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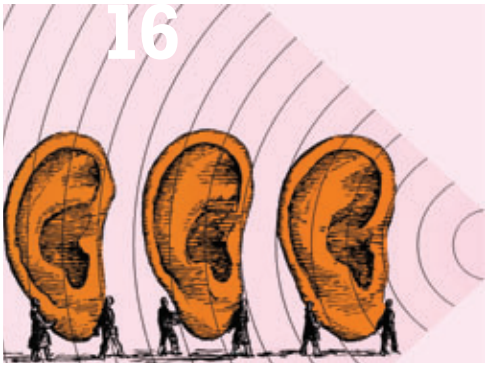

28 COVER STORY: Virtual Schools

Competing for the Online Student

As the for-profit sector moves into the virtual school business and more students opt for alternatives to traditional classrooms, public schools work harder to keep and help the online student. **By John K. Waters**

20 21st Century Schools

Shoulder-to-Shoulder Innovation

An Arizona district won this year's Sylvia Charp Award because of a revolutionary—and truly collaborative—approach to standards-based curriculum development that it is sharing with the rest of the state. Here's a look at how they did it. **By Jennifer Demski**

16 Assistive Technology

Listen Up!

Classroom sound amplification systems can make a difference in helping the academic performance of almost all students, as well in decreasing the number of referrals to special education programs. **By Marty Weil**

DEPARTMENTS

4 Our Space
Mutually Assured Learning

6 Here & Now

36 Product Focus
Internet Security

40 Index

42 Drill Down
Online Textbooks

OurSpace

Therese Mageau, Editorial Director

Mutually Assured Learning

The relationship between virtual for-profits and public schools can be beneficial to all involved

THE OTHER DAY I found myself looking up the definition of "symbiosis" because I wasn't sure I was using the word correctly. According to my *American Heritage Dictionary* (the one I was given by the *Detroit News* when I was in high school, no less), symbiosis is "the relationship of two or more different organisms in a close association that may be but is not necessarily beneficial to each."

That definition came to mind as I read this month's cover story on how some school districts find themselves competing with virtual for-profit and charter schools for student enrollment (story begins on page 28).

On the surface, this set of affairs may seem detrimental to public schools, which, by their very nature, are not set up to be competitive enterprises. (Oh, I can hear the free-market advocates howling now: Schools *should* be competitive; if IBM had the same failure rate of schools, the argument goes, it would be out of business. As somebody—not me, although I wish it had been—once said in response: if IBM were compelled by law to hire those who lived in their catchment area, they'd never *be* in business.)

But if we start with the premise that online education is not only inevitable but desirable, the involvement of for-profit and charter entities in the e-learning marketplace could be a symbiotic relationship that benefits all involved.

First, there's no question in my mind that for-profit entities have made important investments in the development of their virtual offerings and in doing so have upped the ante of the quality of online teaching and curricula. There is a higher bar for all schools to aim for now.

In addition, as Connections Academy co-founder Mickey Revenaugh points out in our story, districts that contract with for-profit companies like hers can offer a wider range of online options than if they had to build it all themselves. It's not just the rural school in Arkansas that can now offer Mandarin. It's that amazing online math curriculum that you want your students to benefit from, or the turnkey solution that will allow districts to serve families who opt out of public schooling for religious or political reasons.

But there is no chance that public schools are actually going to be put out of business by their virtual competitors. For one thing, all the virtual (and non-virtual, for that matter) for-profits and charters in the world could never reach every child in this country. And as I have written before in this column, as long as parents must go to work, children will go to school. Even more important than the custodial role they play, schools always have been and will continue to be the heart of their communities—indeed, in some cases, where all other institutions have fled, schools provide the only heartbeat left in a neighborhood. A symbiotic relationship with other virtual schooling providers could actually strengthen the bloodlines between a district and the people it serves.

Continue the conversation. E-mail me at *tmageau@1105media.com.*

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Report Demonstrates Expectation Gap in Technology Use at Schools

An overwhelming number of students and teachers believe that enhanced technology skills will lead to greater career opportunities in the future, according to a new survey. Fewer, however, believe their schools are meeting their technology expectations.

CDW-G released its annual "21st Century Classroom Report," which surveyed 1,000 high school students, faculty, and staff about the importance of using technology in their classrooms. The report said that 94 percent of students and 97 percent of faculty who responded to the survey agree that learning technology skills in high school will lead to better career opportunities in the future. Faculty and staff agreed that 21st century technologies such as wireless internet, interactive whiteboards, and digital content are necessary for a successful classroom experience.

However, only 39 percent of students believe their schools meet their technology expectations, while nearly all (94 percent) said they use some form of technology to complete homework assignments, but only 46 percent of faculty said they regularly assign homework that requires using any technology at all. Only 49 percent of students believe that their faculty understands how they want to utilize technology for learning. For more information on the CDW-G report, go to *newsroom.cdw.com/features/feature-06-27-11.html*.

Educational Testing Tabbed as Hot Industry in the Future

The hottest startup industry over the next five years will be testing and educational support. That's according to a survey IBISWorld conducted to determine the fields most likely to emerge as significant industry leaders in the near future. According to IBISWorld, the economic recession and slow job market will drive many to either return to school or delay their careers by continuing their education. In fact, during the previous five years, the educational testing sector generated $15.4 billion in revenue.

IBISWorld, a Los Angeles-based industry research firm, examined income trends, expansions, and profitability levels of over 700 industries to conclude which of these industries are most likely to grow within the next five years.

Other hot sectors, according to IBISWorld:

- Internet technology
- "Green" industries, a field that is growing at an annual rate of 9.4 percent, primarily because of consumer interest in eco-friendly products
- Residential and commercial construction, expected to grow at a 12.5-percent annual rate despite the doldrums the real estate industry has been in since 2007
- Healthcare, expected to grow at a rate of 4.3 percent each year, primarily because of activity anticipated by recent health insurance reform

[industry update]

Pearson has launched an online series of interactive study guides to help aspiring teachers prepare for certification tests. The new guides, called NES Prep, begin with diagnostic tests that include explanations of the correct answers to help users identify areas where they need additional study. Each guide is built around National Evaluation Series objectives and includes review exercises for progress assessment. For more information, go to *myneslab.com*.

Creative Commons and the **Association of Educational Publishers** (AEP) have partnered to create a metadata framework aimed at improving web search results for K-12 learning resources. The partnership is, according to the AEP, the first industry-specific initiative to spring from Schema.org, an alliance of the major search engines that was formed to create a universal framework for tagging web-based content. For more information on the project, visit *thejournal.com/articles/2011/07/18/metadataalliance.aspx*.

Excent has released MyGraduationPlan 2.0, updated e-learning software for K-12 that helps special education students and parents get more involved in their individualized education plans. This new version applies Universal Design for Learning (UDL) curriculum development principles, which give all individuals an equal opportunity to learn. It has also been changed to comply with Individuals with Disabilities Education Act 2004 regulations.

Discovery Education will release a new online science "techbook" this fall. The Discovery Education Science Techbook will take the place of traditional textbooks at the elementary and middle school level. The techbook will include features not accessible with ordinary textbooks such as virtual labs, video clips, e-book passages, and an interactive glossary. It also will include real-time assessments that make curriculum recommendations for individual students and allow teachers to update materials.

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Print Management: Real-world Ways to Cut Costs, Boost Productivity

The **Park Hill School District** in Kansas City, MO, discovered how to better control print and copy costs, and reduce waste.

The Ongoing WiFi Device Explosion on Campus: What Is Your Plan?

Boost the performance, capacity, and reliability at the same time you are meeting the demands of existing and emerging technologies.

Wireless LAN Architecture: Key to Achieving WLAN Success in Education

This session focuses on alternatives in today's WLAN architecture, and how the architectural choices you make now can affect performance.

How to Select a Tablet

Learn 10 essential criteria that organizations should consider when choosing a tablet computer. Sponsored by GovConnection.

Linking Interactive Whiteboards, News Lessons

An interactive whiteboard maker is partnering with a news network that broadcasts to middle and high school students to deliver interactive media and activities to whiteboards in the classroom. **Promethean** has joined with **Channel One** to deliver the latter company's daily news program.

The alliance has produced Channel One News InterActiv, which, beyond delivery of the daily news program, will offer assessment activities, pop quizzes, and collaborative exercises tied to current events and integrated with Promethean's student response devices.

Channel One also announced it would offer a version of the InterActiv product for students in grades 3 through 5, a younger group than it has traditionally served with the broadcasts.

In both sets of offerings, supplemental digital content will be available for instructors to help them add skills development into the lessons in areas such as collaboration, problem solving, and critical thinking. These lessons, according to the two companies, will be aligned with standards in core content areas, including math, language arts, history, science, and geography. For more information on the partnership, go to *thejournal.com/articles/2011/07/18/collaboration-links-interactive-whiteboards-with-news-lessons.aspx*.

{win big!}

National Competition Looking for Winning Lesson Plan Videos

M86 Security called for entries in its nationwide VuSafe Video Contest for K-12 classrooms. Students and their teachers are asked to create and star in an educational video based on one of their routine lesson plans. The winning classroom will receive HD video cameras for each student and an HD camera, tripod, and 27-inch Apple iMac computer already installed with video editing software for the entire classroom.

Entries will be accepted until Oct. 31. For more information about guidelines, requirements, and entries for the contest, visit *M86VuSafe.com/contest*.

Microsoft Office Desktop Competition Finalists Named

Certiport (*certiport.com*) announced the top finalists in the United States Competition on Microsoft Office. Over 72,000 students in the country competed to exhibit their talents working with desktop computing applications. Only five were chosen for the next round. The top five 2011 finalists are Miranda Hill, Juliana Toyloy-Stanton, Breana Guarnera, Kami Martin, and Brian Broom-Peltz. For more information on the finalists and their schools, go to *prweb.com/releases/2011/7/prweb8630964.htm*.

The final challenge of the Worldwide Competition for desktop computing will be held in San Diego in early August.

'America's Top Young Scientists' to Be Selected in October

Discovery Education and 3M announced the 10 finalists in the 13th Annual Discovery Education 3M Young Scientist Challenge. Middle school students from across the country competed in this year's competition. For information on the finalists and their schools, visit *youngscientistchallenge.com*.

The finalists have been teamed up with 3M scientists for a summer mentorship. The finalists will go on to present their prototypes at the 3M Innovation Center in St. Paul, MN, Oct. 3-4. The winner will receive a trip courtesy of Discovery Student Adventures, $25,000, and the title of "America's Top Young Scientist."

[you told us]

The Future of Mobile Learning Devices

I just read "Masters of Learning" ["Our Space," June/July; *thejournal.com/articles/2011/06/07/masters-of-learning.aspx*]. Thank you for helping me to validate initiatives that I am working on here at my school. I am completely convinced the mobile learning device is something we must begin to leverage.

As a school that has had a 1-to-1 program since 1997, the real key in all of this is that we have to get the teachers to embrace this idea and be creative, and not just use the mobile device as an extension or replacement for the laptop, which became an extension of the desktop, which became an extension of the mainframe, etc. As each device tends to get smaller, the more we still feel the need to do what we did with the previous technology.

I came back all fired up after FETC, talking up the smartphone with some colleagues. "Hey, we are a Google school," I told them, "and the kids already have access to their work from the phone, a full-blown GPS, a camera that is better than my 3-year-old personal camera, video at their fingertips, all these free apps. I am thinking of replacing the laptop program with a smartphone program." When someone asked, "How do you want the students to type their papers, with their thumbs?" I had a quick response: "Wait till you see Motorola's Atrix."

I again was discouraged that too many times, as educators, we spend too much time fitting yesterday's round peg into today's square hole, instead of rethinking our ultimate goal: preparing our students to be successful.

My own kids, a sophomore and an eighth-grader, use their smartphones more than anything, for anything that they want to do, period. More than their laptops, more than their Xbox, more than the TV. This isn't a passing fad.
—Marcus T. Muster, director of technology, The Kiski School, Saltsburg, PA

I was distressed to find that you expressed a belief that mobile learning devices (i.e., smartphones) would close the digital divide: "With the cost of such devices dropping precipitously every day, there's no reason that every child can't have a hand-sized mobile computer to use at home, at school, on the bus, in the playground, and every place in between."

There are a few things wrong with your assertion. First, these devices are not dropping "precipitously" in price. The second point, even more detrimental to your argument, is that you did not address the total cost of ownership if you calculate the purchase price, voice plan (if applicable), and data plan over two years.

The smartphone is not a game changer in closing the digital divide. The single biggest player in reducing the cost of computing is the use of free and open-source software. The next biggest reduction would be lowering the cost of high-speed access.
—Charles Profitt, Rochester, NY

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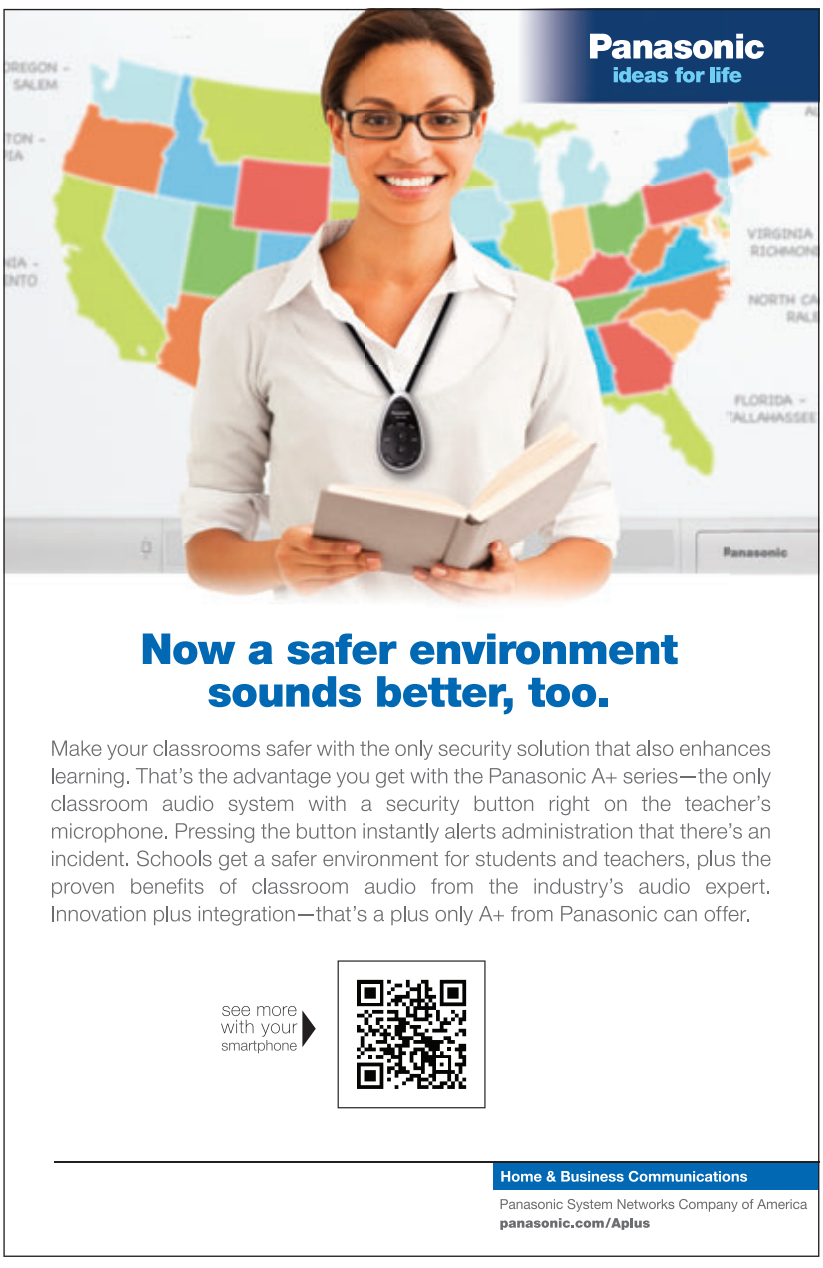

the focus

Refresh: A Critical Part of a District Technology Strategy

Fort Wayne Community Schools
Wayne New Tech High School

Greg Estes/Design Collaborative

Fort Wayne Community Schools in Indiana is a large school district with more than 30,000 students. HP has been a valued partner for over three years, supporting each tech refresh initiative with the most cost-effective pricing and helping the district move toward a consistent overall refresh strategy. When the state of Indiana mandated online testing of all students, HP understood the challenges and helped the district develop a cost-effective plan.

