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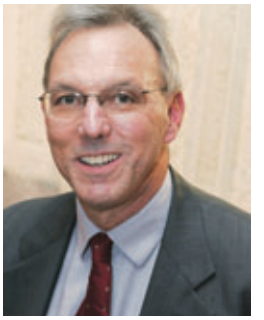

Breaking the QR Code

I HAVE BEEN executive editor of *T.H.E. Journal* since May. During that time, it's been a relief to meet and communicate with some of our readers. The reason? It's been nice to learn that not every single of one of you is more tech-savvy than me.

I'm always the last guy to get whatever the newest device is. Everybody I knew was absorbed in the Android vs. iPhone conversation while I was still fumbling around with the free phone Verizon gives you when you sign a two-year contract. My wife and I haven't actually downloaded a movie from Netflix yet—even though we've been paying the monthly charge for almost a year.

And I've been interested to learn that my wife, who is a teacher, is not unique in her experience with technology in the classroom. This year, she's got a new interactive whiteboard in her classroom. Before the fall semester started, she had a couple of training sessions with a frazzled tech specialist. It wasn't enough. So far, she's managed to screen a few movies; that's about it.

I know you know teachers who face this kind of a situation. (Maybe you are a teacher who is in a similar predicament.) We have great aspirations when it comes to using technology for teaching and learning, but we don't always have the greatest execution of those goals.

When I say "we," I am including *T.H.E. Journal.* We are not a how-to guide, but we do aspire to guide you through some of the issues and challenges you face in creating technology-rich 21st century schools. And sometimes we actually take advantage of some of those ideas ourselves.

Turn to page 27. You'll find a Quick Response code. Snap a picture of it with your smartphone using a free app like QR Reader, and you'll be connected to a list of citations for the sources our guest columnist, McREL's Andrea Beesley, uses in "Keeping Rural Schools Up to Full Speed."

The first QR code, sort of an advanced bar code, was created for Toyota in 1994. The automotive industry used them for years to keep track of the millions of parts required to put cars together. Because they're so easy to read and have such large storage capacity, other segments of society have begun to use them too—even education. Type "QR code" into an article search at *thejournal.com* and you'll learn how science teacher London Jenks is using them in his classroom at **Hot Springs County High School** in Thermopolis, WY. Or you can find out about the prize that history teacher Melanie Wiscount won for the innovative way she uses QR codes in her classes at **Palmyra Area High School** in Palmyra, PA.

WE CONTINUE TO LOOK FOR WAYS TO MOVE BEYOND THE PRINTED PAGE TO SUPPLY YOU WITH THE INFORMATION YOU NEED TO DO YOUR JOBS.

And you can look for more of these codes in future issues of our magazine, as we continue to look for ways to move beyond the printed page to supply you with the information you need to do your jobs.

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

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REACHING THE STAFF
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[news]

K-12 Parents Give STEM Education a Solid 'B' Average in Harris Interactive Survey

A NEW SURVEY polling parents of K-12 students on science, technology, engineering, and math (STEM) education reveals a reasonable amount of satisfaction among respondents with current efforts, leaving some room for improvement.

For the survey, custom market research firm Harris Interactive surveyed 854 parents of K-12 students, on behalf of **Waggener Edstrom Worldwide** and **Microsoft**.

Among the survey's findings, only half (49 percent) of parents surveyed agreed that STEM actually is a top priority for this country, despite an overwhelming majority (93 percent) who said it should be. But when asked to grade their child's school on its ability to prepare students for STEM careers, most gave schools an A (28 percent) or a B (41 percent)—the latter being the average grade. Only 3 percent would flunk their child's school. The survey also found that parent respondents were generally willing to help their children succeed in STEM education, with half (50 percent) hoping to see their children pursue STEM careers and 61 percent indicating that they were willing to spend extra money to help their children be successful in their math and science classes.

The biggest obstacle may be getting students interested in STEM careers before college. Less than a third (31 percent) said their children favored a STEM subject in school, and 42 percent said their children wanted to pursue STEM-related careers. A separate, related study conducted by the same firm, with 500 college students pursuing STEM-related degrees, found a majority of those students (78 percent) developed an interest in their chosen field before they entered college.

ON-DEMAND WEBCASTS

thejournal.com/pages/webinars.aspx

Back to School Safety Forum: This Year's Security Risks, Threats, and Safety Solutions

A panel of experts from ADT discuss the threats and safety risks facing America's schools this upcoming year. **Sponsored by ADT.**

How to Select a Tablet

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

Secrets of High-quality Interactive Lesson Content

Education experts reveal the primary features of high-quality interactive lessons and provide real-world application of these principles. **Sponsored by Mimio.**

{win big!}

Grand prize winners **Piner Elementary School** (Morning View, KY), **Spaulding School** (Gurnee, IL), and **St. Veronica Catholic School** (Chantilly, VA) each won $40,000 "21st century classroom" packages from **CDW-G** and **Discovery Education**, including notebook computers or tablet PCs, an interactive whiteboard, student response system, a projector, a document camera, and more. The schools also received $5,000 digital media grants.

Twenty-three additional winners will receive either an interactive whiteboard, digital camcorder, or digital signage solution. Another 17 schools won a new Flip Cam.

"The wireless lab will help our students use the curriculum in ways that are meaningful and natural to them and help us develop our students into global learners," says Christi Jefferds, principal at Piner Elementary School.

For more information on this year's winners and prizes, visit: *cdwg.discoveryeducation.com*.

[industry update]

The **Consortium for School Networking** (CoSN) is conducting a nationwide search for leading-edge school district leaders to share insights on innovative uses of new media in K-12 education, including social media, web 2.0, and student-owned mobile devices. Selected school districts will form a team of administrators and participate in an online community of practice (CoP) to foster peer-to-peer sharing of ideas, best practices, and challenges, with the goal of leveraging new media to reenergize, rethink, and reimagine learning. To learn more about the initiative, visit: *cosn.org/web20*.

Building on the release of *HMH Fuse: Algebra 1* in digital format earlier this year, publisher **Houghton Mifflin Harcourt** has released Common Core Editions of three titles in the HMH Fuse series through Apple's iTunes store, including Algebra 1, Algebra 2, and Geometry. The new editions also feature an integrated student response system that allows instant in-class interaction between the teacher and students.

School Improvement Network has launched Common Core 360, a training product designed to help educators understand and implement the Common Core Standards. Educators will have access to documents, a mobile app, and PD 360, an online professional learning community with more than 700,000 users.

Also included is the "Mapping to the Core" LiveBook, a multimedia digital book based on theory from curriculum expert Heidi Hayes Jacobs, which helps guide educators through the process of aligning curriculum mapping to the Common Core Standards.

Currently, two schools are having their implementation experiences documented for a series of videos to be released next school year. The company is offering extended licenses and free trial offers to early buyers. To learn more, visit *commoncore360.com*.

Education technology vendor **EduTone** has acquired California-based startup **K12 Checkout**, whose K12 Complete online storefront will be integrated with the EduTone Xchange platform, a storefront that acts as a hub for free and fee educational content. Customers then log on to Xchange for single sign-on access to the applications.

The merger will enable EduTone customers to streamline online payment processing and fundraising activities, and to offer a broad range of school-related products and services to local communities.

THEJournal.com Gets to Take a Test

FOR PEOPLE WITH DISABILITIES, reading websites, like the one your school's district maintains, can be a challenge. To make things easier, some turn to screen-reading programs, which audibly identify and interpret what's on the screen. Needless to say, some websites lend themselves more to screen reader browsing than others.

T.H.E. Journal decided to put its own website to the test, enlisting a volunteer web tester with the South Carolina Assistive Technology Program, which helps state agencies create accessible websites. Our tester examined both the home page at *thejournal.com* and an an article page, using ZoomText Reader from Synapse Adaptive, an assistive program that magnifies and reads web pages and other digital matter out loud. Here is his review:

The home page opens to a Flash presentation that I can't hear. I can thankfully see where the link is to close the box, but not everyone would have an easy time doing that.

At the top right of the home page, there's a Flash presentation that I presume shows an ad or a peek at the current issue of T.H.E. Journal*, which I cannot hear. To make things even more difficult, I keep accidentally triggering the sequence as I move my mouse.*

The article page, however, was quite easy for me to read. I was able to hover my mouse over the title and tagline to hear them, and then I started the App Reader feature to listen to the body of the article hands-free. I had no problems reading the article, which is definitely not always the case with article-based websites.

