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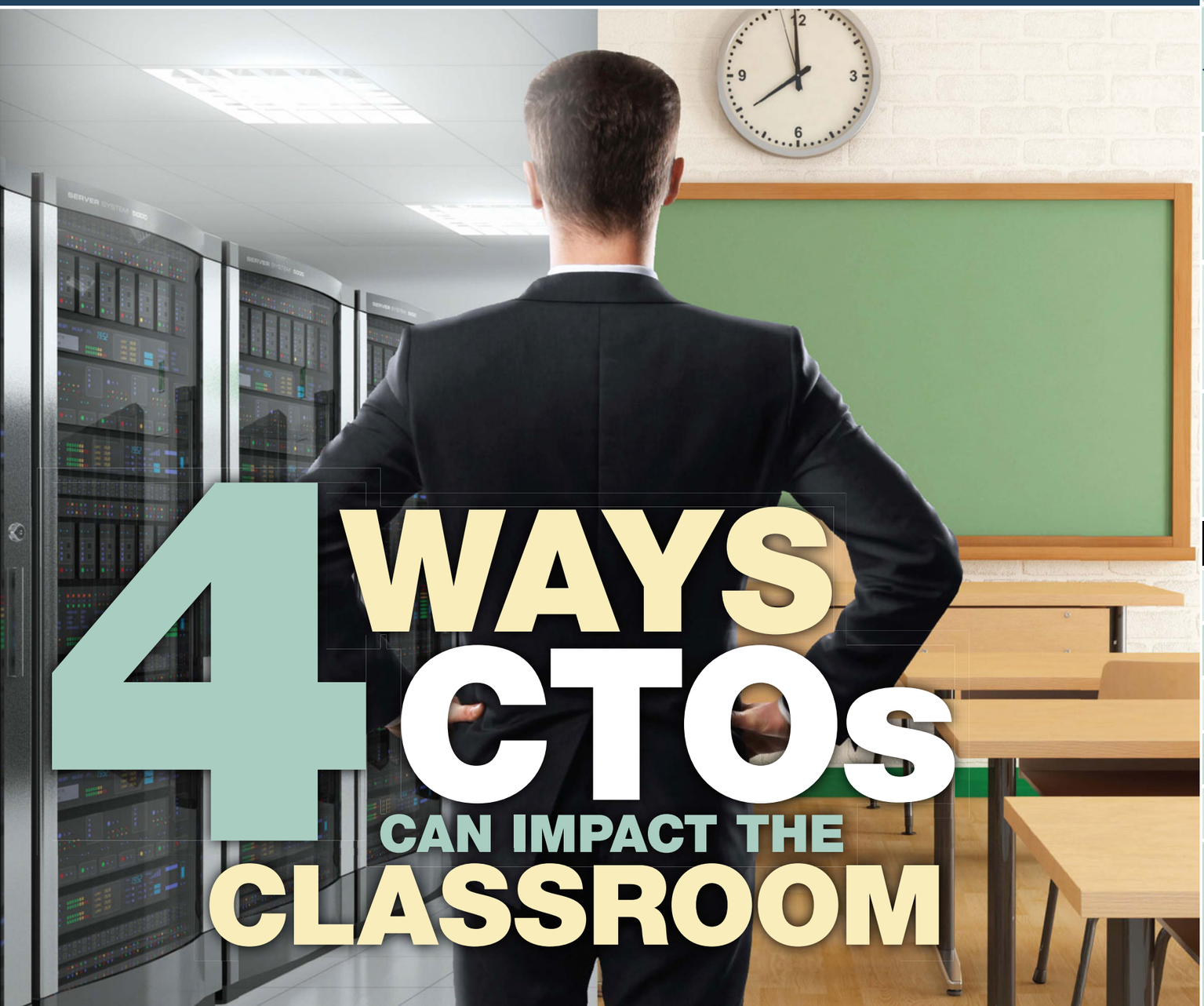

4 WAYS CTOs CAN IMPACT THE CLASSROOM

IN THIS ISSUE

CALLING ALL TECH-SAVVY DISTRICTS!
Nominations are now open for the 2014 Sylvia Charp Award for District Innovation in Technology. **See p. 23.**

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Christopher Piehler, Editor in Chief

A new wave of technology helps students turn their ideas into objects they can touch.

The Three R's in 3D

Affordable 3D printing for the classroom takes shape.

LAST OCTOBER, futurist David Thornburg wrote in *THE Journal*, "I am convinced that every classroom should have a 3D printer." He went on to predict that the technology was "poised to take off" in education.

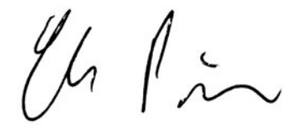
Based on what I saw last week at FETC in Orlando, 3D printing is already approaching cruising altitude. The CPALMS booth, which was full of 3D printers, was front and center in the exhibit hall, and was always buzzing with educators eager to get their hands on custom-printed objects — or just watch in wonder as the machines did their work. Elsewhere in the exhibit hall, Stratasys was showing off its line of 3D printers for educators.

These machines have an undeniable "wow" factor, but as with most new technology, the barrier to widespread adoption of 3D printing has been the price. Thornburg's prediction that 3D had reached a tipping point was based partly on the affordability of a printer from Afinia (currently listed at $1,599).

But if you extend your definition of 3D printing beyond machines that build objects from layers of plastic to mean "hardware and software that give students the experience of watching their ideas become objects," districts can get into three-dimensional learning with a much smaller investment.

During the TechShare LIVE! presentation, the speakers showcased a number of 3D tools whose low prices could move them from the wish list to the shopping list. For schools that lack the space or the funds for a printer, a recent Kickstarter project called the 3Doodler extrudes rubberized ink and starts at a reasonable $99. Another "pen" called the Circuit Scribe allows students to draw electrical circuits with conductive ink. It doesn't ship until this July, but it costs only $25. On the software side, a free mobile app called 123D Catch turns photos into 3D models.

With all these tools at their disposal, I can't wait to see (and touch) what teachers and students will create.



Here & Now

Tech + Online + Industry + Partnership

[news]

Speak Up Survey Reveals 10 Major Ed Tech Trends

By Chris Riedel

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According to the latest data, video for homework is on the rise; mobile computing is "beyond the tipping point"; and most kids don't use traditional computers to connect to the Internet at home. Those are just three of the major trends revealed in the 2013 Speak Up Survey from Project Tomorrow, which CEO Julie Evans revealed at the FETC 2014 conference.

The 2013 results represent more than 400,000 surveys from 9,000 schools and 2,700 districts across the country. Respondents included 325,279 students, 32,151 teachers and librarians, 39,986 parents, 4,530 district administrators and — new to this year's survey — 1,346 community members.

1) Personal Access to Mobile Devices

According to the 2013 results, students overwhelmingly have access to personal mobile devices. "If there was any doubt in our mind that we were beyond the tipping point in terms of kids carrying a computer in their pocket, backpack or purse," Evans said, "we're there."

Specifically, she said, 89 percent of high schools students have access to Internet-connected smartphones, while 50 percent of students in grades 3 through 5 have access to the same type of devices. High school student access to tablets tops out at 50 percent, and laptops come in at 60 percent. In addition to personal access, the survey found that about a third of students have access to a device (typically a laptop or a tablet) in their school.

2) Internet Connectivity

According to the study, 64 percent of students surveyed identify 3G- or 4G-enabled devices as their primary means of connecting to the Internet, with another 23 percent saying they connect through an Internet-enabled TV or Wii console. When asked why traditional broadband access wasn't their primary means of connectivity, students said there was less competition for access with other members of the family through these non-traditional devices. *Read the full story.*

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Synchronous Collaboration: The Time Has Come

Mobilists Elliot Soloway and Cathie Norris predict that, within two or three years, every app will have a button to allow real-time collaboration among students. In the meantime, they introduce tools like WeMap (for concept maps) and WeKWL (for KWL charting) that allow students to share apps in real time, fostering collaborative instead of cooperative learning.

[webinars]

Is Your WiFi Network Ready for Online Testing?

As the fall deadline for Common Core testing approaches, school districts need to make sure that their network can handle the deluge of devices and traffic this will create. Get a game plan for putting your network in order. Join our webcast on Feb. 20, when Jeffrey Jennings, SLED Contracts/E-rate Manager at Xirrus, will talk with *THE Journal* about what schools need to do. Sponsored by Xirrus

New and archived webinars are available at thejournal.com.