Everybody On hp | AMD

In the Fort Wayne Community Schools, each department has typically made its own tech refresh decisions, with funding coming from a variety of sources. One four-year plan funds a tech refresh program for district central offices and some satellite administrative locations, but not for classrooms. Another plan purchases new machines for special education teachers because they need a consistent platform and better tools to manage IEPs electronically. Another plan funds the replacement of lab machines every three years.

According to Dick Rutkowski, supervisor of network support services, "Our goal is to get everyone to a consistent PC platform eventually and meet sustainability and productivity targets at the lowest total cost of ownership (TCO). Our elementary schools in particular have a range of hardware formats that we need to make consistent. HP has been a great partner in helping us move toward this goal."

Many of the insights that HP brings to the tech refresh discussion are based on the research of Bruce Michelson, national lifecycle manager for Hewlett Packard's Personal Systems Group and well-known expert on tech refresh issues. Michelson believes that the current economy is changing the thinking about the pros and cons of partial versus complete refresh options. "There are no right or wrong answers—only conscious and unconscious decisions," says Michelson. "However, the traditional reasons for the partial refresh option are less valid in today's economy." (See Michelson's presentation at *http://h30395.www3.hp.com/search?page=1&type=-1&q=Closed+Life+cycle+planning*.)

According to Michelson, in today's economy it makes less sense from a TCO standpoint to extend the life of existing machines because many districts have already extended the useful life of their desktops and notebooks due to budget cuts—making today's machines even older than in the past. "In the past 24 months, while we were extending the useful life of the fleet, the technology footprint has dramatically changed," he says. New software releases, energy management options, and power management options do not run well on the older devices. In addition, Windows 7, new chipsets, new form factors, and virtualization are changing the way districts need to evaluate their

State-mandated Online Testing: Another Reason to Refresh

Like many states, Indiana has recently mandated that all high-stakes testing will transition to an online environment. By 2014, all ISTEP+ testing must be conducted online and completed within a few weeks.

Dick Rutkowski, supervisor of network support services for the Fort Wayne Community Schools states, "When we realized we had nowhere near enough computers to meet the requirements of the new legislation, we first looked into renting. But after HP provided very aggressive direct pricing on new machines, we decided to go with a direct deal." The district also intends to take advantage of the special pricing to refresh the machines in the central office and other administrative areas as part of the normal refresh cycle.

To fund the purchase, Fort Wayne Community Schools applied for and received state funding in two installments, spring and fall, and has elected to purchase HP ProBook 6555b Notebook PCs and HP Compaq 6005 Pro Small Form Factor PCs with VISION Pro Technology from AMD. AMD technology enhances the user experience with processors and chipsets that provide exceptional performance while operating as efficiently as possible. AMD technology also provides outstanding visual performance, which is helpful for online learning and video consumption.

In the first purchasing cycle, most machines will be notebooks and will be assigned to the elementary schools. "There's no room in our elementary schools to set up all the computers for testing," says Rutkowski. "So we needed portable devices we can set up in the gym or the cafeteria for testing that can then go back to the classrooms for the rest of the year."

Fort Wayne worked with two HP partners who are handling all servicing, imaging, and tagging. "HP has great relationships with the resellers, which is helpful to us. Repairs have worked very smoothly, using the third-party service under the HP warranty," says Rutkowski. Rutkowski also meets with his HP account manager on a regular basis. "Our HP rep understands our challenges," he says. "He lives in the state, and he really knows what's going on in education. He's always looking for creative ways to help."

Fort Wayne placed new machines in 17 schools in the 2010-11 school year and plans to add machines in more schools each year. According to Rutkowski, "We won't get all the way this year, but before the state deadline we have to get to a 1:3 or 1:4 ratio to meet the legislative mandate." Spring 2011 will see the first online testing implementation. "We still have a lot of details still to work out," says Rutkowski, "and we want to make sure the computers are being used in classrooms the rest of the year."

"Our goal is to get everyone to a consistent PC platform eventually and meet sustainability and productivity targets at the lowest Total Cost of Ownership (TCO)."—*Dick Rutkowski, Supervisor of Network Support Services, Fort Wayne Community Schools*

refresh options.

According to Michelson, the research shows that TCO is made up of many components. "Acquisition price was often the only point of discussion in the past, but TCO research shows that this can be less than 20 percent of the overall cost," he says. Other TCO factors include residual value, power management, the ability to handle new operating systems and applications, and the costs associated with "cascading" devices down to younger students or lower-level applications. "Refreshes are no longer a tactical technology department project. Now we have to look at refresh cycles from a strategic perspective because the economics are different," says Michelson.

It's widely understood that the amount of energy consumed by today's desktops and notebook PCs is much less than that consumed by the machines of three years ago. In addition, according to Michelson, districts must take into account other TCO and environmental factors, such as partner commitment to environmental initiatives, which varies widely; the environmental impact of fewer service calls, which reduces transportation needs; disposal issues, since newer devices are lighter and offer options for disposal and recyclability; and upgrade incentives from utility companies, federal and local legislation, and device manufacturers.

Environmental initiatives and cost-savings often coincide. As machines age, power consumption becomes less efficient, creating an increase in cost. "A PC strategy that 'rides til it dies' contradicts sustainability trends and challenges affordability," says Michelson.

"HP has provided great pricing and service across all our initiatives, including the online testing mandated by the state," says Rutkowski. "We expect our partnership with HP will help us refine and improve our tech refresh strategy moving forward."

HP Compaq 6005 Pro Small Form Factor PC with VISION Pro Technology from AMD

"Now we have to look at refresh cycles from a strategic perspective because the economics are different."

—Bruce Michelson, HP National Lifecycle Manager

School Tech Refresh Checklist

A successful tech refresh involves much more than replacing machines. Before installing new machines, schools can use the following checklist to ensure a smooth implementation.

- Power requirements/outlets in place—one each for computer, monitor, projector.
- Drops/Ethernet connections in place—14ft max. distance from computer to Ethernet jack.
- Teachers' desks located close to power supply, Ethernet connection, projector wall plate.
- Adequate space available for new devices.
- Adequate network closet space/ equipment available.
- Sufficient wireless capacity available.
- New cords purchased.
- Printer layout reviewed/updated to maximize efficiencies.
- Monitors/flat screen displays evaluated and planned.
- Staging area identified.
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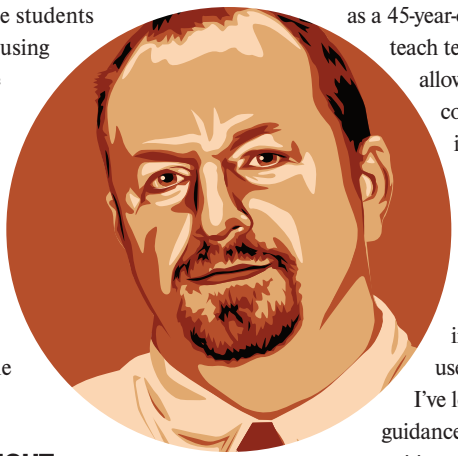
PROFILE

KEITH ROSKO, ART TEACHER, CHENANGO FORKS HIGH SCHOOL, BINGHAMTON, NY

>> THE MEDIUM IS THE MESSAGE

We are a rural district with three schools located on one campus. I teach two technology-based courses, Computer Art and Video Production. In Computer Art, we focus on basic Photoshop applications. We also have the option for students to take seminar independent studies, where they can dabble more in Adobe Illustrator or some of the other programs. Video Production is a course in filmmaking in which the students do everything digitally, using either iMovie or Adobe Premiere. We've had camcorders, flip cameras, and what I'm really psyched about is that I just ordered two iPad 2s for next year. My kids are going to have everything they need to be a mobile film studio.



>> SEEING THE LIGHT

I have a bachelor's degree in art education and a master's in illustration, so I'm very traditionally based. When I came on board here I handled the two-dimensional courses—drawing, painting, illustration. It was 11 years ago that I got my first computer, and I swore I would never use the stinkin' thing. For the first year, out of sheer belligerence I did nothing but put sticky notes on it—I didn't even turn it on. The next year, I was handed the Computer Art course, and it was baptism by fire. I had to learn everything over the summer so that I could teach the course. Immediately I fell in love with it. I saw what the Adobe suite of products was capable of and I realized I could not only do the same things I could do with traditional media, but I could take it to a new level. I could teach some really involved critical thinking skills that was more exciting than [teaching] with traditional pencil and paper.

>> THE STUDENT AS COLLABORATOR

One of the things that I was forced to do, which I think has revitalized my career, is to give up control in the classroom. Particularly as a 45-year-old teacher, you can't teach technology without allowing the students to collaborate on how information is being presented and how they're going to utilize the technology. I had to give them some leeway in teaching me what's useful and what's not. I've looked to students for guidance, and it's always been very exciting.

>> OVERCOMING FEAR

In addition to my classes I run the Enhancing Education Through Technology grant here, serve on the high school technology committee, have served on the district technology committee, and work as a peer technology trainer at all levels. The biggest challenge with the other teachers is overcoming fear. There's a tremendous amount of trepidation when it comes to giving up control in your classroom, utilizing something that people worry may just be a flash in the pan or a lot of sprinkle and glitter on top of something, a distraction from teaching core principles. It's not easy to make that shift from demonstration, lecture, and notes on the board to a much more fluid approach to information in the classroom. But I'm proud of the fact that so many teachers have jumped on board, really attempting to integrate technology at a basic level. They're willing to experiment, to move out of their comfort zones. And it's like a snowball running downhill—once you see someone in the classroom next door doing something exciting, you want to do that as well.

>> THROUGH TECHNOLOGY

Education has to move away from the traditional classroom toward one where there is a much more dynamic interplay between teacher and student. And it can't just be teachers utilizing technology to present information. One of the things we're trying to do here is shift from the mentality of teaching with technology to teaching *through* technology. We're living in a post-PC world, where students expect to be able to do everything on the move. They expect to be able to collaborate. We're giving them a platform to do that so that they're not just stuck with a piece of paper on a desk, isolated from the rest of the world.

MY TOP 3...
EDUCATIONAL TECHNOLOGY READS

***Rewired: Understanding the iGeneration and the Way They Learn,* by Larry Rosen** "A huge eye-opener for me to the way today's children are different from other generations."

***Digital Storytelling in the Classroom: New Media Pathways to Literacy, Learning, and Creativity,* by Jason Ohler** "Uses digital storytelling to encourage students to tell stories."

***Empowering Students With Technology,* by Alan November** "An inspiring exploration of how new media and digital/media literacy are not only important, but can be used to help students take ownership of their education."

Daniel Hertzberg

Do you know a K-12 technology leader or tech-savvy administrator or teacher we should profile? Tell us! E-mail michaelhart@1105media.com.

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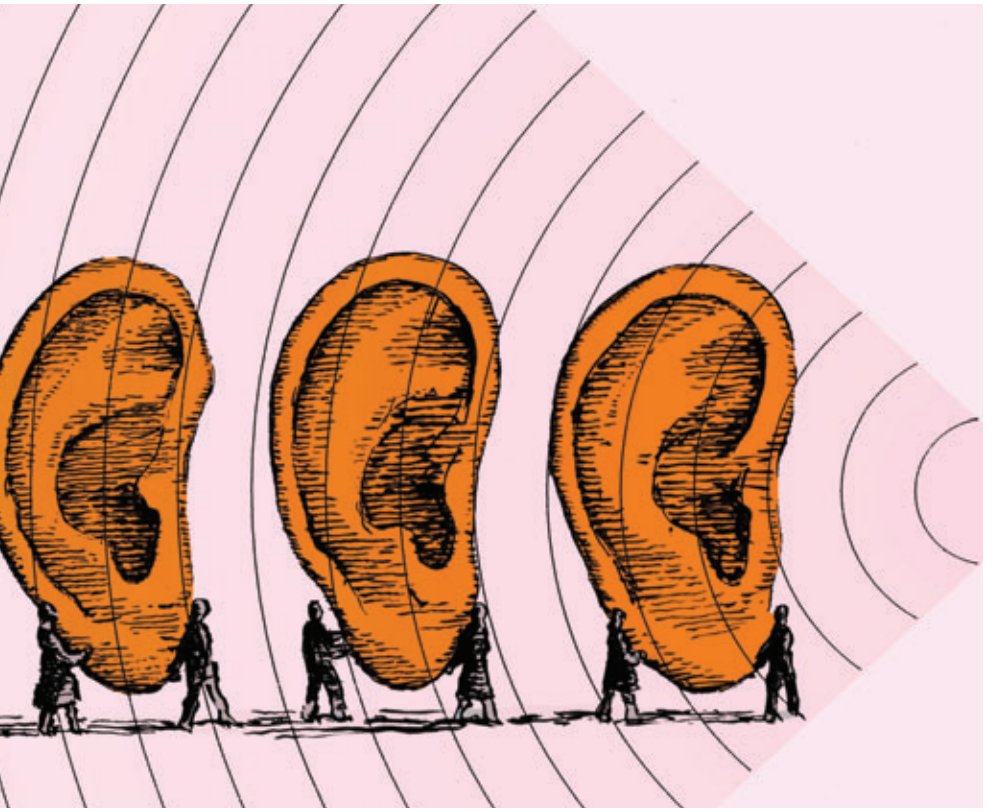
Marty Weil



Listen Up!

Classroom sound amplification systems can make a difference in academic performance as well as in the number of referrals that are made to special education programs.

THERE ARE MANY POSSIBLE interventions that can occur when a child performs poorly in school, but one that can be easily overlooked is a hearing check. Yet a growing body of research indicates hearing loss—even a minimal amount—can have a dramatic effect on everything from attention and behavior to academic performance. At the same time, data indicates, and experts in the field believe, that the introduction of sound reinforcement and sound amplification systems can help with this problem.

Normal hearing for children is 15 decibel hearing level (dB HL) or better at all frequencies with normal middle ear function. Anything less can place a child at risk.

There are approximately 46 million K-12 students in the United States; more than 9 million—about 20 percent of them—have some type and degree of hearing loss. Based on the number of audiologists employed by school districts to manage students with hearing loss, less than 1 percent of these children with hearing problems are receiving professional help through their schools.

Of course, it's possible that not nearly all those students need professional help with their hearing loss. In fact, many times the loss is not even noticeable by most observers, and the same loss likely would not affect the behavior of adults. However, for a child trying to integrate new information, even "minimal" hearing loss can have a huge impact on learning.

"The issue that needs to be addressed is hearing clearly for effective teaching and learning," says David H. Parish, president and CEO of Woodbury, MN-based Calypso Systems, a manufacturer of integrated classroom products, including classroom acoustic systems. He stresses that children who have trouble hearing what is going on in the classroom may perform below standards both academically and behaviorally.

"Studies show that children who fail basic hearing tests have to repeat a grade at 10 times the rate of those who pass them," says Parish. "Clearly, the ability to hear—especially at younger ages when language skills are not as advanced or for those learning English as a second language—is critical for good academic outcomes."