The web accessibility toolbar—an internet browser add-on—shows that most of the images have alt attributes, but I'm not sure which images those are. When I scroll my mouse over images on the page, I don't hear anything. The toolbar also shows a number of images with the alt text, "Click here to learn more." That text is not very descriptive of context, and I can't figure out which images they are just by scanning my eye around the page. I would have to look at the source to figure out where the image is.

Both the home page and the article page used heading elements—<h1>and<h3> —in a way that makes sense. The <h1> element contains the page title and logo, and <h3> contains article titles.

For more on what makes a website truly accessible, and for some helpful tips for a school website, read our online article "The Accessible (For All) Website" at *thejournal.com/accessible_website*.

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PROFILE

TRICIA FUGLESTAD, ART TEACHER, DRYDEN ELEMENTARY SCHOOL, ARLINGTON HEIGHTS, IL

>> MEANS TO AN END

To discuss how I use technology is to discuss every aspect of my curriculum. I teach digitally while the kids are creating physically. I also work with students who volunteer their time during lunch recesses to make movies—we call them Fugleflicks—that help to solve art room problems or teach an art concept to the rest of the student population. We're using video, an interactive whiteboard that allows kids to explore, and we have an online digital art gallery. We're doing so much with technology but it all makes sense—we're using it not necessarily because it's cool, but to help the students learn, explore, create, and share what they're doing.

>> FUGLEFLICKS

An art teacher had seen a movie I had made myself and asked if I might make one about taking care of paintbrushes, an issue that all art teachers share. Thus began "Young Sloppy Brush," the story of a once-handsome brush that succumbed to the evils of sloppiness in the hands of a careless artist. When I asked a group of 25 fifth-graders if they would like to take on that project, every one of them decided to give up recess to make it happen. They worked on a script and an original song, and put eyes on paintbrushes. They made the film in a little studio in the back of the art room. We posted it on my website and then entered it in a local festival, where it ended up winning. The kids were so excited to go on stage and explain the moviemaking process. After that, they were begging to make movies, and there were plenty of issues to be solved. It's become part of our culture now. Last year, our collection of Fugleflicks was nominated for an Edublog award. I thought it was amazing that these movies that we do on our lunch recess can actually make a big enough difference that other educators want to use them.

>> SPREADING THE NEWS

With our online digital art gallery, we're sharing what we make with the world. I also have a personal learning network. I'll tweet and post a link on my website to what we're doing, which allows others to connect to our classrooms and do collaborative projects. Because of our participation in Artsonia, an online showcase of student art, we got to be part of a project where 100 pieces of art from all over the country were shown on a 30-foot LED screen in downtown New York City. We had 10 of those pieces in the show.

>> THE LIGHT BULB MOMENT

I went to college with an electric typewriter, and when I graduated I still didn't know how to put together a resume on a computer. I was not a techie, and when I started teaching 20 years ago I didn't see how technology could enhance learning. But at some point, I saw that a TV could be connected to my computer and a light bulb went off. You mean I can take something that's on my computer and project it? Then I started to realize that with an internet connection, instead of showing the one print that I had of this particular artist, I could show a collection of artwork, and I could set it to music and make it into a movie. So I made it my goal in the year 2000, and every year after that, to learn how to teach digitally. I've become a huge advocate of technology for art teachers. Even though most of what we're doing is traditional art making, technology is helping us learn it. And it's also allowing the kids to do new things, like animate or paint on iPads, where the experience is completely different. The kids love it. Art for them is crazy fun.

>> CREATIVE SPARK

I was recently named 2011 Illinois Art Teacher of the Year and last year I won a 2010 PBS Teachers Innovation Award. It's really keeping me pumped up. I feel so lucky to be an art teacher. I have no textbook, just a curriculum full of concepts, and I get to invent any way I want to cover those concepts. It's exciting to get to be creative, and my excitement sparks my students. We're all just in a frenzy of joy.

MY TOP 3...

NETWORKING TOOLS

Artsonia (*artsonia.com*) "Hosts our online digital art gallery, giving my students a worldwide audience for their accomplishments and tools for connecting our classroom with their families."

Twitter (*twitter.com*) "I have learned so much from following smart, tech-savvy, enthusiastic, and innovative teachers from around the world in my personal learning network."

ArtEd 2.0 (*arted20.ning.com*) "This is a Ning that draws creative tech-loving art teachers from around the globe into a virtual community where they can share ideas and collaborate."

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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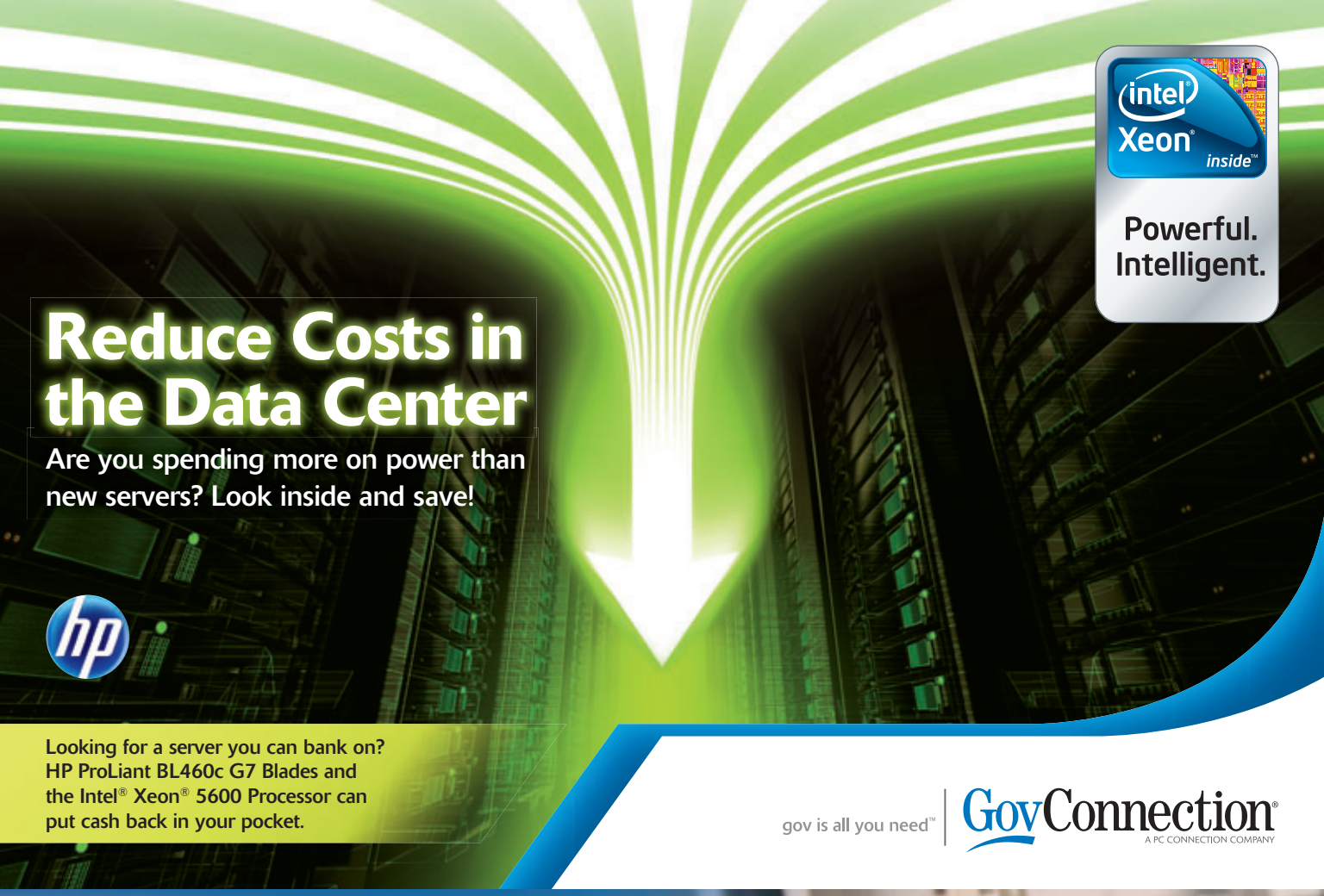

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John Harrington

Six Habits of the Highly Effective E-Rate Applicant

This year requests for E-Rate funding will be double the amount of money available, which is why applicants must be persistent, as well as timely and accurate, when they apply to the FCC for help with infrastructure improvements.

SINCE ITS INCEPTION in 1997, the Schools and Libraries Program of the Federal Communications Commission's Universal Service Fund, more commonly known as E-Rate, has committed more than $30 billion to offset the cost of certain digital and telecommunication services and products that are essential for schools and libraries to receive communications.