Here & Now

[industry update]

ACT Report: Many Students Interested in STEM Aren't Pursuing It

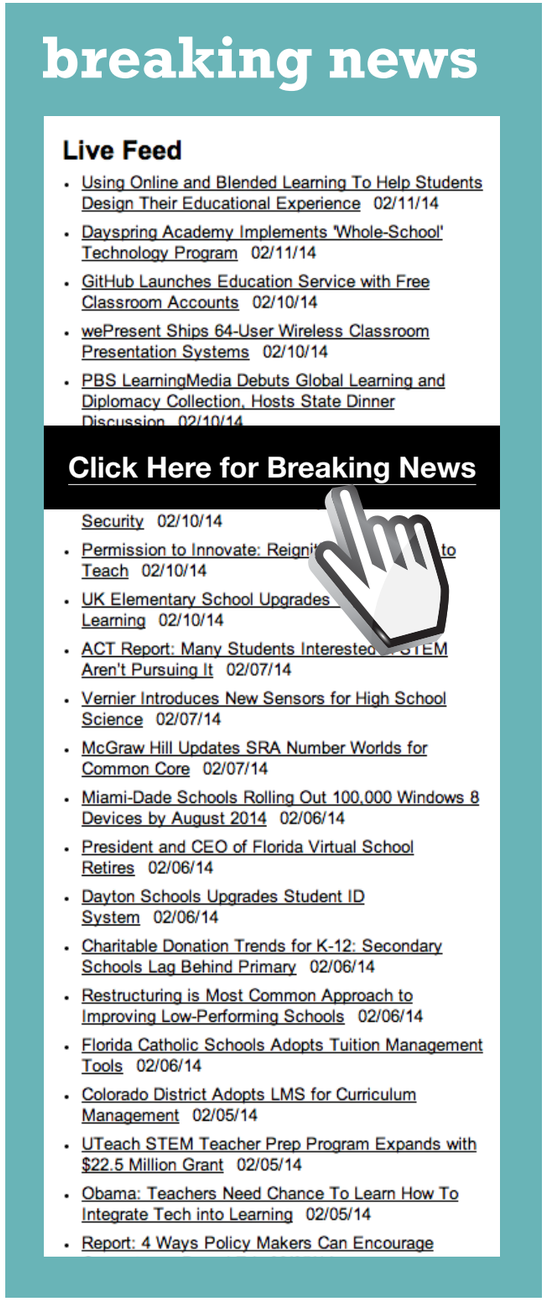
A new report from ACT reveals a pool of students who are interested in STEM areas but are not planning to pursue a STEM career. The ACT national and state report series, "The Condition of STEM 2013," examines the expressed and measured interests of high school graduates in the class of 2013 who took the ACT college readiness exam. Expressed interest is when students say they intend to pursue a particular major or occupation. Measured interest is derived from students' responses to the ACT Interest Inventory, which measures preferences for different work tasks.

A total of 48 percent of the ACT-tested 2013 graduates had expressed and/or measured interest in STEM, including 16 percent who had both. Twenty-three percent had only expressed interest, planning to pursue a STEM career even though their inventory results suggested that other fields may be better aligned to their interests. But nearly one out of every 10 graduates (9 percent) had only measured interest in STEM; they had no plans to pursue a STEM major or career despite their interest in doing so.

According to Jon Erickson, ACT's president of education and career solutions, "Nothing is more costly to the nation than untapped potential, and that's why we must do more to ensure that all students understand the career opportunities that match their interests, particularly those that exist in important STEM fields. If we can identify students earlier and then keep them engaged, they may be more likely to choose a STEM career."

ACT's report also points to a gap between STEM interest and preparation. Around half of the graduates planning to pursue STEM majors and careers were not ready to succeed in first-year math or science coursework in college. Readiness was higher among students with both expressed and measured interest.

breaking news



{win big!}

A $200,000 Challenge

The deadline to enter the Follett Challenge is Feb. 28. A total of $200,000 in Follett products will be awarded to 15 winners who demonstrate innovative approaches to 21st century learning. The overall winner will earn a $60,000 prize; each of three semifinalists will earn $30,000 prizes. Ten $5,000 prizes will be awarded to "People's Choice" winners. Entrants must complete an online application and upload a video describing their program.

The House App Contest

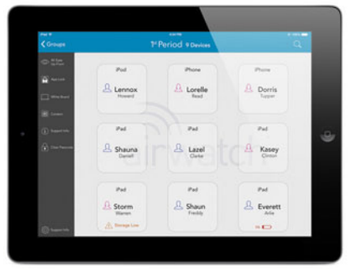
For the first Congressional STEM Academic Competition, high school students are invited to submit an app they created for judging by entrepreneurs and software engineers. Entrants must provide the full source code and submit a video explaining their app and what they learned from making it. The deadline is April 30. To enter, click here.

Product Roundup

New Products from FETC 2014

The latest hardware, software and services

Splashtop Classroom is an app that allows teachers to stream content and applications to computers, iPads and Chromebooks. Students can access the app by scanning a QR code. *Read the full story.*

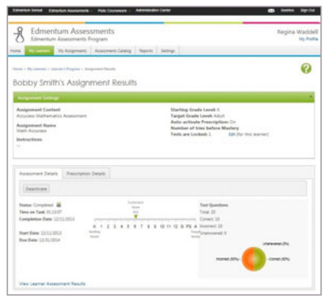


Teacher Tools from AirWatch is an app that puts mobile device management in the hands of teachers, who can lock all devices in a class, lock students into one app or clear passcodes. *Read the full story.*

Lenovo's ThinkPad Yoga 11e is a convertible ultrabook that can be configured as a laptop, tablet, "stand" or "tent." It runs on Windows and is preloaded with Intel Education software. *Read the full story.*

The Epson 595Wi interactive projector supports dual-pen input and is touch-enabled, allowing teachers and students to annotate on projected images using just their fingers. *Read the full story.*

Fourier Education's einstein Tablet+ comes pre-installed with science-focused software and is equipped with sensors for temperature, humidity, heart rate, visible light and ultraviolet light. *Read the full story.*



Edmentum Assessments is a new suite that features diagnostic and formative assessments as well as prescriptive content and Edmentum Sensei, a data dashboard. *Read the full story.*

newsreleases

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- Hitachi Introduces Four Ultra-Short-Throw Projectors
- EchoSystem Lecture Capture Tool Adds Android 4 Support, On-Air Checks
- Ergotron Debuts Device Management Systems

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- Yammer Enterprise Coming to Microsoft Office 365 Education Plans
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- Samsung Reveals Tablet with Google Play for Education
- Aerohive Intros Mobility Suite for Managing Mobile Devices
- New Splashtop Classroom App Streams Content to Student Devices

Security

- Impulse Point Integrates SafeConnect with iboss Secure Web Gateway for BYOD Security
- Bradford Adds Hyper-V Server 2012 Support in Network Sentry 6.2

Teaching & Learning

- GitHub Launches Education Service with Free Classroom Accounts
- Trunity Knowledge Exchange Adds Houghton Mifflin Harcourt Content
- Vernier Partners with KidWind on Solar and Wind Classroom Science Kits
- PBS Offers Free Classroom Resources for Digital Learning Day

On Feb. 26 at 4 PM ET, learn more about Anderson's innovative use of technology in an edWeb.net webinar hosted by *THE Journal*'s Christopher Piehler.

JENNIFER ANDERSON, IPAD U TEACHER
HERITAGE E-STEM MAGNET SCHOOL, WEST SAINT PAUL, MN

INNOVATOR

>> THOSE WHO CAN, TEACH

We are a middle school with an environmental focus on STEM, now in our fourth year as a 1-to-1 iPad school. I was the technology integration specialist when we got the grant that established the program, so I helped the teachers prepare for what it was going to look like to have a class full of students with iPads. After we did our six-week pilot, my principal asked if I would be interested in going into the classroom. I love teaching, so I jumped at the opportunity and was allowed to design what I felt would meet the needs of students who would have iPads with them all the time. I'm now in my third year as the iPad U teacher.

>> STUDENTS AS EXPERTS

If we were going to provide students with this tool, I wanted them to learn to go beyond the classroom walls and become connected learners. So in the first year, I connected my eighth-graders with a school district in Brazil and, through Skype, my students were keynote speakers at a conference there, sharing with teachers who were looking at doing this kind of a program what it was like to have 24-hour access to the world as a student. Right now my fifth-graders are using VoiceThread to do book talks encouraging younger students at some of the neighboring schools to read their picture books. They take so much pride in it because they see themselves as the experts.

>> EVERY PICTURE TELLS A STORY

My other big focus has been in making sure that students become producers, not just consumers, of technology. Our big thing this year is a project in which the students are putting together a photo journal that tells the story of who we are as a community. We created a classroom Flickr account so we could share the photos, and after taking pictures in our school, we started going on trips to different locations in the community. We've invited parents and community members to work with us.