Loud and Clear

The Acoustical Society of America, in conjunction with the American National Standards Institute, has published standards that define, for classrooms, the acoustical standards necessary for effective teaching and learning environments. The key standard is signal-to-noise ratio. The "signal" is the teacher's voice or the audio of media employed in instruction. "Noise" is everything else that makes it more difficult to hear the signal: students' chatter, the fish tank, street noise, HVAC systems, and so on. "The signal needs to be sufficiently greater than noise to be heard and understood, and very often that is simply just not the case," says Parish.

Another eye-opening statistic: Roughly 72 percent of all children referred to special ed also fail a basic hearing test. "Why does this happen?" asks Parish. "Which is the cause and which is the effect here?"

According to Parish, these children are more easily distracted, which makes it more likely that they will be disruptive in the classroom. As a result, they often move

Janusz Kapusta

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into special education programs. This raises the question: Could schools reduce the number of referrals into special education through the introduction of sound reinforcement and sound amplification systems? There are several studies that suggest the answer may be "yes."

According to research compiled by Pamela Millett, assistant professor and educational audiologist at York University in Toronto, a number of studies show decreases in special education referral rates following installation of sound field acoustic systems across school districts.

For example, in the **Oconto Falls School District** (WI), special education referral rates fell from an average of 7.72 percent between 1989 and 1998 to 4.6 percent between 1998 and 2000, when sound field amplification systems were installed in all K-5 classrooms in the district. This is a reduction of more than 40 percent.

Long-term data from the Mainstream Amplification Resource Room Study (MARRS) project, funded by the US Department of Education under the Elementary and Secondary Education Act, supports this finding. The project's data indicates that special education referral rates throughout the nation fell at the same rate as in Oconto Falls—almost 40 percent—after five years of sound field use in classrooms across school districts participating in the study.

Both studies analyzed the results of systems designed to create a uniform sound field in which the teacher's voice (i.e., the desired audio signal) is heard equally well regardless of where a student sits in the room.

Speak Into the Mic

The components usually involved in a unified sound field system are speakers installed in the ceiling and a wireless microphone on the teacher. The microphone transmits its signal to some type of receiver, typically mounted on the ceiling or a wall. The wireless signal reflects and bounces around the room, reflecting off the walls and ensuring a very high percentage of room coverage. The teacher can move anywhere in the room and have the signal remain effective. The wireless receiver converts the signal from the teacher's microphone to an audio signal and sends it to an amplifier, which then sends it to the speakers. Often, the wireless receiver and amplifier are in the same box.

According to the MARRS study, unified sound field amplification "enhances the clarity of oral instructions, promotes student attention, lessens teacher voice fatigue, and increases academic achievement scores, particularly for students with mild hearing loss."

Sound Financials

While improved behavior and academic performance seem like good reasons to adopt classroom acoustic systems, so too is return on investment. "Our district realized it was spending more money than necessary to send hearing-impaired students to other districts because we didn't have the facilities to serve them," says Matt Cirigliano, IT manager at **Delaware Valley Regional High School** (NJ). "With the acoustic system we put in, we'll be able to recoup the cost of installation in under a year, just from savings on out-of-district kids."

The Delaware Valley school hired an education specialist for the hearing impaired to train teachers in using the system to get the most out of it for those with hearing challenges. Cirigliano recalls, "The consultant [helped] everyone understand how hearing-impaired students hear, and to make adjustments in the acoustics."

Parish says the financial impact of amplification systems could be huge. "As a national average, special education costs twice as much as general education. On average, school districts spend roughly 25 percent of their overall operating budget on special education when only 12 percent or so of the kids are in those classes. These numbers spell out the financial potential of these systems."

Sound Performance

Barbara Martin, principal of **Monarch School** in the **Gwinnett County Public Schools** (GA), says performance was at the heart of her school's decision to implement an amplification system. "I don't have statistics on students who are underperforming due to hearing loss, but what made us go ahead with the system was a feeling that kids in the corners or at the back of the room weren't being served, and teachers were constantly having to raise their voices," she says. "We wanted something that would amplify the sound throughout the room, ensure that the teacher's instruction was heard throughout the day, and make every second of teaching time that was pos-

LINKS

- **Acoustical Society of America**
  acousticalsociety.org
- **American National Standards Institute**
  ansi.org

CLASSROOM SOUND SYSTEM VENDORS: A Quick Reference Guide

THAT CLASSROOM AUDIO systems are an increasingly important part of the audiovisual market segment can be seen in the growing number of national and international suppliers of the equipment. While the sheer number of manufacturers and distributors would be prohibitive to publish, the list below contains some of the significant corporate enterprises serving the audio needs of educational facilities in North America.

Bogen Paging
bogen-paging.com

Califone International
califone.com

Calypso Systems
calypsosystems.com

Cetacea Sound
cetaceasound.com

FrontRow
gofrontrow.com

Lightspeed Technologies
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sible available to all of the students."

Cheryl Myers, a preschool teacher for the deaf and hard of hearing at Monarch School, says the system has made a noticeable difference. "We see a clear difference in how the children attend to the teacher's voice," she says. "Now that they hear the teacher, regardless of where they are in the classroom, their attention is better, their behavior is better, and comprehension of the instruction has increased."

According to Martin, teachers are not repeating directions as frequently as they were, so there's definitely more time on task. "The teacher gives a direction once, and no matter where the student is, the direction is taken," she says. "Before it was, 'Time to clean up. Time to clean up. Boys and girls, it's time to clean up.' Now they say it once and the students hear it." the

Marty Weil is a freelance writer based in Asheville, NC.

Ending the Echo Effect

MOST SCHOOL CLASSROOMS are simple square cinder block arrangements with hard surfaces, like blackboards and windows, spanning the walls. In such an environment, sound can bounce around like a pingpong ball, a perfect breeding ground for excessive reverberations that can cause plenty of "ear fatigue" among students and equivalent vocal strain for teachers.

Sound amplification systems do not necessarily correct for this echo effect, but simple acoustic panels do. Companies like SoundproofCow, Acoustics First, and Primacoustic make these fabric-covered sound-absorbing panels for many industries; for the K-12 market their panel solutions are targeted to the sound challenges inherent in classrooms, gymnasiums, and libraries, usually at a cost that most schools can afford.

Primacoustic, for instance, has created tables to help educators calculate how many panels any given room will need to help reduce sound reverberations. If a classroom floor size is 400 square feet, for example, and the ceiling is 9 feet, you will need anywhere from 72 to 180 square feet of acoustic panels, depending on whether you want minimal, light, medium, or "extra" coverage. The company says that most schools "find that a 'light' level of treatment provides sufficient sound abatement while keeping the budget in check." If budgets are tight, Primacoustic suggests that schools start with a minimal treatment and then work up from there as funds become available. By simply placing panels so that each parallel surface has some treatment, schools can dramatically reduce the echo effect in their classrooms.

Acoustics First: acousticsfirst.com
Primacoustic: primacoustic.com
SoundproofCow: soundproofcow.com

Steven Meckler

Teachers and administrators at Vail School District in Arizona impressed the Sylvia Charp Award judges with the level of collaboration they engaged in to create a digital curriculum that takes their district—and others in the state—beyond textbooks.

SHOULDER TO SHOULDER INNOVATION

An Arizona district won this year's Sylvia Charp Award because of its revolutionary—and **truly collaborative**—approach to standards-based curriculum development. Here's a look at how it works. **By Jennifer Demski**

IN 2003, DEBBIE HEDGEPETH was looking for a way to address the **Vail School District**'s academic shortfalls after the implementation of Arizona's Instrument to Measure Standards (AIMS), a statewide standards-referenced test of reading, writing, math literacy, and science. The assistant superintendent for curriculum and professional development at the rural school district in southeastern Arizona wanted to upend the way Vail approached standards-based curriculum instruction. Hedgepeth and her colleagues called it "inverting the curriculum."

Rather than basing what was taught and when it was taught on traditional textbooks, which were not aligned to the specific state standards of Arizona, Hedgepeth and her team sat down with teachers throughout the district to "unwrap" the state standards for each grade level and subject. The team established formative assessments and benchmarks for each standard and created a curriculum calendar based on logical sequences of concepts and required levels of mastery, rather than textbook chapter numbers.

Once the common curriculum calendar, benchmarks, and assessments were in place, teachers were encouraged to select resources and materials that fit the standards, inspiring creativity among the faculty that would hopefully lead to an increase in high-level thinking, skill mastery, and student achievement.

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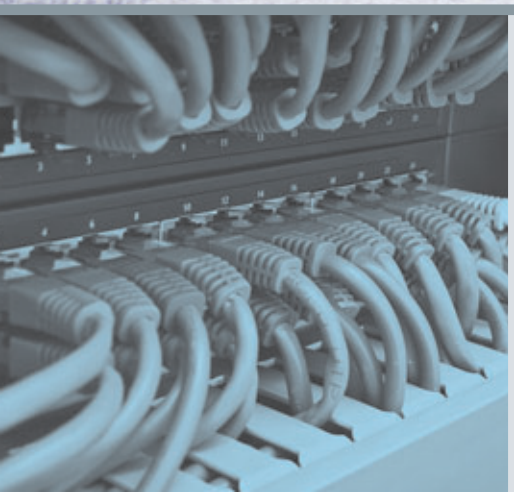

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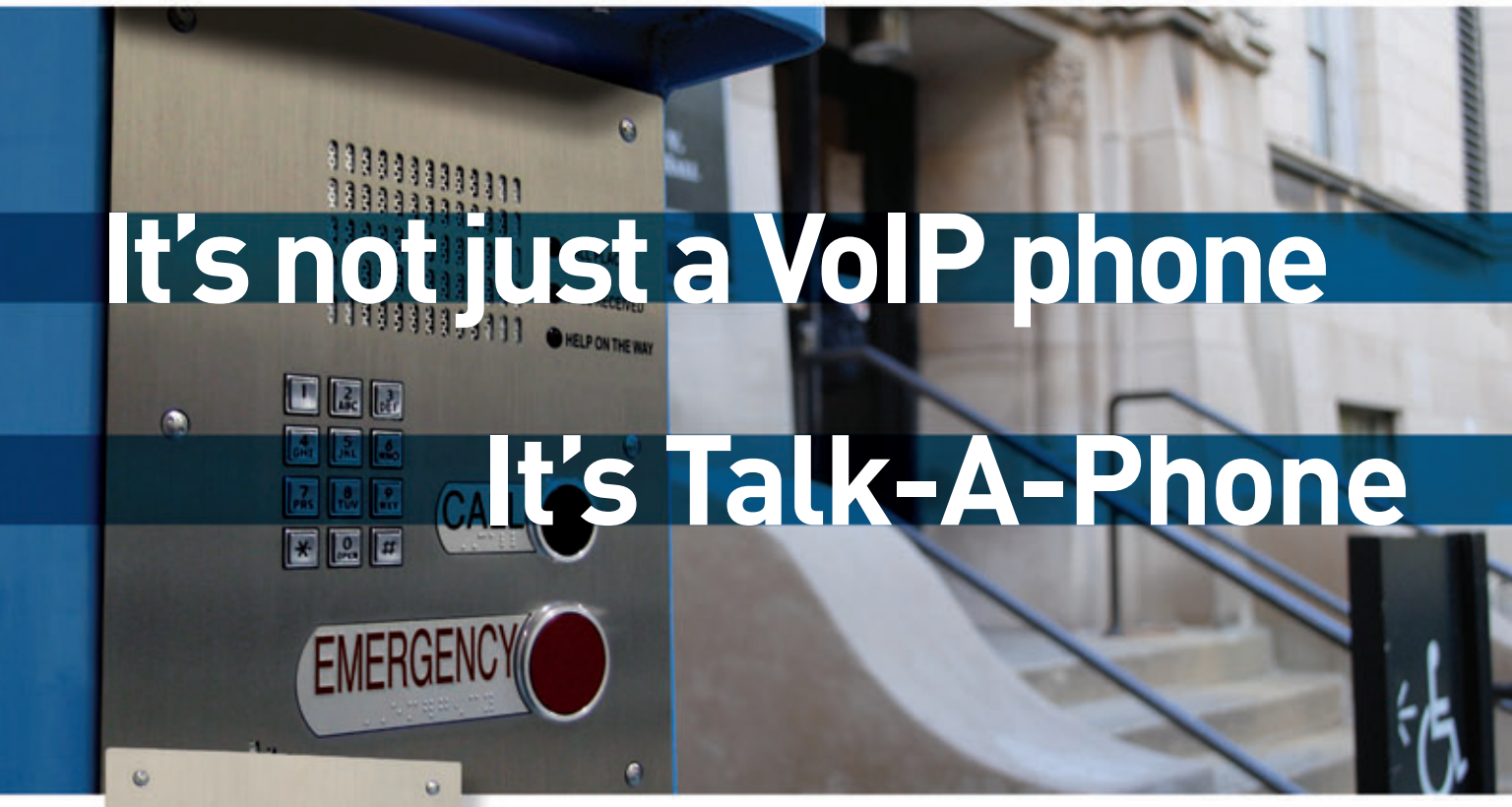

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TABLE OF CONTENTS

S6 HIGHER EDUCATION, BETTER SECURITY
By Ralph C. Jensen

S8 NETWORK THE CAMPUS
By Bill Taylor

S10 HOLD THE PHONE
By Sam Shanes

S12 PRIVATE DEPLOYMENT
By Harm Radstaak

S14 AN A+ FOR VMS
By Rob Shaw

S16 EMERGENCY NOTIFICATION
By Timothy Means

S20 EMERGENCY MANAGEMENT READY OR NOT?
By Rob Hile

S22 SCRUTINIZING VIRTUAL TRAFFIC
By Angela Fortier

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COMMENTARY

HIGHER EDUCATION, BETTER SECURITY

By Ralph C. Jensen

HOW CONFIDENT ARE YOU THAT THE SECURITY OFFERED AT YOUR CHILD'S COLLEGE OR UNIVERSITY IS ADEQUATE TO PROTECT HIM OR HER? SURELY, THAT'S ONE OF THE TALKING POINTS YOU CONSIDERED WHEN CHOOSING HIGHER EDUCATION.

My sons, all grown and graduated, didn't talk much about this issue when deciding which university to attend. It wasn't an issue that entered my mind, either.

Today's parents, however, must consider campus security as a vital part of the learning experience. Today, parents have options and assistance from the university. Campus police take an active role in guiding and informing parents on what their children can expect.

"Parents mainly ask if the campus is safe, and what the bigger issues we face might be," said Troy Lane, chief of police at the University of Wyoming, Laramie. "During most of the month of June, we hold orientations for new students and parents of new students. The police department is represented in both orientations. We avoid many questions because we tell them up front about who we are, what we do and what safety measures are in place."

One question that comes up more and more often concerns residence halls, where students may be the most vulnerable and where updates are underway at Miami University in Oxford, Ohio.

"The university will be installing new proximity card locks on every residence hall room," said John M. McCandless, chief of police at Miami University. "This takes us away from standard keys and will be beneficial. With the old locks, students would regularly leave their doors unlocked, and we would have many thefts as a result.

"The amount of crime alerts we issue for burglaries should also drop. We also have a swipe card system on the entrances to the residence halls that helps to enhance security."

While policing a campus may seem different from monitoring the surrounding community, both Lane and McCandless say that the services the campus law enforcement provide are similar to municipal services; policing a campus does include monitoring Saturday afternoon football games, but otherwise the job is much like community policing, they say.

"The university hosts many events annually, each bringing a different set of challenges," McCandless said. "We coordinate a lot of moving parts, and we could not do it without our area law enforcement partners."

The University of Wyoming handles such special events in a similar manner, but it also depends upon the event. Law enforcement can be available on an on-call basis or they are heavily involved in the preparations. Lane said they have run the gamut of events on the university's campus, including small dances, political debates and even presidential visits.