While E-Rate funding was originally capped at $2.25 billion annually, the FCC made the decision this year to increase the amount each year to accommodate the rate of inflation. The intent is to give applicants some of the purchasing power they lost due to inflation in previous years. Even so, applicants' budgets are tightening and demand is increasing. While $2.29 billion is available this year, demand for E-Rate funding for 2011, $4.6 billion, is twice that amount and the highest it has been since 2002.

Applicants may feel helpless in the face of a demand that is nearly twice the allotted funding, but they can and should know how to plan and prepare their applications in a way that increases their likelihood of receiving funding. To navigate the program and avoid costly funding delays or denials, applicants will need to accept that, while E-Rate is unlikely to go away, the program is always changing—and in ways that can be frustrating. Here is some guidance on how to approach your E-Rate application to increase the chances that you receive funds.

1) Avoid Unnecessary Delays. Higher demand on the E-Rate program is often accompanied by higher administrative scrutiny. Funding denials have always been a serious issue for applicants, but now funding delays are becoming equally serious. In an effort to prevent waste, fraud, and abuse, since early 2003 the FCC has scrutinized applicants—particularly large applicants—to a greater extent than during the first six years of the program. In some cases, applicants now must wait several years before receiving the approval necessary for reimbursements.

Therefore, applicants must be vigilant to avoid any unnecessary funding delays. They must be prepared for more intense reviews and ready to validate any requests. The best preparation for increased scrutiny is to be familiar with program rule changes and err on the side of caution.

2) File Early. In previous funding years, as many as 90 percent of applicants waited until the last month of the filing window to submit their applications, with as many as 60 percent of all applicants waiting until the last week. This procrastination often results in costly delays: Last-minute applicants receive their funding commitment decisions later than those who submit their applications earlier in the filing window.

In fact, the most significant factor in predicting whether an application will be funded before the start of the funding year is filing at least 30 days prior to the close of the current filing window.

3) Be Thorough on Item 21. Beginning with Funding Year 2011, submission of Item 21 Descriptions of Service must be received by the close of the Form 471 filing window (sometime in the spring). But don't let the new deadline cause you to rush through the Item 21 application. It should still be as clear and thorough as ever.

Item 21 provides the Universal Service Administrative Co. (USAC), which administers the program for the FCC, with information it needs to quickly determine eligibility and make a funding decision. If the Item 21 submissions are incomplete or missing pertinent information, the decision will be delayed and the number of Program Integrity Assurance (PIA) requests an applicant will receive before a decision is made will increase.

Applicants should be certain to include a detailed description of the products and services that would be funded, including specific detail including quantity, unit costs, list of billing account numbers, and anything else that might raise questions.

4) Bundle Strategically. In order to spread the funding around and avoid having the same large applicants absorbing the lion's share of Priority Two (internal connections and basic maintenance of internal connections) funds, USAC implemented the "2-in-5 rule." Implemented at the start of Funding Year 2005, school districts can only request internal connections twice out of every five years for a particular school site. However, even with the 2-in-5 rule in place, Priority Two funding is anything but a guarantee. Requesting Priority Two services is more than simply filling out and submitting a form. It requires a great deal of foresight and strategy.

Applicants should take into consideration future projects when thinking about making Priority Two requests. Priority Two requests, regardless of size and scope, will register as a strike against the 2-in-5 rule. Applicants thus should consider either applying for funds for larger projects first or bundling a number of projects at different sites together at the same time.

When considering applications, individual school sites can receive higher priority status (thereby increasing their likelihood of receiving funding) by way of a formula that takes into account the number of students who participate in the National School Lunch Program (NSLP) and whether the applicant is in a rural area. However, when projects are bundled together in an application, that formula determines an average priority status for all the sites to be considered.

Therefore, applicants may increase the likelihood of receiving Priority Two funding by bundling sites that would be considered a higher priority and placing sites that may not have as many students involved in the lunch program on a separate request. By bundling higher-priority sites together, an applicant increases the likelihood that at least some of its sites will receive funding.

5) Know the New Gift-giving Rules. USAC is beginning to focus closely on program abuse, particularly concerning gifts from service providers to applicants. Applicants and other school personnel now are prohibited from soliciting or receiving gifts or anything of value from a service provider who is participating in or seeking to participate in the E-Rate program. Additionally, service providers may not offer or provide gifts to any personnel involved in the process. As an exception, gifts or meals that are less than $20 in value are permissible, provided they do not exceed a $50 total value per funding year, per employee.

6) Retain Documents. E-Rate requires that applicants maintain all of the documents associated with a funding commitment for a period of five years from the last date of service. Forms such as the 470 and 471, RFPs, technology plans, all received bids, bid evaluations, bid scoring criteria, NSLP Data, evidence of CIPA compliance, and signed contracts should always be archived. A safe rule to adopt is: If it mentions E-Rate—save it.

The E-Rate program is changing and applicants must stay abreast of these changes in order to fully utilize the available funds and stay in compliance. By following these simple guidelines, you can make your application process more effective. the

John Harrington is CEO of Funds For Learning, an E-Rate compliance services firm based in Edmond, OK.

LINKS

- **Funds For Learning**
  fundsforlearning.com
- **Universal Services Administrative Co. (USAS)**
  usac.com

BE A GOOD STEWARD

Once an applicant has submitted the appropriate forms for reimbursement, if there are unused funds remaining from the committed amount, the applicant can release them back to the E-Rate program. By submitting a Form 500, applicants can return unused committed funds, allowing the Universal Service Administrative Co. (USAC) to commit the funds to other applicants, most likely for Priority Two requests. However, applicants cannot unilaterally redirect funds to other projects at their own schools or districts.

This "rollover" amount is beneficial to the program, especially to the applicants that otherwise would not have received funding, as it can be applied retroactively to past funding years. USAC recently announced that it has approximately $1.1 billion available for rollover. USAC can make recommendations on which particular year it believes the funding should be rolled over to, but the FCC is the final determinant on how unused funds will be disbursed. The FCC should announce how much of the $1.1 billion it will authorize USAC to carry forward within the next few weeks. Think of rolling over your unused funds as a karmic gesture—you might be the beneficiary of someone else's rollover another year!

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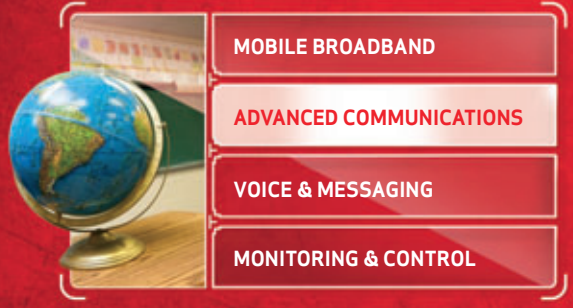

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By Geoffrey H. Fletcher

California high school interns work with "flexbooks" from the CK-12 Foundation, one of the first organizations to take advantage of the California Digital Textbook Initiative.

Driving Digital Change

Several states have taken steps to make adopting digital content easier for schools. Not all have been entirely successful yet, but their early mistakes can be guideposts for others considering the same thing.

DOES STATE POLICY really cause change in a school district? This may seem like a silly question—of course it does. If the state passes a law requiring students to have 24 credits to graduate, school districts must comply, and students do not graduate without 24 credits. Case closed.

But what happens when the policy's wording uses "may" instead of "shall," allowing, but not requiring, change? Do school districts take advantage of the opportunity provided by the "may" language, especially when it encourages innovation? As one might expect, it all depends, but it depends as much on the implementation of the policy by the state as it does on the district's choice.

Approximately a dozen states across the country, both adoption and non-adoption (or open territory) states, have changed laws or provided significant initiatives to encourage digital content. In some states—Texas, Arkansas, Iowa, Indiana, and Georgia—new policy has changed the definition of a textbook to include digital content, and to allow textbook funds to be used to purchase technology. Other states—California, Maryland, and Maine—have undertaken significant efforts with open educational resources (OER), which are free or low-cost materials licensed under a Creative Commons agreement that allows the materials to be reused, revised, remixed, and re-distributed.