>> THE WORLD IN THEIR HANDS

Before, even when students could go to a computer lab, it was for a limited amount of time, so they couldn't do such big projects. Now that we've put these iPads in their hands, they're so much more engaged. As teams of teachers we create iBooks, where we send students out to learn things and provide them with links. We use iBooks Author to engage students in text. We create iTunes U courses. And because we are an E-STEM school, students are always going out into the field with an iPad to take pictures and record data.

MY TOP 3

Anderson shares a trio of tech projects that support a big idea.

>> LIVING THE DREAM

Every time we come close to finishing a project I'll ask the students, "What are we going to design next? What's your passion?" We allow them to dream about what they want to do and then design the projects around that. And the kids get so excited about the projects.

They can bring in their personal devices if it's going to help with their learning, and they are always the teachers in my class. They help design the lessons. We circle up, talk about ideas, and I just feed off of their energy. To watch them discover different ways that they're going to use the technology is a lot of fun.

Dian Schaffhauser

Projectors Get Interactive

A new generation of devices turns any surface into a canvas for collaboration.

The era of the interactive whiteboard in the classroom may be coming to a close. Districts are discovering that they can avoid the inflexibility and relatively high cost of IWBs by choosing interactive projectors, which happen to be small, portable and in many cases able to work with the same software that powers the boards.

The market for these devices is growing dramatically in the "professional" sector, which includes education (along with business and government). According to PMA Research, a firm that monitors the market, interactive projectors make up one of the few "bright spots" in this product category, which has remained flat overall since 2008. In 2009, when the interactive projector category first started taking off in the United States, about 500 units had shipped. In 2012, 55,000 interactive projectors shipped, many of them headed to classrooms, according to PMA Vice President Linda Norton.

While big names like Epson and Hitachi dominate the category, "niche" companies such as BoxLight have also advanced the technology. Norton said the price of a mainstream interactive projector is "considerably higher" than that of the standard variety: on average about $1,451 versus $873. But, she added, "They're obviously attractive to teachers because of the functionality." So what exactly do interactive projectors do to justify their cost?

Six Interactive Projectors Worth Turning On

The Surface Controls the Computer

To put it simply, technology that once existed only inside interactive whiteboards now resides inside projectors. As BoxLight product manager Jeremy Peterson explained, with an interactive projector, "Any flat surface can become an interactive surface," whether a wall, whiteboard or tabletop.

Light, smart or interactive pens provide stylus and mouse functionality. Users don't even have to touch the surface with the pen; they can simply hover the pen above the surface to perform their activities. Another feature borrowed from interactive whiteboards is the ability to accommodate more than a single user working with a pen. Also, images created through the

projectors can be saved as a graphic files to share with others.

Dallas Independent School District, which installed a fiber-optic network in 2013, has taken advantage of 17,000 new wireless access points to set up 3,500 digital classrooms with interactive projectors from both BoxLight (the ProjectoWrite6 WX31NST) and Dell (the S500wi). Both projectors tap into the wireless network for interactivity instead of a USB or VGA cable. A wireless dongle plugs into the USB port of the teacher's computer to communicate with the projector.

Peterson pointed out that the new breed of projectors is mobile. "With an interactive projector," he said, "you can [move it] from room to room and be set up and ready to go in less than five minutes." Teachers who change rooms during the day "don't have to worry about cables being run from the wall. And they don't have to worry about students tripping over cables."

Software Stays the Same

Marilyn Gavitt, coordinator of instructional technology at **Martin County School District** (FL), felt troubled when she saw her first demonstration of an interactive projector. Five years ago, a committee in her district had made the decision to install Promethean interactive whiteboards for the primary classrooms and Smart Boards for secondary classrooms. With a refresh cycle of five years and a thousand classrooms to outfit, the district is now completing that rollout.

In 2009, only 500 interactive projectors had shipped to the professional sector. By 2012, that number had climbed to 55,000, many of them headed to classrooms.

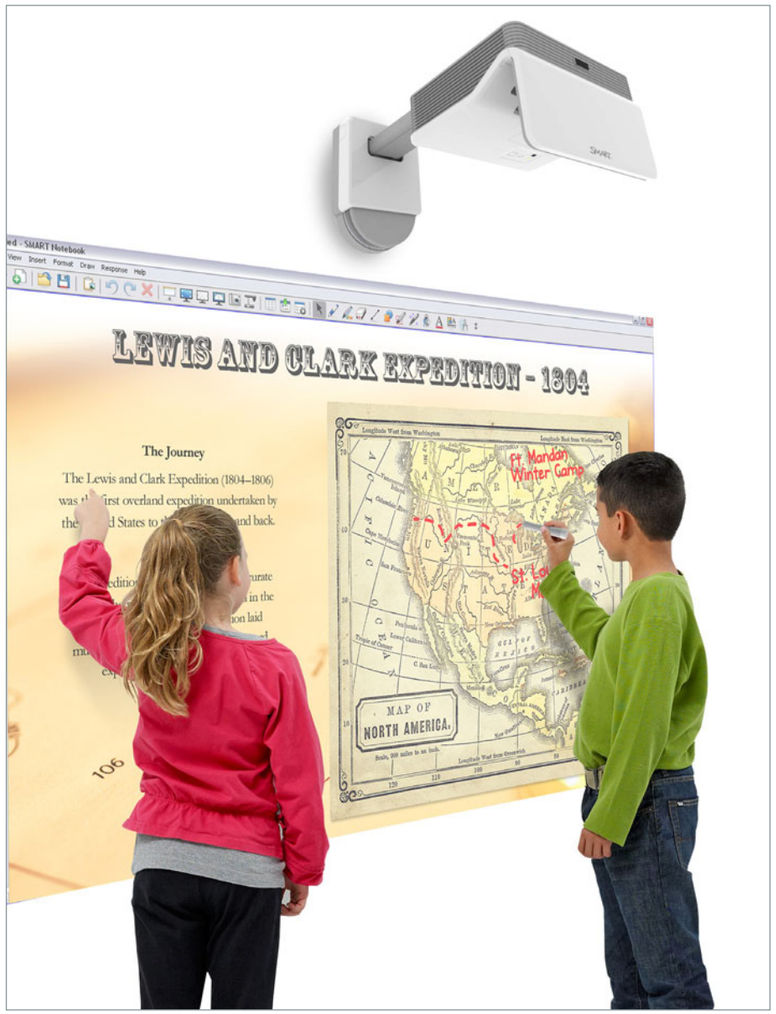
But two years ago at FETC, she saw Epson show off its new BrightLink line of interactive projectors. “I was afraid because we were so ensconced in our [interactive boards]. I said, ‘We can’t just drop that and go with this.’” But the decision became much easier in March 2013 when Promethean reworked the licensing of ActivInspire, its popular teaching and learning software, to eliminate the limitation that it be used only with its own boards when purchased as a bundle deal. At the same time, Epson gained licensing rights to sell ActivInspire as well as Smart’s Smart Notebook software with its new projectors.

Suddenly, teachers at Martin County could use the same software they were already accustomed to with new hardware. Following a small pilot test, as the earliest board adopters hit the five-year mark, their boards were replaced with Epson’s BrightLink 485Wi projectors. Last school year, that added up to 101 projectors; this year it’ll be another 155. In many cases

HANDS-ON TECH

VIDEO: In a video made with Epson, elementary school teacher Kristine Meise talks about an unexpected benefit of using an interactive projector.

the boards are remaining, to be used as a collaboration surface; but the projectors previously installed on "arms" attached to the boards have been replaced with ultra-short-throw projectors installed just above the boards.



Copyright SMART Technologies

Gavitt said that teachers "liked the idea that they could still have their dry erase board. And they like that there isn't this big arm sticking out. And the image was brighter. The lamps are cheaper. It just made sense."

Buying Advice From the Pros

When putting together the business case for buying interactive projectors, Gavitt called the cost of the lamps a "huge consideration." She said, "You can only get at the most two years out of a lamp." Her district once bought lamps that cost between $300 and $400, while her BrightLink lamps run less than a hundred.

Gavitt also recommended selecting a projector that can run the software your teachers already use. Although interactive projectors typically come with some kind of basic software, using the collaboration software that is already in the classroom can save time on teacher training, as well as money, "because you won't have to buy it outright."

Peterson suggests testing out the accuracy and responsiveness of the projector. Users want to be able to go to the surface and control their computers as they normally do, he explained, but some projectors tend to have a delay, which means that, "If I draw a straight line [on the surface], I can pull my hand away and watch the line being drawn."

Ultimately, said Gavitt, the best test of success is to see how students respond to the technology in the classroom.