Much like their counterparts in municipal and county law enforcement, campus police crave technology. McCandless noted that 28 years ago an electric typewriter was high-tech. Times have changed. Today, law enforcement officers rely on technology to work in a smarter way. Everything from digital fingerprinting to license-plate readers has changed the way police complete their mission. Other technology in

use at the University of Wyoming includes the deployment of text tip programs, social media, in-car cameras and video surveillance systems.

This technology isn't cheap.

"These systems do require maintenance, backup and updates," Lane said. "We find ourselves counting on in-house, self-trained experts or relying on vendors for servicing."

Higher education also finds itself adhering to federal guidelines to inform students, staff and faculty if there is an emergency on the campus. Mass notification systems vary, and law enforcement's use of particular systems also varies. At the University of Wyoming, campus police employ a text alert program, mass e-mail notification and a public address system. At Miami University, law enforcement has partnered with E2Campus for text messaging, but the department also uses VoIP phones and message boards.

Police also rely on additional campus resources, such as faculty and staff.

"One of the things that hasn't changed is the fact that we need our community to be a partner (eyes and ears), and we constantly ask them to call if they see anything suspicious," McCandless said. "Other departments on campus are great partners—grounds and physical facilities are an example of folks on campus that we count on."

The University of Wyoming is always looking to involve the community, including text tips, Silent Witness e-mails, crisis intervention teams and the ongoing reminder that public safety is everyone's responsibility, including students' and parents'.

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FEATURE

NETWORK THE CAMPUS

Networking simplifies installation; technology solves application challenges

By Bill Taylor

IP-BASED VIDEO SYSTEMS SEEM TAILOR-MADE FOR THE EDUCATION AND CAMPUS ENVIRONMENT. USING IP AND CONNECTING ACROSS INFORMATION NETWORKS, THESE SYSTEMS CAN REACH MAXIMUM EFFECTIVENESS IN THE ENVIRONMENT OF MODERN NETWORKED CAMPUSES.

Network connectivity ensures surveillance video can be made available from anywhere on the campus without the added expense of running coaxial cable to each camera. Existing networks are typically campuswide, meaning that the ability to provide critical video for any surveillance need is as near as the closest network node.

Network connectivity is simplifying campuswide video coverage, at a time when the need for surveillance and security on college and university campuses is greater than ever. The 2007 tragedy at Virginia Tech, in which 32 people were killed and many others wounded, remains a stark reminder of the need for campus security. Assaults and rape also are ongoing security concerns at college dormitories, and a multitude of less-serious incidents—including vandalism, theft and fights among students—further reflects an accelerating need for security and surveillance systems on campuses.

INTEGRATION OPPORTUNITY

IP networking drives all kinds of systems for various uses on campuses and presents an opportunity to expand the effects of integrating security and other systems. Today, college classrooms often are integrated with networked audiovisual systems that also tie into the university's IT backbone. The connectivity and functionality of these systems also enable them to play a role in security and emergency response, in addition to their everyday functions.

An integrated audiovisual system is part of the new technology-driven classroom environment. Intelligent solutions can integrate

video, computers, projectors, whiteboards and handheld tablets, along with a wireless audio system. Beyond the educational benefits of such systems, they can be helpful in case of an emergency situation or an outbreak of violence.

Cutting-edge technology is helping meet challenges brought on by system components spread across large areas and is enabling IP-based surveillance systems to become an even more integral part of campus life.

For example, a wireless classroom audio system could double as an element of an emergency response system. Infrared technology-based audio systems help teachers and students communicate better and can include the use of a wireless pendant microphone worn by the teacher that sends a signal to infrared receivers connected to speakers to amplify the sound of the teacher's voice. In case of an emergency, the audio system works in tandem with an integrated document camera to allow a teacher to quietly initiate an immediate first response.

The document camera is primarily used to capture images of books, maps or other teaching materials and project them on a screen in the classroom. A network document camera, similar to the video cameras used for surveillance, provides exceptional images in virtually any lighting condition. In case of an incident or an emergency, the teacher can press a panic button located on the pendant microphone. This sends a signal to automatically reposition the document camera to focus not on a book or map but on the classroom as a whole. In effect, the document camera instantly becomes a video surveillance camera, and video is incorporated into the school's networked surveillance system to provide visual information about an unfolding event. Pressing the panic button also sends an immediate alarm to authorities, enabling immediate response and action to secure the campus, if needed.

APPLICATION CHALLENGES

The campus surveillance environment does present a number of application challenges. Among them is the question of how to maintain and support surveillance systems, given that system components are spread across a large area. Cutting-edge technology is helping meet all these challenges and is enabling IP-based surveillance systems to become an even more integral part of campus life.

Outdoor applications. Cameras must be able to withstand environmental elements and continue to operate. Outdoor cameras should meet international IP66 standards for dust and moisture resistance in order to be installed under building eaves or in other environments subject to wind and rain. A dehumidification device and/or a heater can be used to offset extreme operating conditions.

Threat of vandalism. Cameras must be able to stand up to abuse, vandalism and other rough treatment. Engineering and design features, and use of special materials, enable cameras to continue operating even after shocks and impacts that would disable a conventional camera.

Camera coverage for large areas. Using fewer cameras to cover a larger area can help to keep system costs low, and megapixel technology now makes this possible. High-resolution images enable operators to zoom in on an image to see greater detail, such as a vehicle license plate, even on recorded video. Operators can direct PTZ cameras to cover larger areas, and some PTZ cameras automatically pan and tilt to follow a moving subject, keeping it in the center of the image. PTZ cameras also can be programmed to present a sequence of pre-programmed views and/or to move to a specific position in response to an alarm.

Image quality. Identifying faces is important in the campus surveillance environment, so image quality is paramount. Resolution is one factor in quality, and intelligence inside the camera works together with megapixel sensors to further improve images. For example, image processing technology can transform dark areas into natural, high-contrast images such as those seen by the human eye. Adaptive digital noise reduction takes care of the "noise" in a camera image, a process that is especially useful for clarifying images of moving objects.

Lighting. Cameras can help to offset the challenge presented by variable lighting in campus environments. Cameras must be able to capture important details even when an image is backlit. Image processing manages the dynamic range of a video image, which is the span of gradations from the lightest to the darkest areas. Intelligence inside the camera uses natural-contrast image correction to optimize contrast of each pixel and to faithfully reproduce objects in any area and position. The result is better images despite extreme lighting conditions. Day/night cameras also enable 24/7 coverage across the campus.

System costs and preserving previous investment. Campuses that have existing analog security systems often want to preserve that investment as they transition to IP video. Video encoders provide the critical technology link between a legacy analog system and a new IP system. Strategic use of encoders can provide a seamless migration path to connect older systems with newer technologies, while preserving the value of existing resources and incorporating them into a modern networked system. Advanced encoders may include intelligent features such as face detection, H.264 high-profile format transmission and video motion detection. There also are numerous other solutions on the market that enable use of existing infrastructure.

KEEPING SYSTEMS HUMMING

In the campus environment, system components can be located far from the central control room. Although components may be out of sight, system operators should create a plan to keep all system components working dependably and efficiently. Ongoing system oversight should include verifying that cameras are functioning properly and that all features are functioning at their full capability.

Regular troubleshooting and updates to the network along with your cameras and recorders will ensure you get top performance and the best possible ROI from your entire system.

TAKE A WIDER VIEW

A broader mindset enables campuses to leverage multiple technologies to improve security and to use security systems to enhance non-security functions. Taking a wider view can maximize the benefits of modern technology and make it easier to cost-justify technology investments.

Bill Taylor *is the president of Panasonic System Networks Company of America. He can be reached at* Bill.Taylor@us.panasonic.com.

FEATURE

HOLD THE PHONE

Emergency communications: Is it time for VoIP to shine?

By Sam Shanes

COLLEGES ARE REMOVING ANALOG PHONES FROM DORMITORIES FOR A VARIETY OF REASONS. STUDENTS DON'T USE THEM BECAUSE THEY HAVE CELL PHONES. IN AN EMERGENCY, EQUIPMENT FAILURE DUE TO A WALL-CONNECTED PHONE'S AGE CAN QUICKLY TURN INTO A LIABILITY. THE COST OF MAINTAINING THE NECESSARY LEGACY INFRASTRUCTURE MIGHT FINALLY OUTWEIGH THE UPGRADE OPTION, PROMPTING THE CHANGE. OR IT COULD ALSO BE A DESIRE TO STANDARDIZE ON IP.

Whichever the case, the problem is anything but trivial. Phasing out legacy emergency communications capabilities without a migration plan will cut the vital link between those seeking help and security staff. The importance of such a communications channel cannot be overstated from both legal and public relations perspectives.

So what are the options? Phones can be installed in dormitory hallways for emergency use. VoIP is quickly becoming a de-facto standard for communications on IP networks, so naturally office VoIP telephony is viewed as an alternative for emergency communications. However, business-grade VoIP phones do not possess the necessary durability, are not designed with emergency communications in mind and are not ADA compliant.

The proper way is to embrace and benefit from IP while keeping reliable emergency communications a priority. Upgrading to VoIP emergency communications is an attractive and inexpensive option because most campuses are already equipped with necessary IP infrastructure.

DEPAUL UNIVERSITY UPGRADE

As facilities are moving to IP for buildingwide use, it becomes economical to install VoIP emergency phones in hallways, stairwells and elevators along with IP-based video surveillance and access control systems. VoIP emergency phones are designed for emergency situations, and so their primary function is to establish reliable communications in a time of crisis. Emergency phones are ADA compliant, and their ruggedness gives passersby a sense of security.

For DePaul University, upgrading to VoIP emergency phones was not a hard decision to make. Founded in 1898, DePaul University is the largest private institution in Chicago, with more than 23,000 students.

"Fortunately, I'm set in an institution that is big on safety," said Bob Wachowski, director of public safety for DePaul University. "There is a capital funding program in place, and DePaul has come a long way. The university administration is very supportive of my needs, and that is unique."

Wachowski recently upgraded the college's analog emergency phones to new VoIP emergency phones manufactured by Talk-A-Phone. The new phones are SIP-compatible and work on the college's IP PBX system.

As an added benefit, the new emergency phones can be paged at high volume via mass notification software, which allows the public safety staff to issue targeted alerts to segments of a campus in groups or individually. The software automatically tests and verifies connectivity of voice-over-IP phones and sends e-mail alerts when it detects failure.

Wachowski also recently installed Talk-A-Phone's new generation of all-LED blue lights on 90 existing emergency phone towers.

"You can see them from about everywhere you are on campus," Wachowski said. "They help our students feel safe and they are a deterrent to crime."

The new units have ultra-bright, all-LED blue lights, and they feature 209 lumens peak rating and prismatic pattern to increase visibility at greater distances. The units' All-LED construction significantly increases their life span.

"Our biggest crime is theft of unattended items," Wachowski said. "But some of our issues occur late at night, so the phone towers assist the students. I recently met with the student government association to help us promote use of them. Our campus tour guides already promote them. We like to make every student aware of the emergency call towers."

EMERGENCY PHONES IN CLASSROOMS

The situation in classrooms is slightly different, yet it resonates with the issue of migration to alternative technology. Traditionally, classrooms are equipped with announcement speakers only, leaving emergency communications out of the picture. But what if the students or staff in a classroom need to reach out to university security during an emergency?

With growing concerns for student safety on campuses and widespread adoption of mass notification technology over existing IP infrastructure, it is reasonable to offer two-way communication capabilities inside classrooms.

A VoIP emergency phone serves a dual role. On one hand, it's a reliable and robust emergency communications device with unparalleled flexibility to work on SIP-compliant VoIP networks. On the other hand, it's a durable and loud paging speaker, capable of outputting sound louder than 100 dB. Voice-over-IP emergency phones can also be integrated with mass notification platforms to form a powerful, multi-layer mass notification solution.

IP empowers communications. And now that emergency phones are available with VoIP, security professionals can take full advantage of their IP infrastructure.

Sam Shanes *is the chairman of Talk-a-Phone. He can be reached at* sshanes@talkaphone.com.

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FEATURE

PRIVATE DEPLOYMENT

Icelandic university warms up to prox card technology

By Harm Radstaak

REYKJAVIK UNIVERSITY IS A VIBRANT INTERNATIONAL UNIVERSITY LOCATED IN THE HEART OF REYKJAVIK, THE CAPITAL CITY OF ICELAND. THE UNIVERSITY IS ICELAND'S LARGEST PRIVATE UNIVERSITY AND FOCUSES ON RESEARCH, EXCELLENCE IN TEACHING, ENTREPRENEURSHIP, TECHNOLOGY DEVELOPMENT AND COOPERATION WITH THE ACTIVE BUSINESS COMMUNITY.

RU has been happily using HID proximity technology to secure its buildings for many years. About three years ago, though, the university decided to build a larger, more modern facility to accommodate all of the university's five degree courses in the future.

Designing this new facility for RU was not an overnight task. Many hours of planning and research were put in to ensure the best possible facility. The university's technical manager, Ellert Igni Harðarson, spent almost a year researching the applications and products that could be suitable for the new building, and in the course of his research, he also met with HID Global at its EMEA offices in Haverhill, United Kingdom.

To make the new building a success, RU worked closely with Securitas Iceland, which, with the university's building consultant Eirikur K. Torbjornsson, designed a solution to fit the university's vision.

This vision was to have an almost "key-free" building, not only to increase the convenience and security for students and staff but also to reduce costs and increase efficiency. Whatever solution the university would choose today needed also to be able to grow and fulfill future requirements of a high-tech system and building.

"Our vision is to have a true multi-application smart card that in the future can be enabled for cashless vending, canteen, on-demand printing, photo ID, library, use of lockers and maybe more," Ellert said. "We also are working with the wider community to extend the use of student cards for public services, such as for buses, the museum and swimming pools. We really would like to see the use of smart cards adopted even beyond the boundaries of the university and make the advantages of multi-application ID cards available to everyone."

"By planning for a true multi-application future from the start, with this project we were able to ensure a quick return on investment for the university," Eirikur said.

Content with the existing solution and after much research, the university decided to transition to HID iCLASSR, using both multi-technology cards and readers. Officials considered iCLASS a cost-effective and convenient choice as it made the migration to smart cards simple.

"From the outset, it was important for us that students who were issued access cards for the old building would be able to use their cards and gain access also in the new building," Ellert said.

The university charges students a nominal fee for the cards, which according to Ellert has helped to reduce card loss to almost zero because students begin to value their cards instantly.

The system now installed at the university extends the boundaries of access control and has seamlessly integrated lighting, electronics and room-allocation control.

"We are trying not only to provide a secure and high-tech facility for our students and staff, but to also be green and conscious of our environment around us," Ellert said. "Such integrated solutions help us to learn about how rooms and areas within the university are used, allowing us to become ever more intelligent and efficient."

Today, the multi-technology smart cards provide about 4,000 students access to all the university buildings. By uploading to the university's intranet, a student can receive his or her card on the first day of school with all his or her details and a photo already printed on it.

"We use a Fargo HDP5000, which is handled by our receptionists, who are able to deliver cards to new students even during the busy periods at the beginning of term," Ellert said.

The cards are used throughout the old and the new buildings to gain access to classrooms, lab rooms and study areas 365 days a year, 24 hours a day. The new campus is not yet complete, and use of the current facility was extended last August.

"Iceland itself is a very-forward thinking country, and most of our local and international students have been in touch with smart cards and access control cards before, therefore the adoption of smart cards was very quick, and we have received very good feedback from our students and staff so far," Eirikur said.

Ellert and Eirikur concluded by saying that they are excited about the possible future uses and applications for their smart cards, hoping that one day soon the university cards can be used on the local bus, the public library and even at the theater.