While the policy changes in many of these states are very recent, making it too early to assess the quantity or quality of change, Texas, California, Virginia, and Indiana all have a few years under their belts since implementing their changes. Each of these states' changes has been previously chronicled in *T.H.E. Journal*. In short:

- The Texas legislature passed a bill in 2009 creating a commissioner's list for digital content and allowed some textbook funds to be used to purchase technology. It also passed a bill allowing the state to create OER, either through a contract or through materials created by certain institutions of higher education. This summer, Texas passed additional legislation that further modifies the textbook adoption process. Most notably it creates an instructional materials fund for districts (combining a textbook fund and technology allotment) to be used to purchase content, technology, professional development, and technical support.
- The Virginia Department of Education called for the creation of an OER supplemental physics book to address rapidly changing areas of the field.
- Former California Gov. Arnold Schwarzenegger implemented the Digital Textbook Initiative that called for submissions of free, OER textbooks in secondary science.
- The Indiana State Board of Education changed the definition of *textbook* to include digital content and to allow textbook funds to be used to purchase technology. The Indiana Legislature has since codified these changes and changed the vetting process for textbooks to allow local school corporations greater control and choice.

Drivers of Change

The impetus for change in these states each came from different policymakers, but a common driver for the changes was a more flexible use of funds in a very tight economic climate.

A second, related driver was increased efficiency. Testimony in legislative hearings in Texas from school district technology and textbook coordinators indicated that thousands of books are sitting in warehouses still shrink-wrapped on pallets. This obvious

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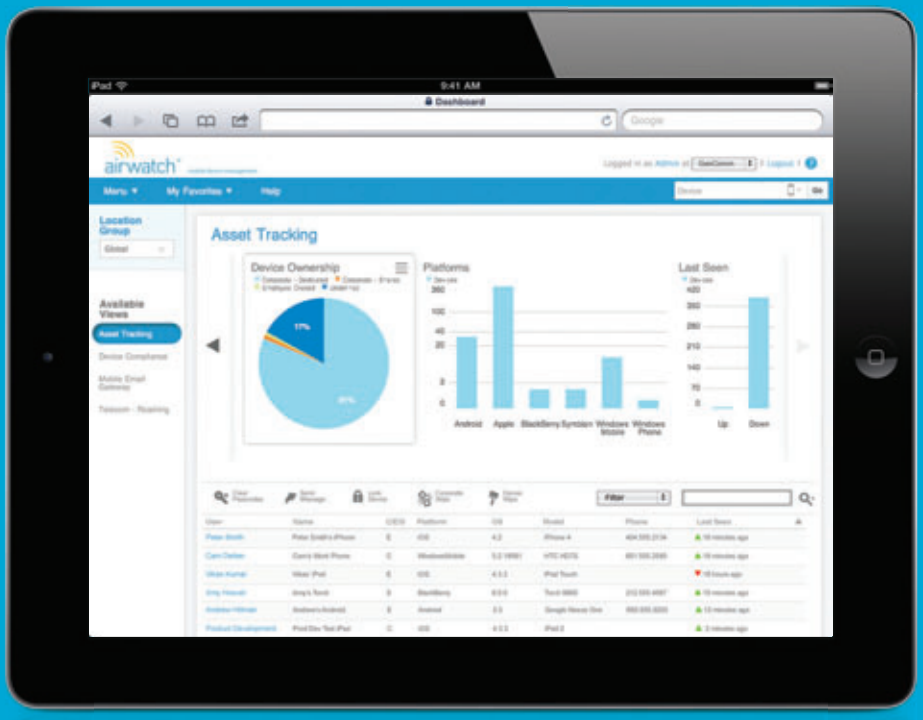

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misappropriation of state funds persuaded Texas legislators to provide greater flexibility to educators regarding textbooks and technology.

A third driver of change was the desire to tap into technology to create more engaging materials. This was particularly true in Indiana, where the State Board of Education sent a letter to school districts saying that the social studies textbooks submitted for adoption in October 2008 "...do not provide content that is interesting, engaging and supportive of effective learning."

Despite these compelling motivations for change, with one exception, the policies themselves have not resulted in the transformations originally sought. In Virginia, very few educators have used the supplemental physics book, according to Lan Neugent, assistant superintendent of technology with the Virginia Department of Education. In California, the Department of Education does not have a comprehensive database tracking adoption of secondary instructional materials, but the records it does have show that fewer than 20 schools have adopted the OER instructional materials from the Digital Textbook Initiative, and most of those were charter schools.

In Texas, the commissioner's list for digital content has not yet been fully implemented, and few districts have yet to take advantage of any aspect of it. For the OER contract component, materials submitted did not meet the Texas standards, and OER advocates have raised questions about how the call for submissions was conducted and the timeline provided, as well as the choice of subject area for those materials. Only in Indiana have school corporations availed themselves of the opportunity for innovation provided by a change in policy.

Lessons Learned

What can be learned from the way educational content policy was enacted in these four states? The State Educational Technology Directors Association (SETDA) has identified a number of lessons, four of which are highlighted here.

1) Quality is a primary concern. According to Neugent, few Virginia educators have used the supplemental book, to a large degree, because it was created by a variety of authors from various backgrounds with inconsistent editing and no common format. In California, Brian Bridges, director of the California Learning Resource Network, noted that "approximately 20 texts were submitted in the first phase, but only four met 100 percent of the standards." Failure to meet the standards is also the reason why OER submissions in Texas were not adopted.

2) Vetting of content must be flexible. As noted above, flexibility has been the one true hallmark of these changes. The supplemental physics book in Virginia did not go through the traditional vetting process. According to a Texas legislative aide who did not want to be quoted, the commissioner's list was created in part to avoid the sometimes arbitrary scrutiny of the State Board of Education. The new law in Indiana changed the vetting process from one that actually prevented some instructional materials from being adopted to one that allows districts to determine which materials to use, no matter what the vetting process determined.

3) Marketing and publicity are necessary ingredients. School district administrators in Virginia, Texas, and California all noted that the state-driven efforts didn't receive much attention within the districts. While the Digital Textbook Initiative received significant publicity in California and across the country, little sales or marketing activity occurred beyond notification of the availability of the materials. Curriculum leaders and teachers are accustomed to multiple marketing and sales pitches through different avenues when textbooks are up for adoption in their areas. If states are going to contract for or otherwise take a significantly different approach to creating and distributing instructional materials, they need to work with vendors to determine some sales and marketing venues beyond notifying school districts with a letter and posting the information online.

4) Having a vision for instructional materials is essential. One reason Indiana has experienced significant change in schools, as well as an accelerated shift from print to digital texts, is because all the policy leaders established a clear vision for instructional materials and communicated that vision. The State Board of Education publicly decried how non-engaging were the social studies textbooks that had been submitted and followed with a series of steps to address the problem, which included broadening the definition of *textbook* to include electronic materials, and providing schools with the flexibility to use textbook dollars to purchase technology. The commissioner supported the change, and the legislature followed with a law that took it a step further to provide flexibility in the vetting process. The message was clear and broadly communicated.

Streamlining Factors

As policies change at the state level and technology creates growing demand for open content, the shift from print to digital content is accelerating. In light of this, educators and policymakers might consider three factors to streamline the process in the future.

First, instructional materials need to be seen as an integral component of a larger reform package. Second, policy sometimes needs to be stretched to include implementation. Finally, our concept of instructional materials is in dire need of reinvention. The sticking point seems to be the inertia of the old, isolated vision of content. If states and districts could work with internet- and business-savvy experts to create a more modern, interconnected vision for content, then related areas, like professional development and assessment, might become more cost-effective and efficient. Then and only then will policy for instructional materials reach every district. the

Geoffrey H. Fletcher is the senior director of strategic initiatives and communications for the State Educational Technology Directors Association.