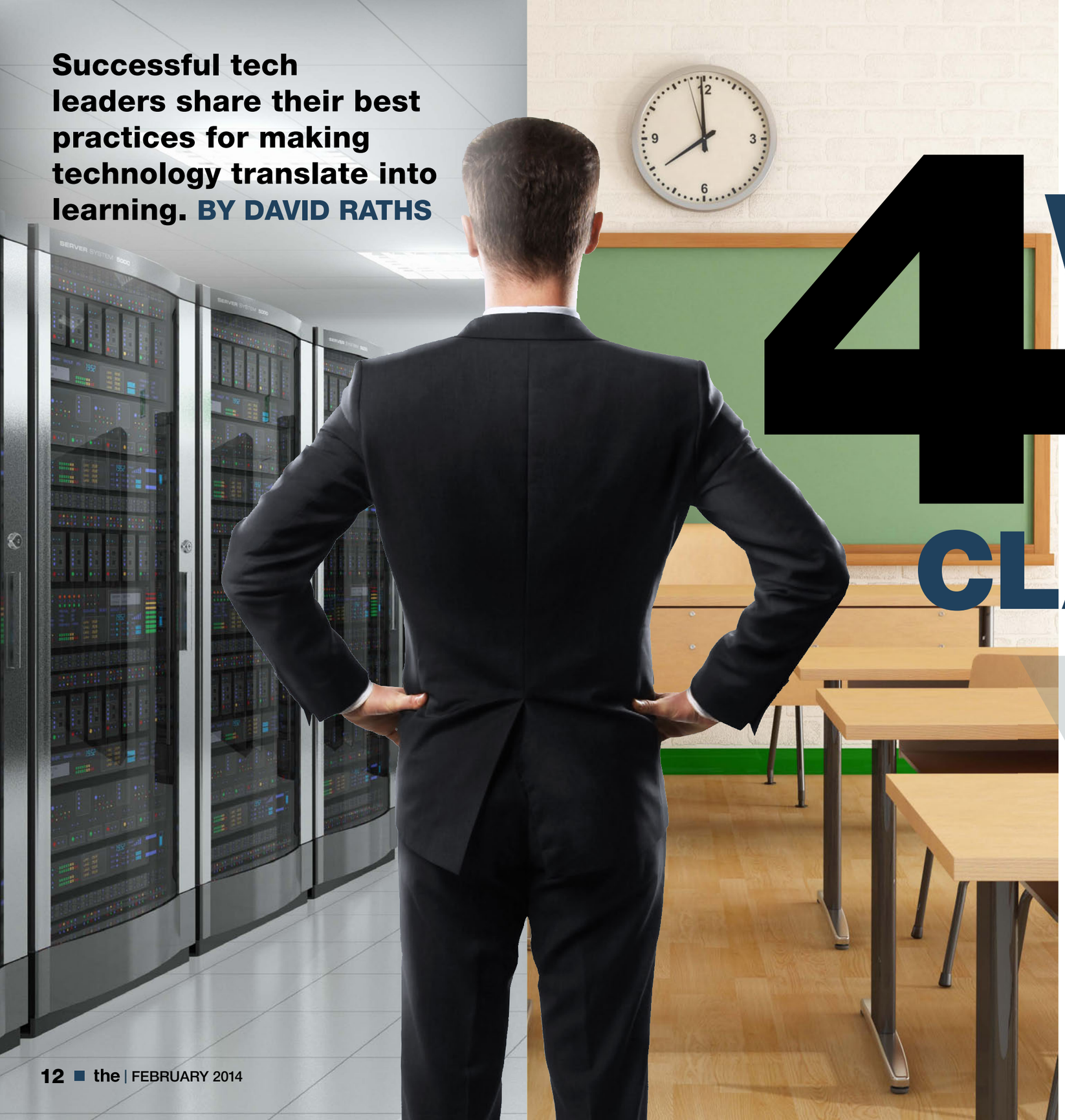
"I'm not talking about one student. I'm talking about a group of students learning and interacting in a circle at the board with the teacher behind them, just facilitating. They're responsible for their own learning, teaching other students what they've learned or finding out things on their own as a group. It's an exciting time in education." the

Marilyn Gavitt said the new projectors can create "a group of students learning and interacting in a circle at the board with the teacher behind them, just facilitating."

Dian Schaffhauser is a senior contributing editor based in Nevada City, CA.

NEXT:
4 ways CTOs can impact the classroom

Successful tech leaders share their best practices for making technology translate into learning. BY DAVID RATHS



4 WAYS CTOs CAN IMPACT THE CLASSROOM

YEARS AGO, typical K-12 IT leaders came up through the administrative ranks and focused on keeping computers and business applications running. Whether they were called CTOs or CIOs, they had compartmentalized skill sets that tended to favor technology over teaching. In 2014, however, the role of chief information officer or chief technology officer is just as likely to go to a former teacher or principal with an interest in finding new ways to harness technology to collaborate with curriculum and assessment leaders.

Indeed, when the Consortium for School Networking (CoSN) surveyed 250 IT leaders in 2013 about their key concerns, 65.7 percent of respondents cited the change to a student-focused BYOD environment, while 39.8 percent mentioned the need to break down silos in their districts. CoSN noted that these results "show that IT leadership is clearly focused on the education and learning environment in a district, rather than the business environment, despite their budgetary challenges."

What separates CTOs who play a significant role in teaching and learning from those who don't? *THE Journal* asked four school district technology leaders about how their job responsibilities are changing and how they have broken down barriers between curriculum and technology departments to create a culture of innovation in the classroom.

Remove Roadblocks

Tom Murray believes that one of the biggest problems school districts face is a disconnect between curriculum and technology departments. "We want ours to work in lockstep," said Murray, director of technology and cyber education for the **Quakertown Community School District** in Bucks County, PA, which has 10 schools and about 5,500 students. One way he has addressed the problem is to embed an employee, Chad Evans, in the curriculum department. "His title is 21st century learning facilitator, and his role is to bridge the gap between curriculum and technology," Murray explained.

Murray started his career as a classroom teacher and was a principal for five years before moving to the technology department three years ago. "In my experience, many directors of technology understand a lot about networking and infrastructure but don't understand how technology impacts what takes place in the classroom," he said, adding, "It is important for the technology executives to spend time in the classroom, especially if they don't come from a teaching background." He believes they shouldn't make decisions from a district office without understanding the true impact those choices can have in a kindergarten class.

Murray said his job is made easier because his superintendent, Lisa Andrejko, is tech-savvy herself. "She has a vision for 21st century education, and pulled me from a principal's job to be director of technology and cyber education to help establish that," he said. "I liked it because I can take advantage of my passion for technology — but technology in the hands of students to make a difference in their education."

Murray is comfortable wearing two hats at once. "On the infrastructure side of things," he said, "I rely on the strong team we have to make sure we are a great customer service organization." But he also challenges the traditional technology department "lock it and block it" mentality. "That is outdated, I believe. One of our goals is to remove roadblocks and to stop saying, 'You're not allowed to do that.' With students, we focus not on acceptable use policies but on responsible use. We want to teach digital citizenship. We are not going to set policy for the 2 percent who are knuckleheads. We are setting them for the 98 percent and then deal with any scenarios as they arise."

At the same time, Murray stays involved in teaching through Quakertown's "cyber school" initiative. "Our students can schedule any combination of face-to-face and cyber classes that meets their needs," he said. All the courses are designed from the ground up, taught by Quakertown faculty and analyzed by the director of curriculum. According to Murray, since the initiative launched, "We have seen a 10 percent increase in graduation rates and the highest student achievement levels ever."

Just as the district offers differentiated learning for students, it also offers differentiated professional

development for teachers. “We want teachers to have a say in professional development, to identify things they need help improving and work with their supervisor to develop a road map of how they are going to get there,” he said.

Murray is also a big proponent of using social media to meet with other educators from around the globe. He compiles a list of weekly Twitter chats in education and helps moderate an EdTech chat that brings together 300 or 400 people to talk about topics such as resource-sharing or how to challenge people’s thinking. “So I get to connect with a lot of people who are smarter than I am and challenge my thinking. We push each other,” he said. “That’s how you grow, rather than sitting in a workshop where someone talks at you.”

When it comes to exploring ways to use technology, Murray leads by example. “To create a culture of innovation, you have to get administrators to open up about what they are learning,” he said. “Have them write blogs. The best administrators are transparent about their own development.”

Focus on What Students and Teachers Need

When you speak with Scott Smith, he makes one thing clear about the **Mooresville Graded School District** (NC): Technology is not driving the bus. Technology is secondary to a focus on what teachers and students need. Smith’s title is chief technology officer, but as a former teacher with an Ed.D. in curriculum and instruction, he said, “My goal is to focus on technology’s impact on the teaching and learning environment.”

