learning-disabled students, the **Memphis City** district is assessing the viability of a network upgrade. “We have one student with severe disabilities who uses an \$80,000 assistive device controlled by eye-blinks,” said CIO Richard Valerga. “More wireless connections will enable her to have Internet access anywhere.” Valerga noted that the student uses Apple Final Cut Pro to edit videos, employing controllers located on either side of her head and other tools.



Challenges

Among all the school administrators and educators, there was agreement that along with the benefits of technology-infused classrooms, there are also challenges:

- **Application management:** In several instances, district IT teams have had difficulties in configuring multiple mobile devices at once. Conference participants agreed that this is one of the “growing pains” associated with attempting to deploy a consumer device (such as an iPad) on an enterprise scale. Paradise Valley USD has solved this dilemma with the use of the Casper Suite for Mac to manage Mac computers and iOS devices. “This allows us to push apps out to any device on campus or at home wirelessly, or users can download applications on their own,” Billings said.
- **Support for personal and professional use:** Since the use of mobile devices has become so popular with Walled Lake teachers, its IT team was required to support applications (such as iTunes) that are not normally used in the classroom. Additionally, students were changing application settings, and learning-disabled students were inclined to “scroll” repeatedly. Billings reported that Paradise Valley employs an inexpensive application that enables teachers to synch their devices with their own iTunes accounts, saving the IT team from that task. Also, Paradise Valley is evaluating the use of FileWave, an application that enables the management of all clients within a single window (Mac, Windows, or iOS).

Conclusion

It is clear that technology is enabling unprecedented success for students with disabilities. In fact, school administrators agree that in today’s classroom, students with special needs are frequently the first to receive—and benefit from—the use of iPads and other popular mobile devices. The applications being developed for such devices offer attractive, cost-effective solutions for budget-constrained districts to engage and instruct students with special needs.

At the same time, the burgeoning use of such technologies is driving the need for teachers of the learning-disabled to become familiar with the tools, through relevant, customized professional development programs. This need, in turn, is sparking a shift to new content and curriculum delivery models and information-sharing vehicles, including wireless access to education portals and applications, as well as the use of such collaborative technologies as TelePresence and WebEx.

In all cases, it is equally apparent that the intrinsic value of mobile and online tools can be realized only when the learning needs of each student are identified and then matched with the most appropriate technology. With a rapidly expanding universe of tools now available, students with learning disabilities—and the teachers charged with their support—can look forward to improved academic outcomes and brighter futures.

Additional Resources for Educators

National Center for Learning Disabilities

381 Park Avenue South, Suite 1401
New York, NY 10016
212 545-7510
212 545-9665 (fax)
Toll-free: 888 575-7373
<http://www.nclld.org>

RTI Action Network

1101 Vermont Avenue NW, Suite 400
Washington, DC 20005
Toll-free: 888 575-7373
646 616-1252
202 842-1942 (fax)
<http://www.rtinetwork.org>

Helen and Charles Schwab Foundation

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