LINKS

- **"Making the Big Shift," June 2011**
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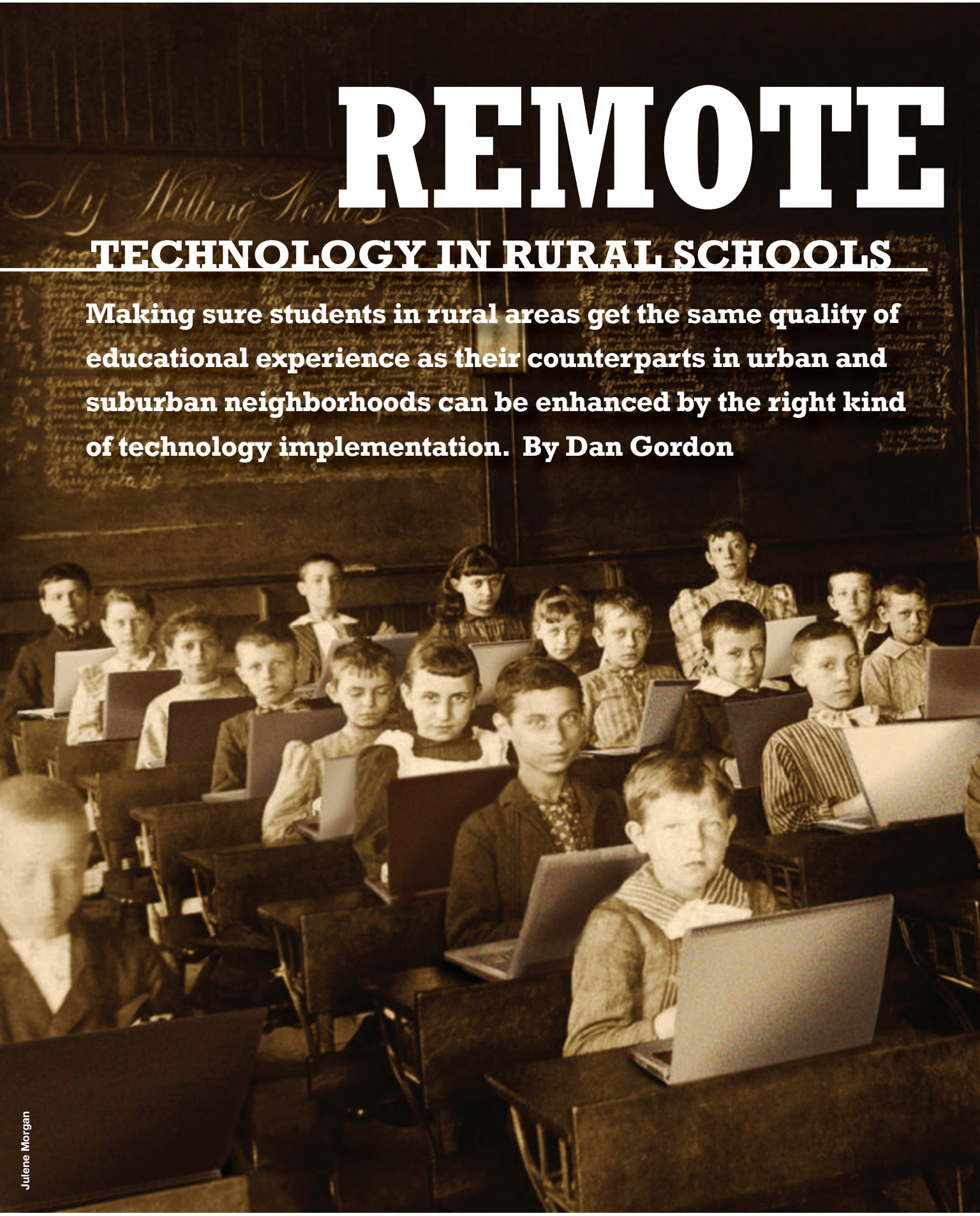
REMOTE

TECHNOLOGY IN RURAL SCHOOLS

Making sure students in rural areas get the same quality of educational experience as their counterparts in urban and suburban neighborhoods can be enhanced by the right kind of technology implementation. By Dan Gordon



Julene Morgan

LEARNING:

Editor's note: This is the second of a two-part series on how schools in different types of communities meet the challenge of implementing technology. To read about the challenges and solutions for urban schools, published in the September issue of T.H.E. Journal*, go to* thejournal.com/big-city-rules.

ALASKA'S KODIAK Island, a vast stretch of nearly 3,600 square miles of terrain in the middle of the North Pacific, sits roughly 300 miles southwest of Anchorage, separated from the Alaskan mainland by the Shelikof Strait. Offering breathtaking scenery, Kodiak is described on the island's official website as "…a place to slow down to the tempo and timbre of wilderness, to appreciate silence broken only by the eagle or loon."

But, like any of the countless rural areas across the United States, Kodiak Island is also a place inhabited by children who need quality instruction. And all too often, the same solitude and small-town feel that make rural communities so appealing to so many can also challenge school districts seeking to provide the best possible education for their students.

The emergence of technology as a critical component of that education has presented rural districts with an invaluable tool for overcoming the problems created by sparse and remote populations. But the same districts often face barriers to effective implementation of technology, from lack of infrastructure and funding to a shortage of tech-savvy teachers, staff, and potential community partners.

In the **Kodiak Island Borough School District**, the geographic isolation is particularly pronounced. Seven of the district's 15 schools are "off-road"—accessible only by air or boat. The largest of these schools has approximately 55 students; the smallest has 11. Each has two teachers.

"The problem we've faced over the years has to do with equity," says Norm Wooten, a longtime member of the Kodiak Island Borough District School Board. "How do you offer the same education to kids in these schools as the kids in the town?"

For many rural areas, the problem begins with infrastructure—little to no access to broadband, or in some cases any internet connection. "The lack of reliable, robust, and affordable connectivity continues to be a daunting problem when you get into a remote rural area," says Ann Flynn, education technology director for the National School Boards Association. "There has not been an attractive business model for internet providers to go into these areas and make it affordable."

For rural districts that do have broadband access, there is still the problem of students not being connected at home. According to a recent Federal Communications Commission report, 19 million Americans in rural areas (about 28 percent of them) do not have access to broadband, whereas 7.2 million in nonrural areas (or about 3 percent) don't. In **Eastern Lebanon County (PA) School District**, which serves nearly 2,500 K-12 students in four towns and the surrounding farm area halfway between Hershey and Reading, connectivity "depends on where you live," says Dorothy Noll, a technology learning coordinator for the district.

"There are people in our district who have no internet connection at all because of where they are located," Noll says. "We have to make sure we have avenues in place for students from these families—whether it's community libraries or going to a friend's house and working on a project together—so that they're not left behind."

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Leadership Lapses

Other challenges relate to the small populations in rural areas. A 2008 US Department of Education survey concluded that rural districts are dramatically less likely than their urban peers to have access to technology leadership. "Larger communities just have more people to draw from, so you're more likely to find the type of person with IT skills that you need to run a robust school-district network," says Flynn. "When you don't have those people in your community, you have to find ways to recruit them in an attractive relocation move, and that can be difficult."

For districts able to overcome the challenges, technology can serve as a powerful solution. For example, having few teachers in a sparsely populated district makes it difficult, if not impossible, to adequately cover all subject areas, particularly as the content becomes more specialized. That challenge was particularly formidable on Kodiak Island, where math scores were declining at a steep rate in the rural schools. "We ask our rural schoolteachers to teach all subjects to all students, and most are not highly qualified in math," says Phil Johnson, principal of the district's Rural Schools Office.

In Kodiak, the use of distance-learning technology has turned around once-struggling schools by not only enabling students to learn from better-qualified instructors, but also by expanding the breadth of content that can be offered. Supported by a grant from the Alaska Native Education Program, since 2008 the district has delivered math instruction through a model that includes video teleconferencing, Elluminate, and Moodle, supported by Smart Board interactive whiteboards, desktop cameras, Bamboo pads, and projectors.

Highly qualified lead teachers—resident within the district but not necessarily the site—are assisted by co-teachers, with one instructor on each side of the camera to make sure students always have in-person support. With the grant, the district was able to offer stipends to lead teachers and provide staff development in support of distance education.

In a first for many of the remote schools, students could take Algebra II. The program continued to expand, and soon students were being offered Pre-Calculus along with nonmath courses: Anatomy and Physiology, Advanced Composition and Literature, and Music.

"I have a math teacher teaching Prealgebra and Algebra I from Ouzinkie to seven other schools," Johnson says. "Then I have a science teacher at Kodiak High School teaching Natural Resources to seven schools, and Music is taught from an elementary school located on our Coast Guard base here."

Advanced-placement courses became available, and college-readiness scores increased significantly. Beyond the core courses, the technology has enabled the district to offer rural students specialized instruction. Last year, several students from the off-road schools expressed an interest in learning how to weld. The students were connected remotely to welding instruction at Kodiak High School, and several were able to earn certifications to work professionally as welders, including one student from a school of 12 who passed four welding certification tests in a single day after completing the distance-learning course.

Shrinking Districts

Many rural districts are shrinking and, as a result, undergoing consolidation. Fewer schools in sparsely populated areas means longer commutes for students. The prob-

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lem struck a chord with a couple of Vanderbilt University faculty members, leading them to start a university-based program that addresses concerns about science, technology, engineering, and mathematics (STEM) readiness in rural areas while simultaneously transforming the problem of lengthy bus rides to and from school into an opportunity to augment learning.

In October 2005, Billy Hudson decided to ride the school-bus route he had ridden as a child growing up in rural Grapevine, AR. In doing so, he learned that with consolidation the length of the commute had doubled, to 90 minutes each way.