For several years, the district has had a 1-to-1 laptop program for all staff and all students in fourth through 12th grade, as well as wide deployment of digital content and interactive whiteboards. Mooresville is

not a rich district, but it has made use of what it has. Out of 115 districts in North Carolina, it is 100th in per-pupil expenditure and third in academic achievement, Smith said.

To keep his ear to the ground, Smith goes on regular classroom walkthroughs with the executive directors of curriculum and instruction. "We walk through an intermediate school together, classroom by classroom, and then compare notes when we come out," Smith explained. "Perhaps one teacher is doing great things with the digital resources, and that concept could be shared with another teacher. In fact, we have formalized that process a little bit by creating a Google Form for each class that the executive director and I both fill out and then compile our ideas." Those observations are shared with the teachers. "It is not a gotcha exercise," he said. "We share our notes with principals, teachers and with the seven instructional technology facilitators."

Smith's advice is to work on breaking down barriers. "In education, it is easy to get so siloed that you miss opportunities for collaboration," he said. "Things that work in elementary schools may also work in secondary schools, but we have to have them working together, and technology can bridge that gap sometimes," he explained. "For instance, we use Discovery Education online streaming content. We have to make sure we are getting strategic alignment across the district to get as much out of that as possible."

Smith makes sure that communication goes beyond just collegiality and transparency to actually solving problems. Mooresville holds quarterly data meetings at which administrators can drill down on goals and objectives. As an example, he said, "We can look at which teachers' students are doing well in fifth-grade science. I gather comments about the technology aspect such as a math program we are piloting. I can use these comments about its value when we are considering budgeting for it later."

This type of collaboration may be harder for technology executives who don't have the same educational training and background that he does. "IT folks can be black-and-white about things. Sometimes I have to tell my staff that I know something isn't what makes the most sense to you from a technology standpoint, but just do it because it is best for the kids."

Listen First, Speak Later

Kevin Schwartz, chief technology officer at **Clear Creek Independent School District** in League City, TX, has been busy with a 1-to-1 tablet implementation since he took the job in 2012. After working through a 1-to-1 rollout at his previous district, he realized that there are two ways to go about it. "You could have one charismatic person, either the CTO or a superintendent, who is the pied piper and really takes the whole project on their shoulders," he said. "Or you can do the harder thing, and that is build consensus and a community. We chose the latter and got regular structured conversations going early on."

In fact, his approach upon arrival at Clear Creek, a district with 40,000 students, was to do a lot of listen-

SOCIAL MEDIA MAVEN

VIDEO: Quakertown's Tom Murray advises first-timers on using Twitter to connect with and learn from other educational technology leaders.

ing. “People started asking me for my vision, and I kept saying, ‘I have to hear that from you.’ ” He said it enough times that people started to take him seriously. When teachers and administrators expressed their desire to proceed with the 1-to-1 program, he got them deeply involved in every stage of the planning process. “When this plan was presented to the school board, it was the curriculum leaders and deputy superintendents all speaking before me,” Schwartz remembered. “I was the eighth speaker, and I could explain how we are going to do this.”

Schwartz said his IT department needed to change to reflect a tighter focus on student learning. There had been turnover and instability in the CTO position before he arrived, and morale had suffered. “I had 100 people who behaved like abused children. They were great, smart, talented people, but they had learned some bad habits and had to do some healing,” he said. “But by focusing on student learning instead of the department, it quickly improved. Some people didn’t like it and left, but all the negative feedback is gone.”

Schwartz suggests that CTOs consider two key things:

1) Focus on why, then how, then what. “I say ‘Think about the device last,’ ” he said. “Everyone wants to shortcut that process of thinking about why we are doing something and focus on which device to buy. I say build buy-in and that question of which device makes most sense will answer itself.”

2) Build cross-functional teams. “IT aspiring to align itself with the goals of the business does not produce the best outcomes,” he said. “I think truly successful CTOs do not think of technology as a utility to apply to the business. It’s better to build teams with curriculum leaders. That is easy to say, but hard to do — exhausting to do. But it’s worth it.”

Build Consensus

The tagline of Matt Federoff's e-mail signature says it all: "Technician by trade, educator at heart." Federoff worked as a classroom teacher for several years, then as a part-time teacher and part-time technologist before becoming the CIO of Arizona's **Vail School District** in 1999.

When he was working in the classroom, Federoff knew that teachers were doing some interesting things with technology, but they were often isolated from the IT department — or worse, perceived as an annoyance or a threat. Federoff was concerned that these classroom innovators were not having any systemic impact.

When he took the IT leadership role in his district, Federoff made a point of forging connections between curriculum and IT. "We had to find the right reverence and respect for each other," he said, not to mention learning to speak other's languages. "I say to my curriculum director, 'I can go to the ASCD conference and understand what they are talking about. Could you say the same if you went to one of my technology conferences?' "

Both sides have their own jargon and both can be insular, Federoff said, yet they must work hand-in-hand. He learned this the hard way several years ago. "Our curriculum development team went out and purchased performance benchmarking software without vetting it with IT," he said. "It turned out to be out of line with what we could support. That was a real 'aha moment' for us and for them. They never brought IT in to determine whether this program runs on what we have now," he said. "But I am hesitant to point fingers because when IT was highly insular, the executive leading it wasn't interested or thought he wasn't qualified to make a decision about that type of software."

When it comes to day-to-day operations, Federoff believes that the IT leader should be in charge of both administrative and instructional technology. "You can have employee lieutenants in each world, but they should be unified under one IT leader," he said.

He recommends that CTOs should start by taking the curriculum director to lunch and asking about the challenges the district faces, just as any IT executive has to understand the business he or she is serving. Are reading scores low at one school? Is absenteeism a major problem? Which schools are performing well on state tests?

Technology execs must learn how to collaborate in new ways. "Technology is a meritocracy where the smartest guy in the room usually gets his way," Federoff said. "But educational leadership is not like that. It is about consensus-building among five or six people. So when the tech guy joins that conversation, he has to be good at team-building to get things done. It is a different mindset."

Vail's "Beyond Textbooks" initiative is a great example of how the district likes to work. Debbie Hedgepeth, the assistant superintendent of curriculum and professional development, came to Federoff with a specific problem of moving curriculum guides from paper to a website.

"Once we did that and got beyond just static documents, we saw an opportunity to do much more by having the teachers start adding standards-aligned content that they had created," he said. "The magic happened when we could harvest the teachers' enthusiasm and crowdsource it and populate it with their content. We went to fix a specific problem and that opened up to interesting new possibilities. After it was developed, we went back to develop some best practices and formalize processes. Now it is being used by 81 districts and is the largest digital content provider in Arizona." the

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NEXT: Protecting mobile devices

Elaine Sanchez Wilson

How to Protect Your Mobile Device Investment

After spending millions on 1-to-1 rollouts, districts are using a variety of products and practices to safeguard their devices against damage by students and teachers.

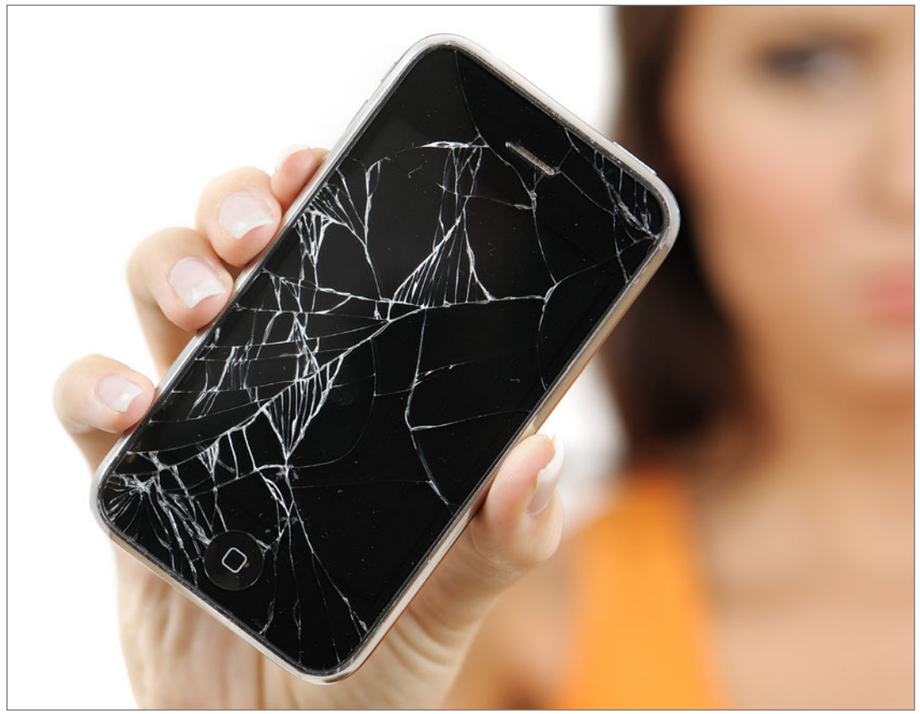
With schools around the country — including major urban districts like **Miami-Dade**, **Houston ISD** and **Los Angeles Unified** — rolling out 1-to-1 initiatives, hundreds of thousands of kids (and their teachers) are handling new mobile devices. To those in the classroom, these are learning tools, but to school administrators, they are major investments that need to be protected. So while data security may grab the headlines, tech leaders are also engaged in the more mundane task of choosing cases and teaching best practices to provide physical security for their mobile devices. Here's how they're protecting against breakage, and what they're doing when accidents happen.