"RU has the determination to think big, to always improve the university's ability and to decisively carry out our plans," Ellert said.

Harm Radstaak (hradstaak@hidglobal.com) *is the managing director of identity and access management, EMEA with HID Global.*

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FEATURE

AN A+ FOR VMS

Remote monitoring functions meet the grade; intuitive design smoothes out learning curve

By Rob Shaw

IT'S ONE OF THE FIRST LESSONS LEARNED IN SCHOOL: IF AT FIRST YOU DON'T SUCCEED, TRY, TRY AGAIN. AFTER UNSUCCESSFULLY TRYING A HANDFUL OF VIDEO SURVEILLANCE SOFTWARE PROVIDERS AND EVEN MORE VIDEO CAMERA MANUFACTURERS, HOBBS, N.M., MUNICIPAL SCHOOL DISTRICT SOLVED THE EQUATION FOR ITS VIDEO MANAGEMENT SYSTEM NEEDS.

Located just a few miles west of the Texas border in eastern New Mexico, Hobbs is a community of 32,000 that enjoys mild winters and warm summers. With more than 8,000 students, the Hobbs Municipal School District continues to grow, which, as any educator knows, calls for an increasing need for effective and reliable technology throughout the schools. And today, video surveillance is considered high on that list

Unhappy with previous video surveillance software providers and cameras, Hobbs systems engineer Andrew Toglia called on New Mexico systems integrator Klein Security & Safety to find a permanent solution that met its high standards in addition to resolving a long, unmet desire to have recorded audio in addition to video.

"Hobbs had serious problems with their previous video surveillance program. It became such an issue for them that they abandoned what they had in place in search for a better product," said Mark Kleinsteuber, vice president of Klein Security & Safety Systems.

"Among the many problems they had with their previous software providers was unreliability," Kleinsteuber said. "They didn't perform as promised. They persistently had problems with upgrades, which would put more bugs in their system. Their biggest concern, however, came to be dealing with the horrendous and absent tech support regarding fixing these constant issues."

The school district also had problems with image quality and camera performance in its previous system.

"Their picture quality was terrible and was even worse in low-light conditions at night or when building lights were off," Toglia said. "These were very recognizable names in camera manufacturers, and we had problems like PTZ cameras coming off of their tracks constantly."

Klein Security & Safety recommended Hobbs download a free Video Insight software trial because the integrator felt it would be the right product to provide what the school district needed.

"We recommend Video Insight software for all of our projects, among them schools, businesses and petrochemical plants," Kleinsteuber said. "It's a reliable, feature-rich product that's intuitive and easy to use. We rarely experience problems, but if there's an issue, Video Insight's U.S.-based customer service is responsive and top-notch."

Kleinsteuber recommended Axis network cameras for use with Video Insight because the duo "works together seamlessly."

In fact, after becoming acquainted with Axis IP cameras, Toglia says Hobbs has chosen to move forward exclusively with Axis products.

"Axis has the best picture quality, especially in those important low-light conditions. Axis also has better interfaces on the cameras themselves for saving and restoring settings, changing iris or focus settings and other options," he said.

Perhaps most importantly, Toglia said, "Of the more than 400 Axis cameras we've had in place for three-plus years, we have not had one fail yet."

One of the key features Hobbs officials sought in a video software provider was the ability to monitor and record sound, a feature its previous software provider did not have.

"As a school district, oftentimes pairing sound with video provides a complete picture of an incident, enabling administrators to better pinpoint parties involved and the evolution of an incident more precisely," Toglia said.

Another issue Video Insight solved for Hobbs was storage. The previous software Hobbs used was based on time and not on size.

"With our previous providers, you'd always just have two weeks of storage no matter what," Toglia said. "But with Video Insight, we base it on size so we can configure it to store the data for as long as we want, which is particularly helpful being a school district, where we often have long periods of time without regular activity in buildings due to summer or holiday breaks."

In addition to recorded sound and storage, another advantage was that the software allowed camera access from outside the network.

The Hobbs video surveillance system operates with one centralized server located at technology headquarters and an archival server at each building.

"You can view all of your cameras from anywhere," Toglia said. "We were able to give school district police officers login credentials so when they respond to a school they can view crystal-clear images from the Axis cameras from a laptop or smartphone before going into the building. They couldn't do that with our previous software."

Toglia says he also likes being able to control PTZ within the software and the ability to play recorded video back and forward at eight times the speed with a very "smooth image."

Ease-of-use was the final benefit that tipped the district's decision on the solution.

"We haven't even had a formal training, nor have we had requests for one. We loaded the software on their desktops and gave them a five-minute tutorial and they have been up and running ever since."

Toglia and Kleinsteuber also agree that technical support is critical, especially in a school environment in which many different non-security personnel might be accessing the video. On the rare occasion the district needed support, officials said Video Insight's one-hour-call-back-guarantee tech support department has "been very impressive to Hobbs and to my company," Kleinsteuber said.

Hobbs has made an aggressive effort to ensure comprehensive video surveillance coverage of its 16 schools and four buildings, providing more than 400 Axis cameras throughout the district. The next phase of construction will include an additional 70 Axis cameras.

"Overall, we couldn't be more pleased with how well Video Insight software and Axis cameras work together and the top-notch security solution they have provided Hobbs Municipal Schools," Toglia said.

***Rob Shaw** is CEO and co-founder of Video Insight. He can be reached at* rshaw@video-insight.com.

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FEATURE

EMERGENCY NOTIFICATION

Protecting the learning environment

By Timothy Means

INSIDE CLASSROOMS, 10 TO 100 OR MORE PEOPLE ARE ISOLATED FROM THE OUTSIDE WORLD IN A ROOM WITH DOORS THAT DO NOT LOCK TO KEEP DANGER OUT. IN THE EYES OF CAMPUS SAFETY EXPERTS, THIS IS THE PERFECT SETTING FOR A POTENTIALLY BAD SITUATION.

The amount of time college students spend inside classrooms—from two to six hours daily—causes a sizeable gap in mass notification system coverage for most colleges and universities. To penetrate the protected learning environment, schools must employ precision notification systems.

On college campuses, professors have taken a hard line against the use of cell phones and laptops in class because of the disruptions caused by calling, texting and surfing the Internet. Most classrooms have signs posted prohibiting use of cell phones, and many professors include similar language in the class syllabus. A National Education Association survey shows that 85 percent of professors on college campuses support banning cell phones in their classrooms.

So it's clear that the classroom is one of education's sacred spaces. But what happens when events outside demand that emergency information penetrate the protective cocoon of the classroom?

MASS NOTIFICATION LAYERS FAIL TO PENETRATE

Unfortunately, the predominant methods of mass notification on university campuses—cell phone/text messaging, e-mails and Web announcements—are minimally effective in the classroom.

On average, only 40 to 50 percent of students opt into a school's calling program, which equates to 10 to 12 students in a classroom of 25. If, say, 75 percent have their phones turned off in class, then only two or three students would be able to receive a message pushed through the school's cell phone-based emergency notification system (ENS). Given that calling systems cannot target specific classrooms, it may be 30 minutes or more before a message appears on one of those phones. Even fewer students bring laptops to class, but the same logic applies.

"I think that someone would have to personally come to the classroom if we had an emergency scenario," said Emily Drill, an adjunct lecturer at the University of Pittsburgh and Allegheny College. She added that while students are familiar with fire alarm drills, their experience with other emergency evacuation events is minimal.

IP ENDPOINTS GET THE JOB DONE

"Emergency notifications in the classroom setting must be made by more effective tools than e-mail, text messages or Web pages. Two-way communication systems, radio receivers, digital signage or VoIP phones provide the most rapid means for emergency notification," said Dennis Sullivan, assistant EHS director and emergency manager at Louisville University

The most effective way to alert a classroom is to use a precision notification system that connects to dedicated, networked alerting devices inside the room. These may include proprietary alerting devices made by manufacturers such as Metis Secure Solutions or VoIP phones similar to those made by Cisco Corporation. A precision notification system targets alerting devices by location and uses network infrastructure independent of consumer communications networks. These systems can send messages to one or all classrooms without alerting the entire campus population and are a faster, more-accurate way to deliver a warning.

In all its classrooms, the University of Louisville has installed VoIP phones set to dial the University Police if the receiver is picked up. They also communicate emergency messages in the classrooms using a text screen, audio and a flashing light.

"During a recent tornado warning, every classroom was provided timely warning that was faster than text messages, e-mails or our Web page," Sullivan said. "This system is not for everyone and would be extremely costly unless you already have converted the university from analog phones to digital phones."

One advantage of these devices is that they display text and provide audio data to the whole class—including the professor, who is the appropriate authority to direct the class during an emergency. These systems are activated during an emergency only, removing impetus for students to have their cell phones or laptops active during class.

It is important that text and voice information about the need for sheltering in place be conveyed immediately. One EHS director confided that she worries about a scenario where a dangerous situation outside occurs five minutes before classes are dismissed, resulting in thousands of students potentially walking headlong into a crisis. Many fire alarms and outdoor sirens produce a warning tone only and cannot provide detailed instructions. In the event of a chemical spill, severe weather, violent crime or similar situation, leaving the classroom to see what is happening may be dangerous.

Newer fire alarm systems support live voice using a microphone at the panel, but a person has to be in the building and have keys to the fire panel to operate it. All of these steps waste precious time.

According to a survey, fewer than 20 percent of higher education institutions have deployed in-building ENS. Therefore, there are many students who won't get emergency notifications during class. Administrators who make the effort to deploy precision notification systems will fill a gap left by the other commonly deployed ENS layers. It is the best way to inform and protect more students while respecting the integrity of the classroom and the learning experience.

Timothy Means *is the director of product management and a co-founder of Metis Secure Solutions. He can be reached at* tmeans@metissecure.com.

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FEATURE

EMERGENCY MANAGEMENT READY OR NOT?

Preparing security managers for mission impossible: safety and security in an open environment

By Rob Hile

INSTITUTIONS OF HIGHER LEARNING ARE, BY VIRTUE OF THEIR MISSION, OPEN ENVIRONMENTS. THEY INVITE CREATIVE THINKING AND RESIST INTERFERING, WITHOUT BOUNDARIES, FENCES OR BARRIERS TO HINDER STUDENTS' ABILITY TO LEARN AT THE HIGHEST LEVEL. TO THE SECURITY PROFESSIONAL RESPONSIBLE FOR PROVIDING A SAFE AND SECURE ENVIRONMENT WHILE MAINTAINING THE "OPEN" NATURE OF TODAY'S COLLEGES, IT'S NOT A MATTER OF IF SOMETHING IS GOING TO HAPPEN, BUT RATHER A MATTER OF WHEN. THERE'S NO WAY TO PREVENT SOMEONE WITH THE INTENT TO HARM THE STUDENT BODY, FACULTY OR THEMSELVES FROM SHOWING UP, NO MATTER HOW MANY SURVEILLANCE CAMERAS OR ACCESS-CONTROLLED DOORS THERE ARE ON THE CAMPUS. THE QUESTION IS THIS: WILL YOU BE READY TO HANDLE THE SITUATION WHEN IT HAPPENS? DO YOU HAVE THE PROPER PROCEDURES AND TECHNOLOGY IN PLACE?

If history has taught us anything, it is that being prepared for any situation or emergency is the best we can hope to achieve. Such organizations as the Federal Emergency Management Agency's National Incident Management System (NIMS) and its National Response Framework have aided private sector organizations by creating an environment for sharing best practices and much-needed subject-matter expertise for the full spectrum of emergency management and response.

Due to a freer exchange of knowledge and best practices, many colleges and universities are investing a significant portion of their energies and budgets to expand their security programs. Their emergency response framework includes all four phases of incident management, not just the basic functions of prepare and respond.

In the past, threat assessments were often conducted by only the federal government, critical infrastructure overseers or chemical/biological organizations. But now, such assessments are becoming standard operating procedures (SOP) for higher education facilities. In addition, organizations are developing disaster recovery, resiliency and business continuity plans to ensure that, when disaster strikes, they can resume operations as soon as possible. It's not good enough to have situational awareness and a generic response plan.

The best defense against a catastrophic event is a strong offense coupled with a solid playbook with well-thought-out procedures for any situation.

Let's explore each phase of the emergency response framework in more detail:

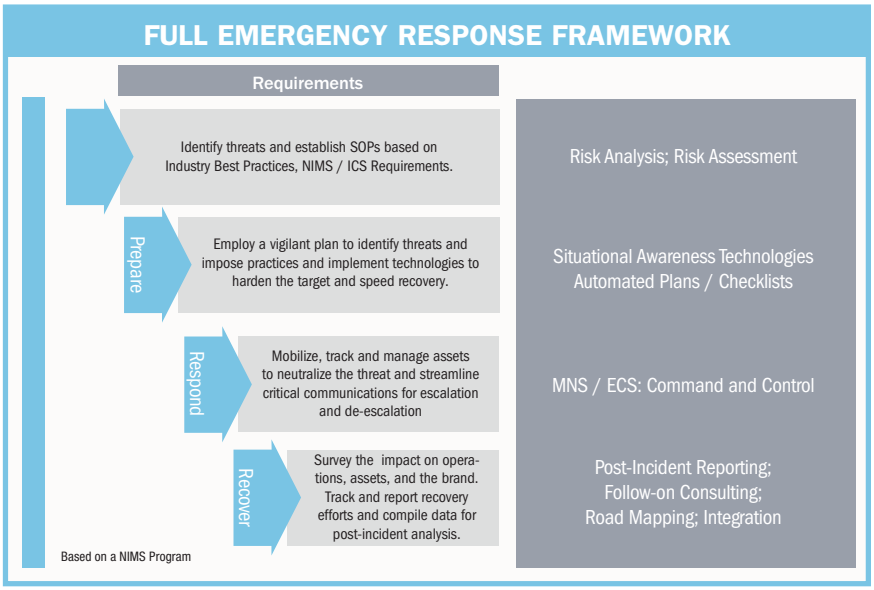
Mitigate: The definition of mitigate is to "cause to become less painful" or "to make less severe." The best way to accomplish this is to identify all known or perceived threats and develop the best way of

dealing with each of them. This is not as easy as it sounds, simply because each facility is different. Even though the threat might be the same—fire, for instance—the student body and faculty's reaction to the threat may differ depending on a number of factors: the type of fire, traffic-flow patterns, lighting, number of exits, a building's layout. Ironically, a number of organizations simply search the Internet for a fire evacuation plan, copy it, place it in their SOP manual and move on to the next task. This is just not acceptable given the unique nature of each threat and of each campus's facility. A number of qualified firms specialize in creating detailed threat assessments for virtually any situation, which would make for a much better evacuation plan. These same firms have assembled best practices from various markets and, in most cases, can help develop an SOP best-suited for your specific facility. Only SOPs specifically designed for your unique situation will help mitigate an emergency situation.

Prepare: Many organizations have spent a considerable amount of time, money and energy on this preparatory phase only to realize when something tragic happened that they were not even close to being ready. As mentioned, without a crystal ball, it's impossible to know exactly when and where a disaster will strike. Unless one has a good foundation that includes professional threat assessments and custom SOPs, it's difficult to adequately prepare for an emergency. For example, proper placement of surveillance cameras in common areas, hallways, lobbies and classrooms is crucial to providing first-responders with critical information in the event of a hostile situation on the campus. Without sufficient planning to identify the best areas to place cameras and the optimal fields of view, how can campus security professionals truly be prepared?