Hudson and his wife Julie saw an opportunity to take advantage of that time by creating a "one-room school on wheels," with students working on STEM content using laptop computers on buses fitted with internet access through a mobile technology developed for recreational vehicles. The Aspirnaut program, launched at Vanderbilt, has blossomed into a K-20 STEM pipeline program connecting a research university with schoolchildren of all ages in 10 rural districts in Arkansas and Maine, with the goal of increasing the number and diversity of students entering the STEM workforce.

Along the way, the program introduced a WiFi bus with media screens to facilitate the viewing of STEM content by K-12 students, differentiated by age group, on 19-inch LCD/PC monitors. Eventually, the program moved beyond the school bus. Online courses began to be offered and an after-school classroom was established where, two days a week, participating students could go for help or to carve out a curriculum tailored to their needs and progress. Science labs for grades 3 to 8 were added through videoconferencing.

"Hands-on, inquiry-based science was just not happening in these schools, so we began beaming it in," says Julie Hudson, assistant vice chancellor for health affairs at Vanderbilt and the program's director. "This is providing that resource conveniently and at a relatively low cost. It's up-to-date and cutting-edge, covering subjects like physics and chemistry that are not easily covered in elementary school."

Hudson believes Aspirnaut speaks to the power of a partnership between a major research university and rural K-12 districts for implementing technology-based STEM instruction. "We can provide in-depth, high-quality content on almost any subject, and the schools have the expertise at how best to reach their students," she says. "We see this program as a template that can be replicated in many places." Through the partnership, students and teachers from the Aspirnaut districts visit Vanderbilt; for many, it's their first visit to a college.

University-Rural Partnerships

When seeking to implement major technology initiatives, an enduring challenge for districts in remote rural areas is the dearth of local examples to emulate. "We are social creatures—we look at what is around us and see who is doing what," says Anne Moore, associate vice president for learning

THINKING GLOBALLY EVEN WHEN YOUR COMMUNITY DOESN'T

IF RURAL STUDENTS GRASP the importance of technology and many of their teachers understand its power—even if they sometimes need guidance in integrating it into classroom lessons—convincing community members of the need to support educational technology initiatives can be a greater challenge.

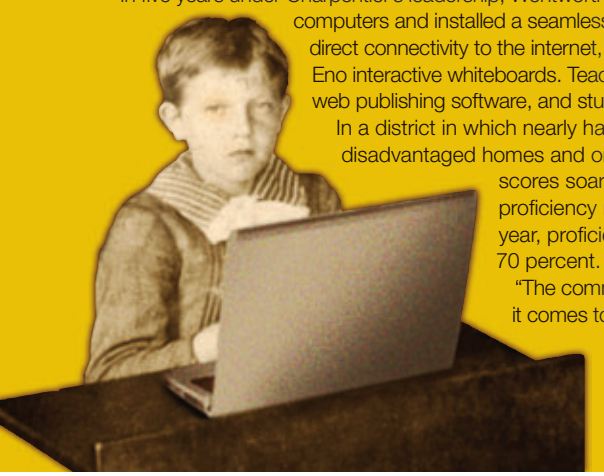
"In a small community like this, we have an aging population and a lot of the senior members don't use the technology in their homes," says Keith Charpentier, administrative principal for **Wentworth School District**, a single K-8 school of 60 students located 18 miles west of Plymouth, NH. "When you try to talk about the technology you need, it's foreign to them, and it's a tougher sell."

Charpentier hasn't been alone in his struggles to convince community members of the importance of investing in classroom technology. "A lot of people in rural communities need to be educated about how important this is," says **Danville Public Schools** (VA) Superintendent Sue Davis. "What they need to understand is that in today's schools it's hard to teach globally prepared students when they're not connected to the world in any way."

Consequently, Charpentier has looked elsewhere to solve his dilemma. When his budget requests were denied, he turned to writing grant applications for emerging technologies. "Every year I talk to the people at the high school and see where we might be able to get grant funding," Charpentier says.

Mining resources in both government and the nonprofit sector, one grant has led to another…and another…and so on. "You get turned down a lot," he adds, "but you keep plugging away and, when a grant comes in, what might seem like a small amount for a big school makes a huge difference here."

In five years under Charpentier's leadership, Wentworth has replaced its barely used hand-me-down computers and installed a seamless IP-based infrastructure. Every classroom has direct connectivity to the internet, along with Epson LCD projectors and PolyVision Eno interactive whiteboards. Teachers are using multimedia production technology, web publishing software, and student response systems.



In a district in which nearly half of the students come from economically disadvantaged homes and one-fifth have an educational disability, state test scores soared from 2006 to 2010: English language arts proficiency rose from 51 percent in 2006 to 78 percent this year, proficiency in mathematics from 39 percent to 70 percent.

"The community has little in terms of knowledge when it comes to technology," Charpentier says. "That said, I have had a *very supportive* board. I also have a very skilled set of teachers who understand technology and are able to utilize it very well."

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technologies and director of information technology initiatives at Virginia Tech University, like Vanderbilt a higher education institution whose mission includes assisting underserved rural and urban communities in integrating technology in teaching and learning activities. "The more you have going on around you, the more chances there are to pique your imagination and interest and see how your needs can be fulfilled. You don't get that so much in a sparsely populated community."

That's where a partnership with a major university can make all the difference. It did for **Danville Public Schools**, a rural district in southern Virginia, just north of the North Carolina border, which forged a partnership with Virginia Tech to install, through a local utility, a gigabit fiber with an access portal at one of its schools as a first step toward a more comprehensive infrastructure.

A decade later, the service has expanded throughout the area. "Our partnership with Virginia Tech was the nexus of everything we did," says Sue Davis, the district's superintendent. "It gave us a leg up on our technology offerings."

Beyond working with the district to install the fiber, the Virginia Tech group guided the Danville leadership in developing a long-term technology plan, and launched a three-year faculty-development program to bring teachers up to speed on the use of the new tools to enhance education. "If people don't know how to do something meaningful with the technology, it does no good to have the fiber in the ground," says Virginia Tech's Moore.

Today, Danville schools are equipped with Promethean interactive whiteboards and Elmo projection systems; a robust wireless network supports mobile laptop carts and computer labs with instructional software. The district has begun to experiment with iPads and Nooks.

"Now that kids are gaining access to smartphones, they're not as interested in marching into a lab to use a computer. They want to be interactive in the classroom," Davis notes. "If we're teaching through worksheets instead of interactively, there is a gap between the way they are learning and what they know is possible."

While tech-savvy students may expect to enjoy the same interactivity in the classroom as they have outside it, for many rural teachers, providing such instruction doesn't come easily. "In rural districts, the teachers tend to stay in their jobs for a long time," says Eastern Lebanon County's Noll. "Because of that, districts such as ours have an older faculty, most of whom are not digital natives. That's why professional development is so essential."

Eastern Lebanon County has long made both a priority. Noll is one of two full-time technology learning coordinators (TLCs), providing professional development opportunities for staff and serving as a conduit for teachers looking to offer technology-enriched lessons.

On "Techie Tuesdays," TLCs provide in-house training to small groups of interested teachers during their planning periods. At each session, Noll shows them something new, and the teachers can use the opportunity to share experiences and exchange ideas with colleagues. Noll also has the sessions recorded and the videos archived online.

Since 1999, the district has also run an Instructional Technology Academy as a way to provide more in-depth technology integration to at least a dozen participants each year. Teachers who attend the three workshops leave with new ideas to implement, along with several new lesson plans. They also receive release time throughout the school year to collaborate with colleagues on technology-enriched lessons.

Back to the Farm

The small size of rural communities does not necessarily limit districts' ability to enlist their local business communities in efforts to implement technology initiatives. "We always advise people to embrace local partners, but in these remote areas, chances are that it's not going to be someone who brings a lot of technical expertise to the table," says Flynn.

But a K-5 school in Walton, KS, found a creative way to partner with local businesses—in this case, family farms—to build a project-based, technology-driven agricultural curriculum. In the process, the school went from being threatened with closure to enrollment beyond capacity.

Because of dwindling enrollment numbers, officials contemplated sending students at the **Walton Rural Life Center** to the next town in a cost-saving consolidation move. Instead, Walton overhauled its curriculum and became the first public elementary school in the nation to completely incorporate agriculture.

With funding from the US ED's Charter Schools Program, the school has implemented a program that uses technology to support hands-on learning, from time-lapse photography equipment to the digital incubator used by the kindergarten class. Students blog about planting vegetables and tending to chickens, and use the internet to conduct research.