Taking Care of Tablets

In the **Rowan-Salisbury School System** (NC), approximately 20,000 students in 35 schools have access to roughly 15,000 iOS devices, thanks in large part to a grant from the Blanche & Julian Robertson Family Foundation. One elementary school, three middle schools and one high school have adopted 1-to-1 iPad programs for their students, as have the fifth grades in all 20 elementary schools, the science classrooms in all seven high schools and the sixth grades in four middle schools.

The first mobile devices to arrive at the district in 2008 were iPod Touches, which participating high school students were allowed to take home. Now that the iPod Touches are being replaced with iPads, the district is planning to keep its devices in school. "You're looking at a $200 device going home versus a $500 device going home," said Phil Hardin, the district's director of instructional technology. "We are trying to do some restructuring to allow that. However, we do have circumstances now where they can be checked out to students for special situations to go home."

Part of that process involves ensuring that each tablet has a certain level of physical protection. With the plethora of cases in a saturated iPad accessory market, districts have a wide range of competitively priced options. Although it varies from building to building, the majority of iPads in the Rowan-Salisbury district have protective covers from Monoprice. The cases are priced in the $14 to $17 range. Hardin



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described the cases as having "a somewhat leather-like but rigid cover, but it allows you to fold it completely open." The back of the cases has an elastic band that students can slide their hands in. "If the teacher is walking around the classroom or the students get up to make a presentation," Hardin said, "they just quickly slide their hands, and the elastic band holds it pretty securely." Furthermore, the cover lets the iPads stand up at an angle. The school system's Exceptional Children's Department, which comprises students with special learning or physical needs, use a more heavy-duty, rugged case from Otterbox.

Seth Kussmaul, a customer service specialist in the information technology services department of **St. Charles Community Unit School District 303** (IL), assessed a variety of cases for the district's 3,000 iPads. These tablets are distributed among 13,000 students in 17 buildings, including an elementary school that currently has a 1-to-1 program in place.

Some of the cases were too costly, while some didn't fit into the syncing carts; others simply were not protective enough, he said. The district initially settled on magnetic Apple Smart Covers, but after a higher-than-desired number of breakage incidents — particularly at the 1-to-1 school — the school system reevaluated its case selection and made the switch to Gumdrop. Recently, it has looked into cases from i-Blason to enhance efficiency.

Kussmaul explained, "We do an inventory with a bar code asset tag, and we didn't have a way to do that with the Gumdrop cases without modifying them — essentially disassembling and double-checking everything," Kussmaul explained. "It was the same for the libraries — when they checked the iPads out to students so they knew who had them, they had to disassemble them, find

out which device it was, and associate that tablet with that student. This other company has a cutout in the back of it, and that lets us put the bar code right there. We can just scan it, which makes things a lot easier for our inventory and for student checkout at the building."

Two Cases for Every Laptop

iPads aren't the only devices that need protection. At **Pascack Valley Regional High School District** (NJ), every student and teacher has access to a brand-new MacBook Air. The school system began with another vendor with good software but terrible hardware, said Christopher A. DeNoia, the district's network administrator. "It was very flimsy and delicate, and in the hands of students, it didn't last very long," he said. "We ended up going back to the market and trying to figure out another vendor who would give us both hardware and software that would be capable for students. That's when we ended up getting the contract with Apple."

At the time of purchase, DeNoia asked for recommendations for a durable case, and he was immediately directed to Speck. The district uses a clear case that provides abrasion resistance and protection from dirt. Students are also issued another case, from Brenthaven, that is padded and reinforced on all sides. DeNoia said that because of this additional protection, if a laptop is dropped from desk height, it likely wouldn't be affected.

"Brenthaven is a company that we had history with," DeNoia said. "We went with them a couple models ago with our other computers. When we went back to them and told them we were getting new computers, we asked if they had anything to offer, and they said yes."

As network administrator of Pascack Valley Regional High School District, Christopher DeNoia chose a case that would allow a laptop to survive a fall from desk height.

Kid-Proofing or Teacher-Proofing?

Despite every precaution, mobile devices are bound to suffer the occasional tumble, nick, screen break or coffee spill.

Ann Dunkin, the chief technology officer for **Palo Alto Unified School District** (CA), which has 3,500 iPads distributed to kindergarteners through 12th-graders, has found that teachers and administrators — and not students — are mostly to blame for damage to the district's tablets. "We teach our kids to be really

careful with them and not to bring any food or drink near them," she said.

Hardin agreed that teachers do more damage. "Most of our breakage comes from the adults," he said, adding that his district has a relatively low breakage rate when you take into consideration the sheer number of mobile devices that it owns. "It typically is a screen break, and in most cases, it's an accidental drop, where the tablet or tablets fell out of their hands or slid out of the protective cases," he said.

Not every school in the Rowan-Salisbury district has purchased cases for their iPads, and one might think that this lack of protection is particularly risky given that the devices are in the hands of elementary school students. However, Hardin said he recently visited a second-grade classroom that boasts a damage-free record with their iPads. "They've been reminded every day to use two hands, don't run and be careful, and they have absolutely no breakage. Second-graders take a lot of ownership in the classroom, and that's what we see: If that ownership piece of classroom management is there, the devices are maintained better."

What Happens When It Breaks

While inspiring feelings of ownership can make students more careful with devices, so can establishing policies that clearly state the consequences of damage. At Palo Alto Unified, if a student accidentally breaks an iPad, then he or she gets one "free pass." "We certainly have a written policy that says what happens if they lose it or break it, but we tend to give staff and students both one chance," Dunkin said. "After that, there are varying types of consequences. Our agreement with the students is: If they break it, they are to pay for the damage. If they can't afford it, they can work it off." For more on how this policy works, see the video at left.

At St. Charles, students are only liable for damage that happens when they take a device home. "There's an agreement that the parents sign in order to be able to have their student take them home," Kussmaul said. "They are made aware of that up front before anything could go home. It's not a requirement, so they can opt out."

If a device's cover fails to do its job in the Rowan-Salisbury School System, the district has one last layer of protection: good warranty coverage. "Our purchasing standard is to automatically buy the AppleCare Extended Warranty for all of our devices for a total of two years' coverage," Hardin said, adding that if damage is determined not to be accidental, then the guilty party must pay the cost. According to Hardin, having AppleCare "makes the repair cost very reasonable as compared to not being covered. For around $49, you get two repairs, as opposed to paying a repair of typically $180 if a screen breaks." the

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EARNING THEIR UPKEEP

VIDEO: Ann Dunkin, CTO of Palo Alto Unified, reveals the most common cause of damage to her district's iPads, and tells how students can work off the cost of repairs.

NEXT:
7 apps to help teach literacy skills

7 APPS THAT TEACH LITERACY SKILLS

By Katharina Boser
& Sarah Wayland

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Visual and sonic aids can help students with language disorders improve their reading, writing and speaking.

MOBILE DEVICES can help students who have trouble communicating orally by allowing them to converse using pictures and the written word (what's known as augmentative and alternative communication, or AAC). Any number of apps can facilitate AAC, but some of them are particularly well-suited for helping students with language disorders learn how to read and how to effectively express themselves in writing. Below, we review some exciting new features in seven apps that teach these skills.

VizZle

VizZle's portal called Teach lets you organize, customize and launch interactive instructional academic lessons on the VizZle Player (free in the App Store). Lessons can then be used on PCs, Macs, touchscreens, interactive whiteboards and within Player apps for Android tablets and iPads. Families, school staff and therapists who subscribe can share lessons and data on student progress. (Yearly rates start at less than $500.) A shared library contains educator-approved audio, video, photos and line drawings that you can customize with appropriate behavioral supports to make it fun for students. These resources cover social skills lessons in addition to an array of academic subjects, many of which are aligned with the Common Core. The app has a visual schedule built in, with a timer in the corner to show how much time is left. Students can track their progress with game boards that list their scores.