Situational awareness is only part of this equation. Scenario-based role-playing and tabletop simulations are also important elements that should be performed on a regular basis. Without regular training exercises, it can be difficult for security personnel to remember exactly what needs to happen when a tragic incident suddenly occurs. Fortunately, there is help in this area as well. Command-and-control platforms can list SOPs for specific emergencies and provide the operator with detailed written workflow instructions. These systems make it virtually impossible for the operator to make a mistake when dealing with what can be an incredibly stress-filled period of time.

Respond: Probably the most important aspect of the emergency response framework is responding quickly in an organized and accurate manner. The significant provisions of the Jean Cleary Act require institutions of higher learning to make timely warnings to the campus community about crimes that pose an ongoing or immediate threat to the student body or faculty. But what is timely? Everyone has a different answer. It is important that security professionals continue to focus on reducing the response time to as close to zero as possible.



The good news is that integrated security platforms can aid in responding to any emergency by leveraging the power of individual security systems under one common operating system. Grouping specific surveillance cameras in and around a security alarm can provide immediate video verification of any emergency. Geographical Information System integration can provide site-specific location of alarms, including 3-D imaging, to key security personnel. Virtually every aspect of situational awareness can be made available to first responders via their smartphones or PDAs. The campus's mass notification system can be integrated and automated with the integrated security platform to ensure the right message goes out immediately in the event of a specific emergency. All or part of an SOP can be automated, such as locking or unlocking exterior doors and locating and dispatching key security personnel in certain emergencies. In the event the operator fails to follow proper protocol, the system can contact his or her supervisor, or electronically enforce critical emergency procedures. This integration can give the operator all the tools he or she needs to respond quickly, accurately and efficiently to any emergency.

Recover: Often the most overlooked aspect of any emergency situation is recovering critical data after the event. Integrated security platforms have the ability to track and record every aspect of the incident, including any deviation from SOPs, all voice and data communication, critical time-of-response data and video footage. Every aspect of the data can be electronically verified for accuracy. In addition, this data can be used for forensic purposes as a basis for review and revision of current SOPs.

As far as business continuity goes, recovery after a disaster can often be measured in thousands, if not millions of dollars. Having the ability to bring your security platform back online immediately after a failure or disaster is vital. Many of today's systems operate in a virtual machine world that remotely host and mirror key database information, features that contribute to full disaster recovery capabilities.

Remember, it's not *if* something tragic is going to happen, it's when. The ability to implement all aspects of the emergency response framework is critical and essential to managing chaos efficiently and effectively when disaster strikes, turning mission impossible into mission accomplished.

Rob Hile *is director of integrated security systems, Siemens Industry Inc., Building Technologies Division, Security Solutions. He can be reached at* robert.hile@siemens.com.

FEATURE

SCRUTINIZING VIRTUAL TRAFFIC

Student cybersafety capture and analysis tools protect the network

By Angela Fortier

FOR EDUCATIONAL INSTITUTIONS, RECENT ADVANCES IN TECHNOLOGY HAVE ALSO BROUGHT PROBLEMS OF CYBER THREATS, VIRUSES, ILLEGAL MUSIC DOWNLOADING AND EXCESSIVE BANDWIDTH CONSUMPTION. AS MORE FACILITIES INCREASE THEIR RELIANCE ON TECHNOLOGY, THE ABILITY TO MONITOR AND TRACE NETWORK ACTIVITY IS VITAL TO ENSURE BOTH DATA AND STUDENT CYBERSAFETY.

The Bloomington Public School System in Illinois has significant multi-directional traffic on its 98-percent-virtual network across 10 locations. Because more than 9,000 people use the school system's resources, viruses can occasionally infect the network. One recently navigated through the antivirus software the school system had been using. The virus affected more than 100 machines in just a short time, as it accessed botnet websites and sent spam e-mails to propagate itself. Systems Administrator Jason Radford explained that Bloomington's traditional network management tools didn't provide insight into the virus's path to pinpoint the source and the affected machines.

Similarly, traditional tools didn't provide the level of detail that Michigan's Lawrence Technological University needed to manage network traffic through 60 servers on its completely wireless campus. The university's IT team regularly saw a lot of network noise and fluctuating system response times, making troubleshooting difficult and time-consuming. With one of the largest wireless networks in the Midwest, the university was also concerned about enforcing security.

Additionally, Lawrence Tech's large base of international students can cause network outages for atypical reasons, such as when they over-consume bandwidth by using a protocol not standard to the United States or an unfamiliar file program. Tim Chavis, executive director of IT services, needed a networking tool that could allow him to determine the cause of bandwidth saturation and security breech attempts.

The State University of New York at Geneseo also needed to monitor network traffic and prevent access to unauthorized sites. When the Recording Industry Association of America notified SUNY about an aggressive campaign to pursue college students who illegally shared or downloaded music, the university knew it needed detailed network analytics.

As did Bloomington PSS and Laurence Tech, SUNY found that Cisco's NetFlow technology provided deeper insight into network traffic.

"While I was aware of NetFlow, we just couldn't analyze the data without a supplemental technology," said Rick Coloccia, SUNY's network manager.

Scrutinizer NetFlow and sFlow Analyzer from Plixer International provided the detailed graphical analysis and insight that the institutions needed to isolate network threats and monitor traffic patterns. Armed with this technology, the school systems were able to combat viruses and threats, trace use of prohibited websites and isolate causes of bandwidth consumption.

After the Bloomington school system's virus infection, Radford used the software to create reports pinpointing every infected machine, and IT "SWAT teams" were dispatched. Now he can further protect the network by denying access to sites that school policy prohibits.

Lawrence Tech's Chavis recently used NetFlow analysis tools to discover that system response times were suddenly exponentially degraded because one international student used a protocol not standard to the United States. The unfamiliar file program consumed 15 megabytes of bandwidth, leaving only 15 megabytes for 4,500 other users.

Using Scrutinizer's functionality and unlimited automatic archiving to investigate users' access to prohibited sites, SUNY's Coloccia leveraged forensic data: He could confirm or deny RIAA allegations, and then either warn a guilty student severely or clear the name of a student mistakenly accused.

"Prior to implementing NetFlow, we did not have the ability go back in time to see how a certain student on the network was behaving," Coloccia said.

In addition to the Bloomington PSS, SUNY Geneseo and Lawrence Tech, other educational facilities and businesses have recognized the benefits of using NetFlow tools to uphold network security. With automatic logging and reporting on all network traffic, businesses can now understand the detailed interactions between systems.

"Using this technology has changed our processes," Radford said. "Through Scrutinizer, we can drill down to any type of traffic, anywhere on the network, so we can quickly provide answers to what is going on and why."

With advances in networking, organizations need means to combat online threats, monitor student network behavior and ensure proper use of network bandwidth.

***Angela Fortier** has spent the past two years doing public relations work for Plixer International Inc.*

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AN AWARD-WINNING INITIATIVE

ARIZONA'S VAIL SCHOOL DISTRICT is the winner of the 2011 Sylvia Charp Award. The award, named in honor of the founding editor of this magazine, is presented annually by the International Society for Technology in Education and *T.H.E. Journal* for innovative, districtwide use of technology.

"There were some amazing districts that applied for the Charp award this year," comments Therese Mageau, *T.H.E. Journal*'s editorial director and one of the judges for the award, "but what ultimately moved Vail to the top of the pack were two things. The first is the totally teacher-driven nature of the initiative. The second is the dissemination model that they use to extend the Beyond Textbooks program beyond their district boundaries. Both ensure that the work Vail has done is not some isolated island of success, but rather that their achievements are replicable in other districts."

For more insights from the Sylvia Charp Award judges, including tips on getting your district into the running for next year's award, visit *thejournal.com/Charp*.

Within four years, all of Vail's schools had achieved "Excelling" status, the highest distinction attainable in Arizona. Yet, the implementation and upkeep of this new approach to curriculum was cumbersome and time-consuming. State standards and curriculum information for each grade level and subject were distributed to teachers in large binders, which had to be replaced each time a change was made to one of the state requirements. Also, though the internet provided a wealth of free digital resources for teachers to use, hunting for those resources was less than efficient—there was no central location where teachers could go to share their resources and access the materials found by their peers.

In 2007, Hedgepeth asked Matt Federoff, the district's CIO, if there was perhaps a tech-based solution to these problems. Around the same time, Federoff was overseeing Vail's transition to Apple's Leopard operating system and server, which would provide the district with tools it hadn't had before, including iCal calendar software and web 2.0 components.

Hedgepeth and Federoff realized that at the confluence of the curriculum department's problem and the IT department's progression was an ambitious approach to the delivery of standards-based curriculum and digital content. With the new tools available to the district through the Leopard OS and server, they could electronically organize all of the curriculum materials around the core essential standards, allowing a teacher to look up any standard and easily find resources that supported instruction for that objective.

[keyword: collaboration visit thejournal.com]

The uncovering of this solution defines the importance of consistent interdepartmental communication throughout a district, says Federoff. "It's so important that school IT departments not operate in isolation," he says. "The critical point is that Debbie had a problem, and I had a solution. If we had never talked, we never would have known. The interactions that lead to these types of solutions can't be forced; they can't be orchestrated. There has to be a standing relationship from the start."

Teacher Empowerment

The framework of what became known as Vail's Beyond Textbooks (beyondtextbooks.org) initiative is deceptively simple. On the district's server reside iCal-based curriculum calendars corresponding to each grade level and subject taught in the district. Teachers subscribe to the calendars that are applicable to their classrooms, with access to multiple calendars if necessary. These calendars map out the concepts required by Arizona's state standards, assigning a date to when each one should be taught.

Each concept appears on the calendar as a hyperlink. Double-clicking on one of them leads to a wiki page featuring all of the resources available from the curriculum department to assist in teaching the standard, including an "unwrap" document created by the curriculum department. The unwrap document outlines what the students need to learn about the concept, provides questions teachers should be asking, notes the level of rigor at which students should be learning, and provides sample tasks that students can do to demonstrate learning.

The real power of the initiative lies with the teachers who use it. On the wiki page for each standard, teachers are encouraged to post resources, lesson plans, activities, presentations, and more. To build this cache of materials, teachers have access to digital content services that the district subscribes to, such as Discovery Education Streaming and BrainPop, as well as free, web-based content and other resources they can find.

"We want to enable our teachers to use their creativity within the realm of a standards-based curriculum," explains Hedgepeth. "With the calendar and the main wiki pages, we have agreement on what we're going to teach, when we're going to teach it, and the level of rigor at which it will be taught. But how one teacher moves his students through the learning process—that's his art of teaching. That is his creative experience."

Teachers are encouraged to post and share their best work, and their names, schools, and districts are posted with each resource they submit. A staff member in the curriculum department vets teacher-submitted lesson plans, activities, and keynote presentations before they go public. Staff members check for congruence to standards, level of rigor, and correct formatting, as well as copyright issues.

Teachers can comment on each other's materials, creating a community of peers to offer support and encouragement as they work toward the common goal of finding the best ways to teach the standards. When there is a change in state standards, the curriculum department can easily redistribute the teacher-submitted digital content to its corresponding wiki pages within the new curriculum.

Indeed, like many districts, Vail is in the process of shifting over to the Common Core State Standards, with expectations of full implementation, including assessment, by the 2014-2015 school year. Vail's curriculum department will be busy updating

"WHEN BEYOND TEXTBOOKS WAS ROLLED OUT, IT WASN'T MATT'S INITIATIVE, OR DEBBIE'S INITIATIVE, OR MY INITIATIVE. IT WAS THE INITIATIVE OF ALL THE PEOPLE WHO WERE ENGAGED IN ITS DEVELOPMENT. PEOPLE HAD OWNERSHIP. THAT'S AN INCREDIBLY POWERFUL WORD." –Superintendent Calvin Baker

its Beyond Textbooks curriculum on the back end by unwrapping the new standards, creating new calendars and wiki pages, and redistributing existing teacher resources to their appropriate places within the new standards. "While the process will be traumatic for everybody, I don't think that we'll lose the body of work that our teachers have created," says Federoff. "We'll be able to transform it into whatever the new reality is going to be going forward."

Vail has proven Federoff's words to be true already. In the first year of the initiative, Vail teachers submitted more than 500 classroom-tested resources to the Beyond Textbooks wiki; three years and 37 districts later, more than 4,100 materials have been posted to the system. Meanwhile, each of Vail's schools has maintained the "Excelling" label they gained in 2007.

"In the shift to standards-based curriculum and the reliance on commercial products in the education marketplace, teachers often feel like they're a cog in the machinery," remarks District Superintendent Calvin Baker. "What's so exciting about Beyond Textbooks is that it allows teachers to not only use their creativity, but to *demonstrate* their creativity to teachers across their school, across their district, and, now, even all the way across their state."

Collaborative Ownership

From the very beginning, Federoff, Hedgepeth, and Baker recognized that this out-of-the-box initiative would only be successful if there was ownership and buy-in among all teachers and administrators. Recalls Baker, "One of the first things we did was bring in 50 teachers and administrators from throughout the district, lay out the vision to them, and let them do the 'sniff test.'" Group input helped to clarify the vision and come up with the name, Beyond Textbooks.

"That kickoff was huge," remarks Baker. "Then, when Beyond Textbooks was rolled out—it wasn't Matt's initiative, or Debbie's initiative, or my initiative. It was the initiative of all of those people who were engaged in its development. People had ownership. That's an incredibly powerful word."

While some in the district went to work to implement the technical changes in curriculum delivery, others focused on changing the hearts and minds of its teachers and administrators. The team worked with the principals at each of the schools to ensure they understood and were on board, so they could help carry the vision at every school site.

"We had to move from the mindset that teachers are in the classroom to have an impact on their students," explains Hedgepeth, "and open that up to teachers being in the school to impact all students of that grade level, and then open that up further to teachers being at the school to impact the entire school, or the district, and then beyond. As that attitude and that vision of the circle of impact changes, then the buy-in also increases."

The team also built in a recognition component for teachers who post materials to the wiki. After members of the curriculum department review the materials, they send e-mails to the teachers who submitted them, offering recognition for their work. Each e-mail is copied to the teacher's principal, supervisor, or superintendent as a way to further honor the teacher's contribution. As Kevin Carney, director of Beyond Textbooks and a former principal at Vail's **Rincon Vista Middle School**, notes, "In this day and age, when teachers are getting so hammered for what they're perceived as doing wrong, the fact that somebody's noticing something that they're doing right goes a long way toward getting teachers excited."

Nicole Buchheit, a second-year math teacher at Rincon Vista and frequent contributor to Beyond Textbooks, notes that the new model increases the life span and reach of the lesson plans and presentations. "As a teacher, you put hours into creating a lesson that ends up taking 45 minutes of class time," she remarks. "It's been so cool to be able to share this work and to know that other teachers are able to use them as well. You're

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making an impact beyond your classroom."

With Beyond Textbooks now implemented in 37 Arizona districts and charter schools, Vail has recognized the importance of training its partner schools and achieving the buy-in and ownership that led to Beyond Textbooks' success at Vail. "That piece, that collaborative ownership, is just so key," says Carney. "It's a shoulder-to-shoulder model rather than a top-down model. As we translate this initiative to other districts, those partner districts that are being really thoughtful with that shoulder-to-shoulder model are having a greater level of success."

Beyond Textbooks, Beyond Vail

With Vail's reputation as one of the highest-achieving districts in Arizona, interest in their new method for compiling, organizing, and delivering standards-specific curriculum spread quickly throughout the state. Baker says, "We host a steady stream of visitors seeking to figure out how we're getting our results, so that has given us a platform for presenting and sharing Beyond Textbooks."

Vail first experimented with replicating the model in the fall of 2008 with a small pilot at the neighboring **Benson Unified School District**. Although the pilot was successful, the Beyond Textbooks team quickly realized that the expansion of the initiative would require more than just giving an outside district access to the curriculum calendars and wikis. "If you've never run, and a marathon runner hands you his training book, you can't just jump in and use his training schedule," remarks Baker. "We found we have to lead people up to that level."