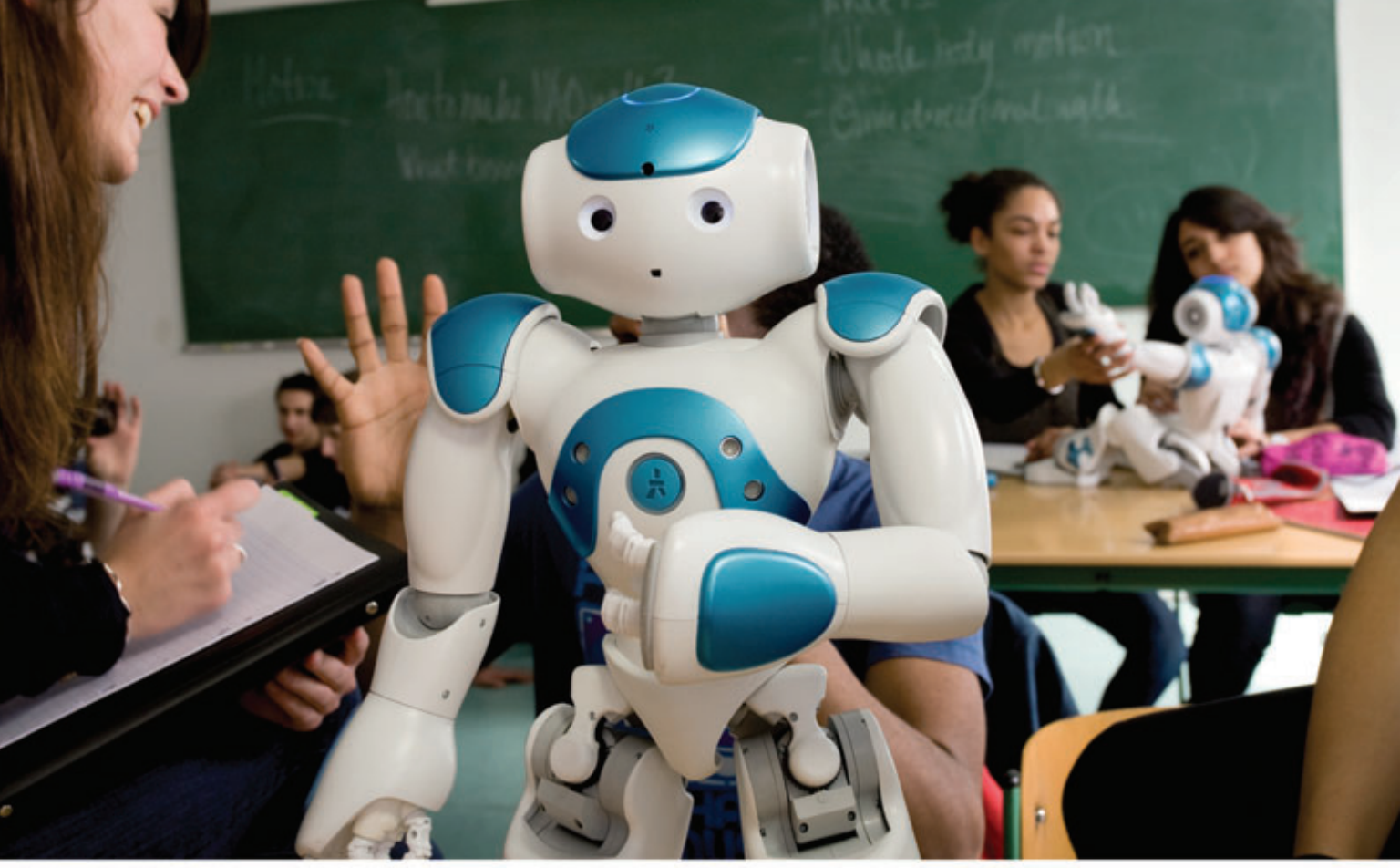
The experience is enriched by the connection each class has to its own local farm families for field trips and classroom visits. "The families get so excited when they see the way their kids learn," says Natise Vogt, the school's principal.

The jury is still out on whether the program will interest young people enough to stay with their family farms. Vogt said this is only the fifth year for the program, "but we are attempting to collect data to track kids in the future."

However, it apparently has improved academic performance. In the 2010-11 school year, every single Walton student tested at or above grade level in math, compared with 94 percent three years earlier. The school has nearly doubled its enrollment since 2007, drawing students from other nearby communities.

"We're giving students 21st-century skills," says Vogt. "Whatever career they go into, they have the foundation and excitement about learning." the

Dan Gordon is a technology writer based in Agoura Hills, CA.



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Andrea Beesley

Keeping Rural Schools Up to Full Speed

Rural schools are long accustomed to meeting challenges in innovative ways. For them, the challenge is not so much a lack of technology as it is adequate internet access, which affects both teachers and students.

RURAL SCHOOLS AND STUDENTS CONSTITUTE a substantial segment of American society. More than half of all public school districts and one-third of all public schools are in rural communities. There are nearly 740,000 rural schoolteachers (23 percent of the nation's public school workforce), and more than one-fifth of all public school students attend rural schools. However, because of their small size and geographic remoteness, rural schools face challenges unfamiliar to urban and suburban schools.

Rural students tend to have less access to on-site advanced high school courses than do nonrural students. In 2002-2003, 69 percent of rural students attended a school offering advanced-placement courses, as compared to 93 percent of students in cities and 96 percent of students in suburbs. When rural students do participate in advanced courses, however, they are often unprepared, and face issues with receiving on-site support and having access to all course materials. Therefore, many rural students lack the full opportunity to learn advanced material.

Also, rural graduating high school students apply to college at lower rates than nonrural students. However, for rural students more than nonrural students, a supportive school context has been associated with the educational aspirations and predicted post-secondary enrollment.

Access to Content Expertise

Teachers in rural schools need the professional development that will enable them to help their students achieve. However, small rural schools often do not have access to the content expertise that high-quality professional development requires. Therefore, rural schools often find it difficult to recruit and retain high-quality teachers. When vacancies do occur in rural schools, they impact the school more than in larger urban and suburban schools because faculties are smaller in rural schools to begin with.

A 1995 report by the National Center for Education Statistics found that schools with fewer than 300 students had higher teacher turnover rates than those with 300 students or more. Schools and Staffing Survey results also substantiated the relationship between school size and teacher recruitment, as a higher percentage of small rural schools (fewer than 200 students) reported that filling teaching vacancies was either "very difficult" or they were "not able to fill," compared to the percentage reported by all public schools.

One approach to the teacher retention challenge, especially the retention of new teachers, has been the introduction of comprehensive and ongoing teacher mentoring programs. Studies of programs in nonrural schools that provide support and guidance to novice educators in the early stages of their careers have reported success in retaining new teachers—when the mentor teaches the same subject. However, compared to nonrural teachers, a smaller percentage of rural teachers reported involvement in any kind of induction program during their first year of teaching. Even when new rural teachers are involved, they are less likely to have a mentor from their subject area.

A study evaluating the success of an induction program introduced to both

rural and nonrural schools reported that more of the rural teachers moved to a different district after the first year. Researchers hypothesized that this difference was a result of teacher-mentor mismatch—the rural first-year teachers were more likely to have mentors from different secondary subject areas or elementary grade levels.

QR code link to rural research references

Communities of Practice

Online options for course delivery and professional development seem like obvious solutions to some of the challenges of the rural education environment. The online environment makes it possible for schools to access courses that they otherwise could not offer. In small schools where teachers have no subject-matter or grade-level colleagues, teachers can join in virtual communities of practice with distant colleagues.

Rural students can take part in virtual field trips and meet other students across the country and around the world. In addition, online course and professional development offerings can be cost-effective for rural districts that are strapped for cash.

Course and professional development providers and companies, as well as researchers and funding agencies, sometimes assume that online offerings are less accessible in rural environments, and that rural schools lag behind urban and suburban schools in technology implementation. When I've submitted proposals to fund online programs in rural areas, I've gotten used to questions from reviewers about whether the participating schools have computers, or whether they will be able to access the internet—questions that I don't see when I propose similar programs in nonrural schools.

Quite to the contrary, in some cases rural students have better access to technology than other students do.

On the other hand, internet access in rural areas is still highly influenced by local conditions. Depending on the vagaries of service providers, one school can have terrific access while the one in the next county has speed closer to dial-up. In addition, rural schools and districts sometimes go about providing and servicing technology differently than do some in nonrural areas.