A new set of materials for teaching reading includes activities that break words down into letter and sound pairings, while also showing how to combine those sounds to form words. Additional activities reinforce word comprehension. Teachers can add a quiz to check that the student understands; VizZle allows you to layer phonics, pop-ups and quizzes in whatever way works best for the child. The Phonics+ template is also great for teaching spelling or vocabulary words. You can use any list, from basic CVC words to SAT vocabulary, and set the lessons up to emphasize meaning, spelling or both.

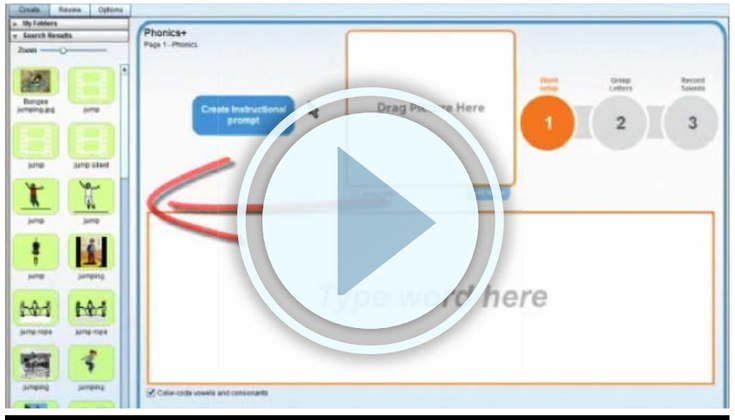
Other new features include switch accessibility, with either automatic or two-step switch scanning; a redesign of the Build-a-Book application that allows you to record yourself reading a book so your student can listen and read at any time; and bigger audio and video buttons.

Crack the Books

Crack the Books is a standards-based, core-curriculum-aligned digital book series, with both interactive elements and universal design accessibility features. Designed for students at all ability levels, the interactive books in the series can be adjusted for reading level, from first grade to eighth grade, so students in a class can experience the same content while reading at their ability level. These books include beautiful photographs; video footage; interesting facts; animations and images; and interactive charts, tables and globes. Comprehension supports are built into the text, along with pop-up definitions for associated vocabulary. Users can adjust print size and customize voice-over options within the app to accommodate students with print disabilities or other limitations.

Currently, three books in the series include teacher resources with lesson plans, worksheets, activities and study guides. These titles, which cost $9.99 each, are *Pines to Vines* (about forests), *Sea Shores to Sea Floors* (about oceans) and *Blades* (about grasslands). Books available without teacher resources include *Aquatic Earth, Cycles of Earth* and *Parched Planet*.

NOW HEAR THIS



VIDEO: A video from VizZle walks educators through the process of creating an activity that teaches phonics.

AutisMate

Designed as an AAC for students who have trouble with oral language, AutisMate ($149.99 in the App Store) is an iPad app that offers a variety of visual supports, including visual scenes, visual schedules, video modeling, visual social stories and grid-based AAC. The app supports vocabularies ranging from simple to complex. While the visual schedules, video modeling and visual stories are all wonderful, we focus on communication skills, which are best improved using the Smart Scenes and Sentence Builder functions.

Sentence Builder uses grid displays that organize items by topics or by categories (such as people, places or animals); events and activities (such as birthday party, opening presents or cooking dinner) or speech categories (such as nouns, verbs and locations). Users can build sentences using these grids; switching back and forth between different grids is easy. For younger kids, or those who find the grid displays confusing, AutisMate has Smart Scenes (visual scenes) where teachers or parents can take pictures of a child's environment and place labels within those scenes. Scenes can be shared via iTunes and e-mail. AutisMate is in the process of building an extensive crowdsourced content library with premade scenes that will be stored in the cloud so users will be able to sync data across multiple devices.

In addition, AutisMate now offers a predictive keyboard and text-to-speech capabilities; new symbols are easy to learn because the app pairs the symbols used in Sentence Builder with the predicted word.

Avaz

Avaz ($99.99 in the App Store) is an iPad app for students who struggle to speak. It comes with 15,000 Symbolstix picture symbols and high-quality voice synthesis to help users create messages that can be read aloud or sent to others via e-mail, Facebook or Twitter. The picture symbols are color-coded and organized into linguistic categories. A user can choose from more than 80 topics sets, and a Core Words set is also available. Avaz

has some attention-grabbing features to help the user understand what they are doing, including icons that grow and then shrink in size when you tap on them. The app can also be set to say the selected word aloud before you move into the communication space.

Users can back up or synchronize vocabulary content on Dropbox. A search feature makes it easy to explore vocabulary words. By surrounding words with "conversation starters," users can quickly construct natural-sounding sentences; this also helps them learn how to effectively use such constructions.

Parents, teachers and clinicians can customize the app in a variety of ways by adding their own pictures to the picture symbol library, removing distracting content, controlling the picture grid size, controlling the speech output and using a high-contrast mode for students with poor vision. It comes with seven voices from Acapela, or you can record your own voice; you can even customize the pronunciation of unusual words. Avaz tracks therapy sessions automatically, and can be set to send the data to a clinician or teacher for later review.

An integrated picture and keyboard mode allows students who are ready to transition to text to alternate between the two modes seamlessly. Avaz's keyboard has support for saving and loading words and phrases, a Quick Response bar for frequently used messages and a picture-assisted text prediction capability for sight readers.

Clicker Sentences and Clicker Docs

When students are ready to move from learning vocabulary to writing sentences, Clicker Sentences ($28.99 in the App Store) and Clicker Docs ($30.99 in the App Store) can enable them to produce work they can be proud of while learning the key skills necessary for independent writing.

Clicker Sentences allows clinicians, parents or teachers to create sentence-

building activities using grids that contain the words required to build a sentence. Students tap words in the grid (a customized keyboard) to build sentences in the simple word processor, then hear each sentence automatically spoken aloud as they complete it, helping them identify any mistakes and make corrections. As the app reads the sentence, it highlights the currently spoken words by changing fonts, background color or text colors, depending on the user's preference. Learners can hear words before they write them to help them find the word they want. The app provides support for students at a range of levels. For example, in the early phases of learning to write sentences, students can see a completed sentence as a model that they can then copy. Later, the model sentence can be displayed in a pop-up that must be closed before they can continue.

Other options include an auditory model that requires the student to listen before writing and a guided-order activity for reinforcing left-to-right sentence construction in English. Users can add a picture to each sentence from a photo library or straight from the iPad camera.

The final product can be e-mailed or sent to any AirPrint compatible printer. A professionally curated learning resource bank offers a wide range of topic-specific Sentence Sets created by the curriculum team at the LearningGrids site.

Clicker Docs has many of the same features, but it is completely text-based. It includes a word predictor that suggests age-appropriate vocabulary based on the already-written part of the sentence, as well as a spell-checking functionality. Word Banks provide tabbed vocabulary support for a variety of topics. All of these features are completely speech supported. Teachers, clinicians and parents can customize the speed and voice of the text-to-speech, the word predictor level, and the contrast color schemes. Clicker Docs allows users to share Word Banks and documents across using Dropbox.

Abilipad

Abilipad ($19.99 in the App Store) is an iPad app for taking notes, creating lesson plans, importing photos and designing customized keyboards. An integrated filing system allows user to create folders to manage their notepads and keyboards. You can create customized keyboard layouts by assigning a letter, word, sentence or picture to each key, as well as an audio recording that plays when the key is pressed. The user can select the font and letter size displayed on the keyboard and can color-code each key. The keyboards are switch accessible.

The Adaptive Notepad provides a distraction-free writing space where you can compose messages. You can also add stock images or your own pictures into your notes. The app also includes a spell-checker and word prediction capabilities to help users with word-retrieval challenges. Users can set the font, size and color of the text as well as the background color of their notes. The Adaptive Notepad allows users to use any keyboard they wish.

Abilipad gives students the ability to read letters, words or sentences in their messages with text-to-speech as they compose using one of the 20 Acapela voices. The speaking rate is adjustable, and the words are highlighted as they are spoken.

The Adaptive Notepad lets you add or duplicate pages, reorder them and organize them into folders. You can e-mail text and images from a note. An extensive library lets you share keyboards, lessons and activities from others, so you don't have to reinvent the wheel. the

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Sarah Wayland is an RDI consultant-in-training and a special needs care coordinator at Guiding Exceptional Parents.