Carney put together a sequence of professional development and training sessions that slowly lead a district up to the highest level of the initiative's implementation—the level at which teachers begin posting their own materials. But before any training takes place, the Beyond Textbooks team requires that interested districts bring their administrators for a one-hour overview of the program. "If they say they want to move forward, we say, 'Great, we want to do the same exact overview with you and some of your key teacher leaders,'" explains Carney.

Vail then brings in a team from the outside district, including its key teacher leaders, for a two-day leadership retreat that explores the logistics of implementing Beyond Textbooks based on the system the outside district was previously using. "Those key teacher leaders are the folks that other teachers listen to, " Carney says.

A road map based on a rubric created by Vail but unique to each outside district's needs is put together. From there, Vail works with the new partner district's teachers in mandatory professional development sessions—workshops, webinars, and a year-end conference—which focus on both the logistics of working with the technology and the philosophy behind the initiative.

To cover the costs of these offerings, as well as the upkeep of the technology itself, Vail has set up a flexible and affordable compensation model. Participating schools pay an annual setup fee, which runs $3,000 the first year, $2,000 the second year, and $1,000 the third year (fees for future years are yet to be determined), plus a wiki subscription fee of $8 per student. They also pay $1,500 for a half-day training session for up to 30 participants. Vail works with partner districts that can't afford the standard fees to make the system more affordable.

Moreover, the district's transition to Common Core State Standards opens up the possibility of Beyond Textbooks becoming a nationwide initiative—the district receives a steady stream of inquiries about the initiative from schools across the country.

"I'd like to tell you that this is what we had intended all along, but we had no idea it would take off like this," laughs Federoff. "We were really trying to solve a specific challenge that we had internally, and it was serendipity that the tool we created was as portable and usable as it is." the

Jennifer Demski is a freelance writer based in Brooklyn, NY.

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As the for-profit sector gets into the virtual school business, public schools begin to vie for the online student at the same time they find new ways to help them be successful.

COMPETING FOR THE VIRTUAL STUDENT

By John K. Waters

THE CLOVIS UNIFIED SCHOOL DISTRICT (CA) first considered creating a full-time online school about four years ago. Clovis Unified is known as a high-performing district, but it was losing 200 to 400 students a year. In a district with a total enrollment of nearly 38,000, those numbers don't seem so bad, but officials realized only about half of those students were dropouts; the rest were *opt*-outs.

"What we saw in those statistics was that our students have real alternatives to what our traditional schools have to offer," says Rob Darrow, principal of the district's two-year-old virtual charter school. "Most K-12 school districts know that they're losing kids who are going to other programs to get their needs met, and they know that they're going to have to offer some kind of online program to meet those needs if they're going to survive."

Jon Reinfurt

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Using the term "survive" seems a bit like hyperbole until you consider some broader statistics: About 45,000 K-12 students in the United States took an online course in 2000; by 2009 that number had already grown to more than 3 million. In their book, *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*, authors Clayton Christensen, Curtis W. Johnson, and Michael B. Horn predicted that 50 percent of all high school courses will be delivered online by 2019. Earlier this year market researchers at Ambient Insight published a report predicting that between 2010 and 2015, online learning in the K-12 market will grow at a compound annual rate of 43 percent—warp speed for even the most dynamic industry.

Of course, K-12 districts haven't exactly been sitting on the online-learning sidelines. In fact, says Hall Davidson, director of global learning initiatives at Discovery Education, by pioneering online learning and proving its effectiveness, K-12 districts have unwittingly broadened the market for for-profit schools.

"It's very clear that online learning has found its time and place," he says, "and it lies at the heart of some serious competition between traditional brick-and-mortar schools and entrepreneurial proprietary schools that are taking advantage of the charter movement. It's just so easy in many states now for an online entity to come in and take enrollment. Here in California, I can enroll my daughter in an online program through a charter school in another county with a few mouse clicks. Some districts realize how heavy the competition is—that there's competition now for attendance dollars that were safer in the past—and some don't. I think the educational community in general needs a Paul Revere to sound the alarm."

Davidson, a former teacher and producer of educational television, sounded that alarm during his presentation ("Build It or They Will Go: Community vs. Enrollment Erosion") for the June 2011 ISTE conference in Philadelphia. He told attendees that districts must recognize "the phenomenon of proprietary innovation," essentially the same kind of disruptive technological change that has rocked newspapers, the photo processing industry, and the music business. They must find a way to "own the online learning and technology space" and "aggressively identify and move forward with the benefits of educational technology." If they don't, he warned, the for-profit schools will, and enrollment erosion will begin a "hollowing-out" of K-12 district pupil populations that will be difficult to reverse.

"Looking at online learning programs as something that provides a competitive advantage makes some people uncomfortable, as though we're being too capitalistic and turning students into customers," says Matthew Wicks, vice president of strategy and organizational development at the International Association for K-12 Online Learning (iNACOL), a Washington, DC-based nonprofit membership association. "I feel that way, too, sometimes. But it has resulted in administrators thinking of ways to better meet student needs."

"District leaders will probably be interested in seizing the advantages of online learning, both to deliver high-quality outcomes for their students and just to stay alive as districts."
–Heather Clayton Staker, Innosight

Wicks is the author of the recently updated edition of *A National Primer on K-12 Online Learning*, a comprehensive overview of online learning published by iNACOL. (The first edition, published in May 2007, was written by John Watson of the Evergreen Education Group.) Wicks says district-led online programs are currently emerging in three forms: the virtual school, in which students are enrolled full-time and get their entire course of study online; programs that simply offer a few supplemental classes online; and "blended learning," which combines traditional classroom-based learning with online learning assets.

Currently, most full-time virtual schools are implemented as charter schools, Wicks says, some of which are chartered by individual school districts. And, depending on the policies of the state, those *public* virtual charter schools are the ones that could be giving local districts a run for their money, or rather, giving them a run for their students, that is.

"When looking at the full-time virtual charter schools, you have to look at individual state policies," Wicks says. "In some states, the chartering authority for the virtual school is not a specific district, but a state chartering authority. In some cases it's the state board of education; in other cases, the state has created a different entity."

These virtual charter schools typically draw students from across the states in which they are established, but enrollment rules vary from region to region, Wicks explains. **Chicago Public Schools** in Illinois, for example, recently created two virtual charters that are available, by state law, only to students within that district. Massachusetts created its first virtual charter school a year ago, but the state imposes highly restrictive rules on how many students may enroll from other districts, as well as how many students may come from any specific district. Other states—Pennsylvania, for example—have open laws, and students can move from one district to another by enrolling in that district's virtual charter school.

"To me, this is a question of choice," Wicks says. "If the district in which a student resides is not offering an option that meets his or her needs, then providing an option for that student to choose a school that does meet his or her needs is a positive thing."

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Clovis Unified set up its own full-time, district-supported charter school in 2009. Two years later, the Clovis Online School is one of only two district virtual charters in the entire state of California.

"In California, there is no funding for part-time online courses for students," Darrow explains. "Those who are offering them are funding them with grant money. When that money runs out, there's no funding stream for the program. We did part-time programs for a while, funding them from 15 different grant programs, but we realized we couldn't sustain what we wanted to offer without a steady funding source available to us. That's when we shifted to a full-time online charter school."

Homegrown Curriculum

Clovis also took on the challenge of developing its own online curriculum.

"We decided to build the content ourselves, so that we would own it and not have to pay an ongoing fee," Darrow says. "Our teachers developed the curriculum based on the state standards and the course outlines we use in our school district. So they're getting essentially the same content they would be getting in a face-to-face class. All the teachers are part-time, and all are credentialed in the subject areas they are teaching."

Developing an online curriculum is extremely challenging, admits Kim Clemmons, technology coordinator for the **Wilson County Board of Education** in Lebanon, TN. But for her district's growing online virtual program, it was well worth the effort.

"When you're developing something custom made, you really get teacher buy-in," Clemmons says. "We actually pulled four of our cream-of-the-crop teachers from specific subject areas to work with a team of programmers and artists from that state's virtual school program. For an entire year, those teachers stayed at their schools as they worked on the curriculum, enlisting the help—and ultimately winning the support—of other teachers."

In 2006, Wilson County Schools received a three-year grant to participate in pilot testing of the state's first virtual school program, called e4TN (E-learning for Tennessee). That program grew to include all high schools and middle schools in the district, along with outreach to the Upper Cumberland Regional Field Service school districts' students and teachers.

Many districts provide online learning at some level, Wicks says, thanks in no small part to the proliferation of these kinds of state-sponsored virtual schools.

"If you go back 10 years," Wicks says, "almost all of the virtual school activity was at the state level, with **Florida Virtual School** being the largest and most famous example."

"Then, about five or six years ago there was a big virtual land grab," says Matthew Waymack, director of the **Gwinnett County Online Campus** in Atlanta. Today, roughly 60 percent of the states have programs.

Wicks adds, "Then we saw the beginning of the full-time programs, mainly in charter schools. Now, especially in states that have active state programs, the school districts are becoming aware that they're losing students to these virtual schools."

"The problem with the Florida model," observes Darrow, "is they set up a separate school with separate teachers, and that has an impact on the traditional schools."

Tennessee approached its districts with a different strategy, says Clemmons.

"They never came in with a cookie-cutter approach that the districts had to follow," she says. "They let us decide how to use the online program: during the school day, after school, or even just in bits and pieces. It made a huge difference; now it's no holds barred!"

The success and growth of state virtual schools has created an easy path into online learning for many K-12 districts, many of which are piecing together programs from

"Looking at online learning programs as something that provides a competitive advantage makes some people uncomfortable, as though we're being too capitalistic and turning students into customers." – Matthew Wicks, iNACOL

Transforming Education Into a Virtual Reality

JULIE YOUNG IS PRESIDENT *and CEO of* ***Florida Virtual School****, the largest and one of the first state-operated virtual schools in the United States. Young has written "Transforming Education Into a Virtual Reality: A Closer Look at Today's Virtual Learning Models" for* thejournal.com*. Below is an excerpt. For the complete article, visit* thejournal.com/Young.

The goal of a hybrid classroom is to pair the best features of face-to-face teaching with the best options of online learning to promote active and independent learning.

In my experience, both blended learning programs and hybrid classes are outgrowths of the online learning course. Both draw upon a central focus of a virtual learning program—learning options that will allow and encourage students to master content and succeed, which is the most important goal of all.

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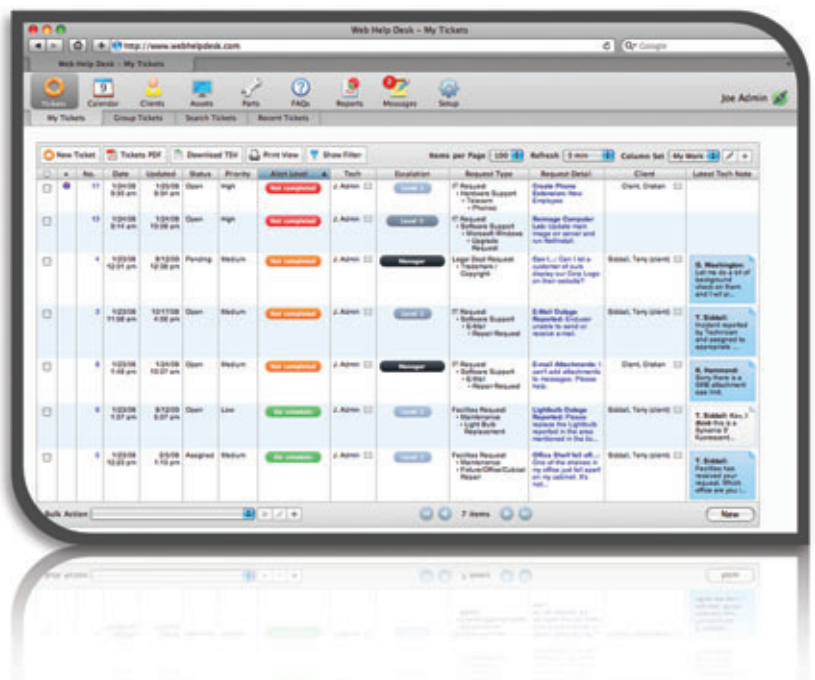

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multiple service providers, Wicks says. It's common for K-12 districts to dip their toes in the virtual water through third-party online learning-services providers, he says.

Mickey Revenaugh, co-founder of the for-profit Connections Academy, which provides virtual K-12 education in a number of ways, sees the growth of district-run virtual schools as a great opportunity for companies like hers to participate.

"It's actually opened up a number of additional ways that companies like ours can serve students," Revenaugh says. "The school districts are waking up to the fact that students and their families are looking for that full range of virtual options, and the districts are deciding that they might as well offer those options directly, rather than losing their students to a charter school, for example, or another district that might be offering a virtual program. In order to do that cost-effectively and in a time horizon that makes sense, they're often contracting with the for-profit providers for selected course content or an entire turnkey solution."

As the Tennessee state program evolved, Wilson County developed its own blended online learning program that combined the use of Adobe Connect desktop conference solution with a Logitech Orbit camera mounted on teachers' desks.

"We're urban on one side of our county, but the other side is fairly rural," Clemmons explains. "That's initially why we ventured into these programs. We had that rural high school for which we were just unable to offer classes at the same level and number we needed to equal our other three large high schools. That was the original need; since then it's just grown by leaps and bounds."

A Blended Alternative

Blended learning is, in fact, quickly becoming commonplace in K-12 districts across the country, says Wicks.

"[It] just makes sense for the school districts, because their students are physically there," he says. "Although there are many districts using charter programs, full-time online programs, and supplemental service providers, blended learning is becoming very, very common."

Researchers at the Innosight Institute have found that, regardless of how attractive the idea of a virtual school is, only about 10 percent of American families have the socioeconomic wherewithal to support home schooling; the other 90 percent need some sort of brick-and-mortar facility to accompany online learning.

"Blended learning is likely to become the norm in K-12 schools," says Heather Clayton Staker, senior research fellow at Innosight. "Keep in mind that schools do more than just deliver academic instruction. They serve a custodial function, provide hot meals, and deliver other social goods. So we think it's unlikely that online learning will emerge purely in a virtual way. And increasingly, we're expecting it to snap into brick-and-mortar environments, so that all those other things schools do get done."

Discovery Education's Davidson believes that blended learning environments are also the most likely to give traditional K-12 districts a competitive edge over their for-profit rivals.

"There's really nothing better than a traditional teacher who knows the students and the curriculum, who can guide the students through the online media options for learning—the 'guide on the side' we've all been looking for," he says. "The data suggest that the blended model is the best in terms of traditional measurement, if you're actually looking at student achievement. It's this combination that will give the districts a competitive advantage over the proprietary schools."

Waymack in Atlanta also argues that there are some things—even in a virtual school program—that only a school district can provide students.

"We can do things like administer final exams in person, which is something we believe gives us a greater level of credibility," he says. "If you compare, say, our summer school to an on-the-ground summer school in Gwinnett County, the grade distributions are very close—which is what you want to see."

The Gwinnett County Online Campus is the oldest virtual school in the state of Georgia, and one of the oldest in the country. Back in 1998, Gwinnett County began offering a "district-level, supplemental online program" that served a handful of students. Last year the Online Campus had 5,000 students enrolled in for-credit classes.

Waymack has watched the evolution of K-12 virtual schools for a long time. He believes district-run programs can offer competitive advantages over state programs like Florida's, but he also says districts have learned lessons from the state programs that allow them to compete well with for-profit programs.

"We've always felt that we do a better job supporting our local students at the district level than any state program is going to be able to," Waymack says. "We have 20 high schools at Gwinnett County, the 12th largest district in the country, and we have a support network built into each of our schools. If a kid at, say, Collins Hill High School, is not doing what he's supposed to be doing, we have a contact person there at the school who will find the student to see what's going on. I'll even go see students sometimes myself if I need to. That's the advantage of a local program. You can't do that with a state program. There's too much area to cover. "

Revenaugh says, "It's certainly true that the school districts are stepping up to the plate in a much more full-featured way to

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offer both supplementary and full-time virtual education than we've ever seen before. But the smart ones are not the ones that are trying to invent everything themselves."

A Competitive Environment

Waymack understands that K-12 districts are operating in an increasingly competitive environment, but he insists his district's program has evolved over more than a decade simply as a means of meeting student needs, not because it's afraid of losing them.

"The students want us, and the district needs us," he says. "In the beginning, it was almost all about remediation. But as the program evolved we began to serve kids that wanted to take things like fine arts, but couldn't because the graduation requirements are such that they almost have to take them outside the normal school day or during the summer. That's a big demographic that we serve. Students needing extra foreign language classes are another one. Over time, we've come to serve a whole segment of our student population that simply wants to do everything online. In the summer, at least half of our students are trying to get ahead; the other half is trying to recover credit."

That's more or less the paradigm that Innosight's Staker sees as the most productive for policy makers looking at K-12 virtual schools. She admits that there's "an element of competition" emerging in the virtual schools space, but thinks it's a mistake to focus on it.

"I really wish we would reframe the debate," she says. "I don't think parsing the world on the basis of for-profit versus nonprofit versus public school or district school or charter school is the right categorization scheme. It's anachronistic."

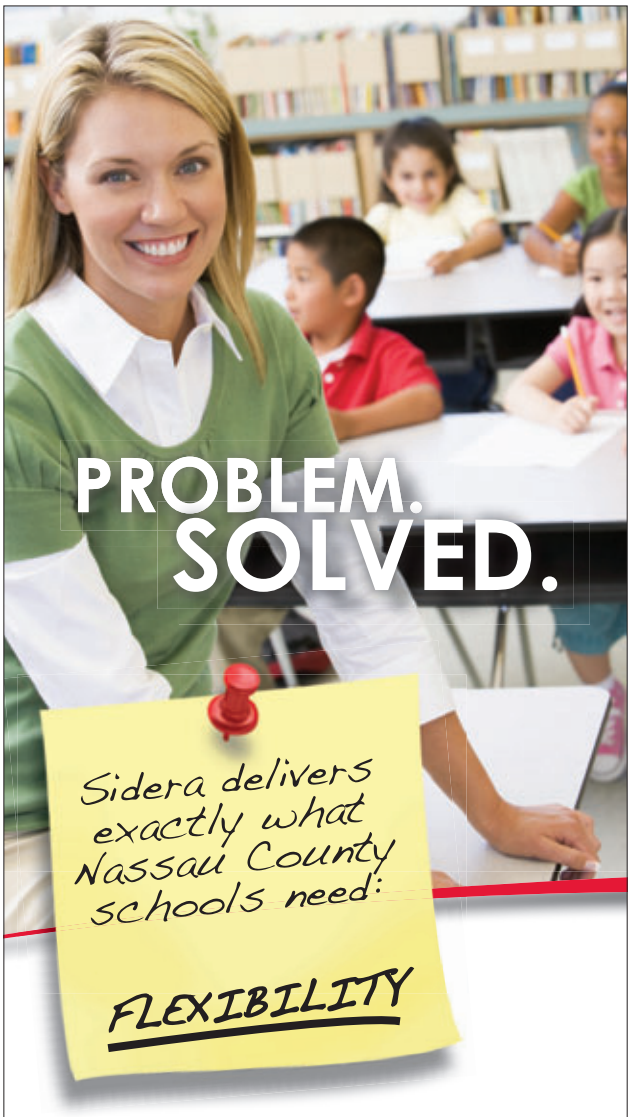
Staker also recognizes what she considers some realities that districts may take on at their peril as they get more and more involved with online learning.

"I think district leaders will probably be interested in seizing the advantages of online learning, both to deliver high-quality outcomes for their students and just to stay alive as districts," Staker says. "This is a growing trend and in this day and age, with bleak budgets and fiscal shortages, there are some cost advantages that can come from digital learning. But my concern is that, unless the right policy is put in place, we're going to get a lot of low-quality educational content out there, and a lot of districts who find the cheapest solution and put kids in computer labs to stare at monitors for hours on end. And that scares me."

Nevertheless, she believes districts should focus on what they do best, and not be afraid to turn to for-profit providers to fill in the gaps.

"Painting a scary doomsday picture about how [for-profit virtual schools] are going to destroy the lives of districts and teachers is a disservice to students everywhere," she adds. "We need to try to find a path that allows online learning to emerge in a way that best serves students. Sometimes that will be through a district offering; sometimes that might be through another provider. The bottom line should be that we're trying to get each student the best educational experience that we possibly can." the

John K. Waters is a freelance writer based in Silicon Valley.



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By Vanessa Hua

Redefining the Security Wall

With the proliferation of web 2.0 apps and mobile devices, internet security requires more than a simple firewall.

DESIGNING INTERNET SECURITY for schools used to be a bit like building a castle with a moat: A crude perimeter kept out Trojan horses and other threats. Safety could be maintained as long as the gatekeepers could define who was a friend and who was a foe. But because of the advent of web 2.0 applications that make information sharing and collaboration easier, K-12 schools now have an increased need for more complex, customized internet security solutions. Firewall and filtering tools must also be flexible enough to serve the varied needs of students, educators, and administrators.

"In the old days, [firewalls] were binary: you either allow or you don't allow," explains Brian Contos, director of global security strategy and risk management at McAfee, an internet security provider. "Now it's a lot more like clay than Legos."

Matt Daley

Facebook is a good example of a tool that requires a more flexible approach to security. Not only a website, Facebook is a conduit for hundreds of applications that range from games to networking for business and pleasure. It's also an access point for music and entertainment services. Rather than block Facebook entirely, Contos says, schools may want to target specific apps that put a strain on network resources, degrade bandwidth, slow down e-mail delivery, or make the network vulnerable to malware.

Indeed, the social networking sites that are so popular with students provide rich pickings for cybercriminals. According to a recent report by internet security provider Symantec, one ingenious ruse in 2010 involved shortened URLs, where hackers posted in newsfeeds and other places millions of bogus shortened links in efforts to lure victims to websites for phishing and malware attacks. Last year, 65 percent of malicious links in news feeds observed by Symantec used shortened URLs.

In many circumstances, to fight such threats, internet security vendors can analyze billions of files, e-mails, and malware products to categorize and determine their "reputation" in the cloud and quickly update their customers' firewalls and filters. However, they have another challenge when working with K-12 schools, which can have more intricate security needs.

School districts must protect their networks from being compromised by intrusions, malicious code, and spam e-mail. They can set stringent policies to block adult, gun-related, gambling, and drug-related content, and other web content deemed inappropriate for viewing by young students. They can also keep out sites that slow traffic down or propagate malicious content hidden in music and streaming videos. Yet, they may also want to give some of their users the freedom to access and participate in wikis, YouTube, Facebook,

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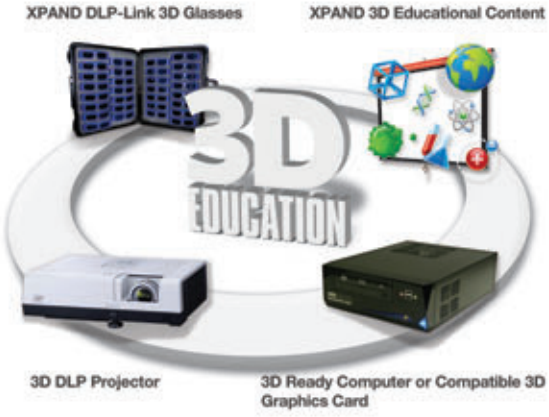

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Twitter, and other social networking and content-sharing sites.

Teachers are well aware of the frustrations of wanting access to certain teaching materials—via YouTube, for instance—that simply may be off limits to them because sites are blocked to the entire district. That's why experts suggest IT staffers seek out security solutions that allow them to set up policies for different groups—teachers, students, and administrators, among others—with granular, rather than wholesale, restrictions even within those groups.

To help districts customize their web security solutions, vendors often offer a predefined list of blockable content and allow school administrators to select additional sites to block, depending on factors such as the age of the students and their familiarity with internet security threats.

Filters also can allow administrators to review and selectively grant access to normally forbidden websites if users can offer good explanations for why they need the information. "These tools have the flexibility to give teachers and administrators the ability to override blocked content," says Mike Maxwell, head of state, local, and education public sector issues at Symantec.

McAfee's Contos points out, "It's a question of customization. In the early days, a class researching breast cancer might have found some pages blocked as sexually explicit, but today, technology is more mature. A site can be easily opened up or it can be easily denied."

Connie White, director of media and technology for **Lakeview Academy** in Gainsville, GA, believes security concerns need to be balanced with educational ones: "Web 2.0, that's where kids are. They know it can be a distraction, but why not help them gain the ability to manage it? You can either ignore it, and not think it's happening, or hit it on the head."

She adds: "We want children not only to develop 21st century skills, but give them the ability to make choices and grow into ethical people." the

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More Mobility, More Problems

THE PROLIFERATION OF mobile devices in schools has created a major security concern that will become even more serious in the future. IT administrators must contend with a multitude of personal devices, smartphones, and tablet computers, many of which can offer access to sensitive data such as grades and students' personal information.

"Mobile devices are a natural extension of the campus network," says Gerhard Eschelbeck, chief technology officer at Webroot, an internet security provider. While the size and shape of the threat remains in the early stages, "the bad guys are working on it."

"How can organizations rein in devices they don't control?" asks Lenny Zeltser, who leads the security consulting team at Savvis, which provides managed computing and network infrastructure solutions.

Mobile devices are vulnerable, Zeltser says, because mobile system architecture "hasn't benefited from being battlefield tested for years and years, which is the case with desktop operating systems," he explains. "When attackers focus on the mobile platform, they get a lot of bang for the buck."

Hackers have unleashed malware that can gain control over a phone, for instance, and charge users for calls they never made or SMS services they never used. The threats are becoming more sophisticated as social media spreads to phones and botnets take control and multiply through the users' entire contact lists.

Schools must make sure they have complete coverage on the gateway side, with filtering of inbound traffic, Eschelbeck says. Mobile device users also shouldn't log onto the school's password-protected sites while on public WiFi networks, where they may be vulnerable to eavesdropping sniffers that can read the data they send and receive. "It's not just about their own personal information, but the entire network's," says Alicia diVittorio, director of marketing at Lookout, a smartphone security and antivirus solutions provider.

Securing a mobile device presents different challenges than the well-established solutions for PCs. Phones have lower processing power and limited battery life, so the security apps must be small in size, and much of the heavy lifting resides in the cloud, diVittorio says. Lookout's solution, available free and in a premium version for Android, offers features such as scanning every app for malware and spyware, backup, and restoration of data. If a device is lost or stolen, it can locate the phone, sound an alarm, and implement remote wipe and lock.

In addition, schools should consider making security solutions that reside on the mobile devices mandatory, and insist that users password-protect their phones. Remind users to evaluate mobile apps before downloading them by finding reviews from reputable sources, advises diVittorio.

Vanessa Hua is a freelance writer based in Claremont, CA.

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The UPS Store **C4**
theupsstore.com/logistics

Web Help Desk **33**
webhelpdesk.com

Xpand **37**
xpand.me/education

SCHOOL INDEX

Benson Unified School District (AZ) 26
Chenango Forks High School (NY) 14
Chicago Public Schools (IL) 30
Clovis Unified School District (CA) 28-32
Collins Hill High School (GA) 34
Connections Academy (various locations) 4, 34
Delaware Valley Regional High School (NJ) 18
E-learning for Tennessee 32-34
Florida Virtual School 32-34
Gwinnett County Online Campus (GA) 32-34
Gwinnett County Public Schools (GA) 18
Kiski School, The (PA) 9
Monarch School (GA) 18-19
Oconto Falls School District (WI) 18
Park Hill School District (MO) 8
Rincon Vista Middle School (AZ) 24
Vail School District (AZ) 20-26
Wilson County Board of Education (TN) 32-34

COMPANY INDEX

Acoustics First 19
Adobe 14, 34
Ambient Insight 30, 34
Apple 8, 23
Bogen Paging 18
BrainPop 23
Califone International 18
Calypso Systems 16-18
CDW-G 6
Certiport 8
Cetacea Sound 18
Channel One 8
Discovery Education 6-8, 23, 30, 34
Excent 6
Facebook 36
FrontRow 18
Google 9
IBISWorld 6
IBM 4
Lightspeed Technologies 18
Logitech 34
Lookout 38
McAfee 36-38
M86 Security 8
Microsoft 8
Motorola 9
Panasonic 18
Pearson 6
Primacoustic 19
Promethean 8
Savvis 38
Smart Technologies 18
SoundproofCow 19
Symantec 36-38
3M 8
Twitter 38
Webroot 38
YouTube 36-38

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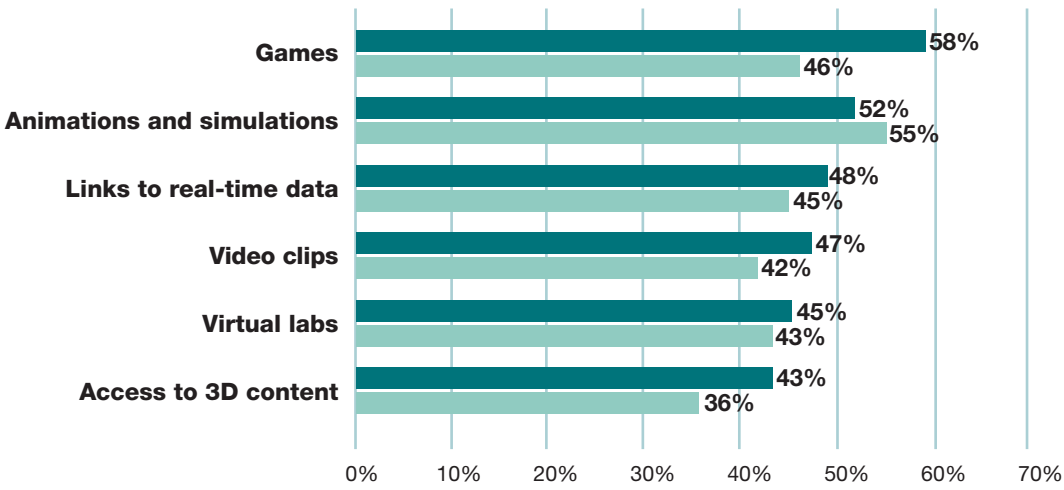
If Students Wrote the Book

ONLINE TEXTBOOKS are not exactly a new phenomenon. In one way or another, digital content has been a part of the classroom for years. In fact, according to Speak Up survey respondents, more than a quarter of all middle school students and a third of all high school students say they now use online textbooks or some other version of online curriculum as part of their regular schoolwork.

When asked to pick the one investment in technology they thought would help their children the most, 64 percent of parents recommended some form of online textbooks and 41 percent of teachers said that was on their wish lists as well.

When asked what would constitute their dream school, 48 percent of students in the third through fifth grades said online textbooks would be part of it and more than half of all older students said the same thing. However, the data also indicates that students aren't just talking about some kind of e-reader or Kindle when they say they want online textbooks. Students want a variety of features and functions that range from keyword searches and electronic highlights to the ability to download information to their smartphones: 40 percent want tools that will help them collaborate with their peers, 43 percent want access to online tutors, and 36 percent want the ability to take online classes.

Middle and high school students describe the digital capabilities they want in online textbooks



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