NEXT:
The digital divide hits home

Greg Thompson

The Digital Divide Hits Home

With more and more students using mobile devices for learning, districts are finding creative ways to provide enough bandwidth for everyone to do their work outside of school.

The Internet has reached virtually every American school, but problems of bandwidth and connectivity persist. Despite more than 17 years of government subsidy via E-rate and this month's pledge from the FCC to add $2 billion in funding, a recent Consortium for School Networking (CoSN) survey revealed that a whopping 99 percent of districts still "needed more bandwidth."

Rich Kaestner, project director for Washington, DC-based CoSN, attributed the bandwidth shortfall to a need to feed the digital beast. Digital curricula, 1-to-1 programs, BYOT initiatives and Common Core textbooks are driving a growing crowd of students and teachers online, both at school and at home. The big equity question of today is this: What can districts do about those homes that don't have Internet connectivity?

"A Big Distance for a Little Money"

In the rural areas of America, bandwidth problems revolve around price and availability. According to Kaestner, "Providers are not anxious to cover rural areas, because it's a big distance for a little money. To make it worthwhile, providers have to charge more, or have some sort of incentive to provide service."

While the E-rate program has helped to bridge this financial gap, John Harrington, CEO of Funds For Learning, believes that the program must adjust to changing times and burgeoning need. In 2013, Funds For Learning estimates that 8,169 rural school districts applied for E-rate funds. These applicants represent an enrollment of 11.77 million students at 33,693 school sites. Harrington said, "The challenge that rural schools (and every school that receives E-rate funding) are facing is that the program has not been adjusted significantly since its inception. We've seen the demand for Internet access triple, while the program itself has only increased about five percent in terms of funding support."

According to Harrington, many rural schools are looking to expand bandwidth by installing fiber optics, either between buildings or across parts of the community. "They have to negotiate right of way, or even crossing railroad tracks," he said. "That's where it takes a lot of work and leadership in the local community. It may take five years. In many cases, the community may look to bond funds or other sources in addition to the E-rate program to get that funding in place."

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E-Rate Doesn't Hit Home

Cell phone data plans, apps for tablets and home Internet access capabilities have changed radically since

the inception of E-rate. And yet, as of 2014, E-rate dollars may not be used to help students connect to the Web at home. In an era of online textbooks and online homework assignments, lack of home access can be a major problem.

When technology experts at **Barrington 220 School District** (IL) went looking for solutions, they spoke with Comcast representatives about Internet Essentials, a two-year-old program that has provided Internet access for 4,000 school districts and 250,000 low-income households.

Tom Leonard, superintendent of Barrington 220, a 9,200-student district in northwest Chicago, eventually embraced the Comcast program that offers a monthly $9.95 Internet fee for families with children on free and reduced lunch. Even though the rate is valid until the youngest child in a family reaches 18, there were still problems.

"For some families, $9.95 a month is still too much," Leonard said. "Also, one hardwired computer per family doesn't necessarily work in our world anymore. If I'm giving kids iPads and MacBook Airs to bring home, those are not hardwired devices. They work in a wireless environment. Even if you did hardwire one of them, you can only have one computer on that hardwired system at a time. You *need* a router."

Comcast eventually helped Leonard to work with Netgear, a manufacturer willing to donate routers to *every* family in the district with children on free and reduced lunch — about 750 routers in all. "We solved most of the problem," said Leonard. "Comcast would do the wiring free, and then our families would be hooked to a free router."

The only issue left was the $9.95 a month. "A community group called the Barrington Area Development Council stepped up and said they would privately raise the money to pay the $9.95 per month charge for at least the next two years for all of these families," reported Leonard.

Even with all elements completely free, some families in the district are still hesitant about accepting the new technology. Barrington officials were a bit surprised by the reluctance, but they have taken measures to explain their reasons. "Some of our families in poverty are culturally new to our environment, and they didn't necessarily know what they were missing in terms of Internet access," Leonard said. "We've had to have some parent/community meetings to explain the benefits of this, because even if something is free, if you don't understand there is a benefit to it, you may not want it. The school district's primary objective is making access available to students who are working through our educational program, but I think there is a collateral benefit to the parents, who may start getting on the Internet at other times to do other things."

Handing Out Hot Spots

In Forsyth County, GA, the the situation is different. The community is considered somewhat affluent, with a mostly suburban landscape, but also with wide swaths of open space that are deemed rural. According to Jill Hobson, director of Instructional Technology at **Forsyth County Schools**, "Sometimes it's almost worse when you do have a population that is affluent, because then it looks like you can't possibly need any help, because you have money." Even in a district like hers, though, "The reality is that the difference between the haves and have-nots is significant."

When Forsyth launched its BYOT program, many children brought as many as three devices to school. Kindergartners with an iPad, iPod Touch and laptop were not unusual. Even among the less fortunate, Hobson contended that attaining devices is not the biggest hurdle. "Many of them still manage to get a device," she said, "but what they don't have is Internet access at home, and we know that is a real problem educationally."

In the fast-growing county of Forsyth, which includes the Atlanta suburb of Cumming, there has

been an influx of people coming from other countries, and many come with little or no money for monthly Internet fees. This makes it difficult for their kids to do their work in such a tech-centric district. “We don’t buy textbooks,” explained Hobson. “Our movement is away from traditional learning materials, which makes it all the more difficult for some families.”

To help families keep up, Hobson and her colleagues work with the company Kajeet, which offers a portable WiFi hot spot called the SmartSpot. Deployment of the hot spots varies by school. Some send them home with students who apply for them, while others place them in media centers for any student to check out as needed. Michael Flood, Kajeet’s vice president of education markets, explained that the device essentially “lights up” a WiFi hot spot in a a 30-foot radius around itself. He added that SmartSpots are password-protected, and “connect to the 3G or 4G mobile broadband network, depending on what the network is capable of in the area that you’re connecting.”

All of the traffic that comes across the SmartSpot is routed though the company’s network infrastructure, which is integrated with each school’s carrier. This means that every SmartSpot user is subject to school Internet policy. “We don’t want to pay for kids to watch Netflix and Hulu on the weekend,” said Flood.

Whereas most wireless carriers sell their services on monthly rate plans, with overage charges if users exceed data limits, Flood said, “Our model doesn’t work that way.” Instead, schools start with a certain amount of data — say, 10 terabytes — in their account, and all users draw from that balance. Devices that aren’t being used don’t cost anything, and there is no fixed monthly subscription fee.

When it comes to the dreaded overage charges, Flood said, “If people are going over, you are not paying some higher overage rate. It’s just that that user is using more than another user.”

For her part, Hobson believes that Kajeet and similar solutions can be applied to other rural districts across the country as part of a plan to expand bandwidth to the home. “This may not be the solution for every single family that does not have Internet access, but it does work for some,” she said.

She said she has been impressed by how little frivolous Internet use she has seen. “I am blown away by what kind of usage we are getting. They are accessing our learning platform and getting to the materials that teachers are posting.”

When it came to funding, Forsyth County relied on private donors to pay for the SmartSpots. “A local doctor and his wife here in our community felt moved to give, and they did fundraising and identified BYOT as their focus,” Hobson said. “They had a golf tournament, plus a raffle. We were very fortunate to have them donate about $30,000 to us for the continuation of BYOT Equity.”

Whether in an urban or rural setting, technology seems to regularly outpace funding, and John Harrington thinks that will be the case for a long time to come. “The Internet bandwidth will never be enough. I’ve seen presentations where there’s a hologram in front of you, and it’s a professor giving a lecture, and it looks like he is actually standing in front of you ... these sorts of things take tremendous amounts of bandwidth. It will never be ‘mission accomplished.’ ”

Hobson agrees that the fight to get Internet access into the homes of all children will likely be a yearly struggle, but she believes it is worth the effort. “I want every child who attends a Forsyth County School to have the same advantages and learning opportunities — the same experiences,” she said. “Students who do not have connectivity outside of the school day are not having equal experiences. They are disadvantaged. Anything we can do to level that playing field, we have an obligation to do it.” the

Greg Thompson is a freelance writer based in Fort Collins, CO.

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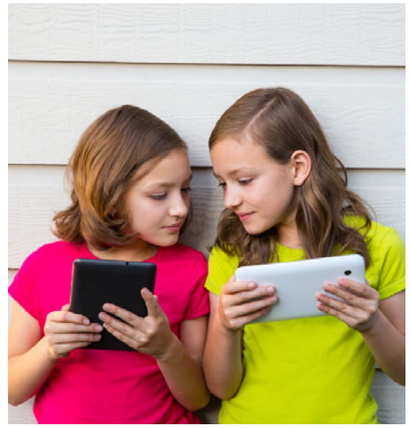

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