So if technology is better in some rural places and worse in others, what should online program providers do? The best approach when considering implementing a technology program in rural schools is to not make too many assumptions. Rural schools can be very sophisticated technologically, but conditions may vary from school to school. It's not at all the same as working with a large urban or suburban district, where contacting one technology administrator may get you all the information you need about dozens of schools.

If this sounds labor-intensive, it is. Sometimes the effort required to involve the same number of classrooms from a large number of rural schools as compared to a small number of urban ones causes online program providers to avoid working with rural schools.

This would be a mistake, however. While individual rural schools are often small, they educate millions of children across the United States. Providing them the best available is important. the

Andrea Beesley is a senior director at McREL (Mid-continent Research for Education and Learning).

VISIONS OF MOBILE LEARNING

Educators conjure up the mobile device they believe could change the future of education.

Illustrations by Ryan Etter

Editor's note: *It's been just a couple of years since the first mobile device hit the market. Yet, it is already a foregone conclusion that it will become an indispensable tool for learning in the future. That's why* T.H.E. Journal *asked a number of educators to let their imaginations go wild and conjure up visions of the future of the mobile device in the classroom. Next month, students share their unique visions of the ideal mobile learning app.*

THE DEVICE WILL FIT IN A POCKET and have multiple inputs to cover any need. It will bear Swiss army knife functionality and have connectivity that works 24/7/365 anywhere, so that it facilitates ease of search and output. It will have very long battery life, be safe for the environment and the end user, and will be so intuitive it will require little to no training. It will be used for everything, including learning. It will be affordable and paid for by each individual with the option to upgrade as needed, when needed, and will be virtually indestructible.

SALLY BAIR
Consultant, Hegins, PA

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Future mobile devices will be interactive with a three-dimensional touchscreen that projects the screen into the air in front of the user for manipulation. These devices will run on a cloud with applications and data stored entirely there. Small in size, measuring only 6 inches by 10 inches and approximately 1 inch thick, these devices will have both WiFi and 4G access, with inherent 16 MB per month included with purchase. One USB port will be included, as well as a headphone jack, HDMI, VGA, and speaker as side features.

STEVE RYAN
Instructional technology coordinator, social studies teacher
Butler School District 53
Oak Brook, IL

The "Ubique" mobile device is credit card-sized, waterproof, shock-resistant, and indestructible, with long battery life and solar power capability. It will operate all programs, regardless of operating system, and will connect to the internet anywhere on Earth via providers working under a global service umbrella. Service providers and product manufacturers will provide the device and service free to students and educational institutions in exchange for tax benefits and concessions. In addition to operating standard learning programs, "Ubique" will monitor physical health status and warn users of potential health issues through various input capabilities, such as blood pressure, blood, and diet.

RHONDA LEDUC
Graduate student
University of Illinois
Urbana-Champaign, IL

It will have to be durable, rugged, and portable with about a 5- to 7-inch screen, forward and backward cameras, flash memory, and AV in/out with adapters for various display systems. Keyboards will be optional for ADA compliance, but voice recognition applications like Dragon Go will be the primary source of data input. Students will become more skilled in oral speaking skills as an indirect result of using voice-recognition software. WiFi connections will be funded through grants and discounted rates by major carriers.

DENNIS IMOTO
Educator
Hawaii Technology Academy
Waipahu, HI

I imagine a tablet-sized device that will be easily manageable and functional, but with a double screen, as if it were a notebook. The screens will also function as solar cells to charge the battery. It should be compatible with every platform for functionality, and it must support any application (no compatibility issues). Students can use the device on or off campus. It will connect through the internet, Bluetooth or 3G.

MANY YEARS DOWN THE ROAD, I envision a device that isn't mobile per se, but located in every classroom. I'll call it the iDesk. Imagine a glass-top student desk that is like a larger version of an iPad—a touch-screen computer desk connected via WiFi to a school's network. Using cloud computing, students would sit down and log into their desks, where they can respond to teacher prompts, complete and submit work, and connect with other students—all without needing additional computers or mobile devices. As smartphones evolve more into full-function computers, students' mobile devices can be linked to the iDesk. An expensive proposition, and this future is many years away, but that is my vision.

KYLE ROSS
Assistant principal, education services
Chaparral High School
Scottsdale, AZ

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ALAN LANDEVER
Director, technology services
Fort Leavenworth USD 207
Fort Leavenworth, KS

Students will pay a technology or lease fee.
INPUTS: touchscreen, built-in camera, built-in microphone, USB port, SIM card reader
OUTPUTS: USB, speakers, video and audio outputs

GABRIELA CABRERA
Elementary coordinator
Thomas Jefferson Institute
Mexico City

For K-12 education, the device needs to address the day-to-day stresses of kid use, and the cost needs to come down significantly. The device should be compact and rugged, have extended battery life, be always connected, support adaptive input that is UDL-friendly (touch, keyboards, switches, voice, able to project or expand the screen, etc.), and cost under $100 and under $75 for annual connectivity. I'm 100-percent confident that we will get there on the device, and 75-percent confident we will get there on the price.

LEE WILSON
President and CEO
PCI Education
San Antonio

It will be an off-the-shelf smartphone. No change. Mobile learning will be a universally ported app that runs on phones, set-top boxes, PCs, pads, video walls, smart TVs. It will be interactive, multimedia, web-enabled, real-time, self-paced, and scored in real time. It will tie back to a cloud that has archived, certified, curated, cleared-for-use content (like Curriki.org). The app and the content will be free, at least for K-12, because, for children everywhere, we need it to be universally accessible.

SCOTT MCNEALY
Former CEO and co-founder,
Sun Microsystems
Current board chairman, Curriki
Cupertino, CA

A mobile learning student will be assigned an activity, presented customized information through multimedia sources, and be delivered immediate feedback. The teacher will act as a project manager. For example, a student will receive information about different soil elements through a video, take samples through peripherals attached to a device, and receive immediate feedback delivered through apps. In the admin app, a teacher might review student feedback, assess results, and determine the best learning for the student. Students will be clustered by skill/task reinforcement. Globally, access to mobile devices will create affordable, content-rich, on-the-go classrooms, leading to accessibility of education in Third World countries.

KAREN SORENSEN
Senior education consultant
and partner
21st Century Education

Smartphones will become learning devices. These devices accomplish tasks like obtaining measurements more efficiently than humans, so utilizing the device to calculate area or volume will replace learning to derive these manually. Research methodologies will be taught, but traditional research projects will be replaced by multimedia compilations that resemble documentary films. Online/device-based tutorials will be utilized more than traditional teachers in classrooms that require buildings and maintenance, offsetting device and communication costs. Stu-

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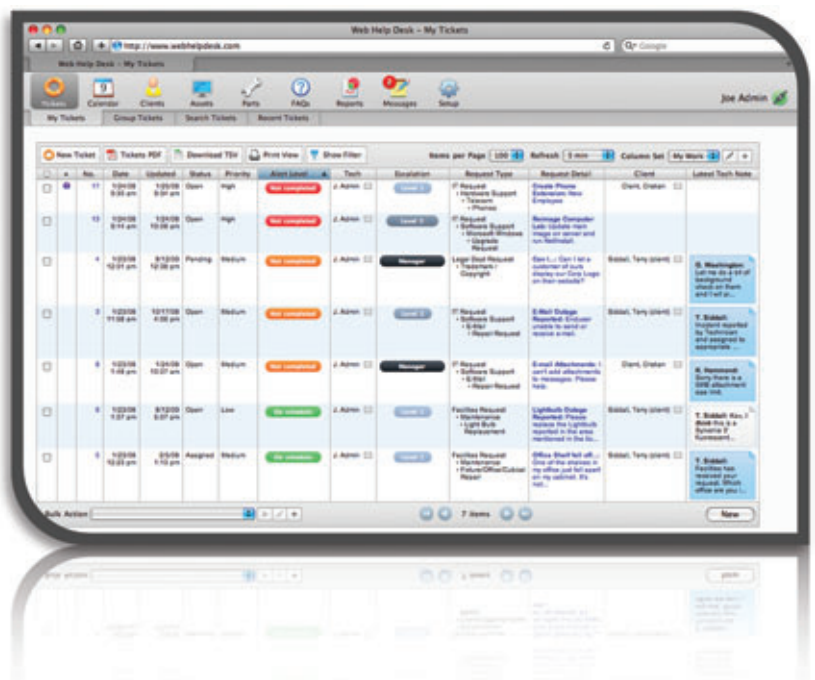

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THE IDEAL MOBILE learning device resembles a credit card after being folded four times. Unfolded, the top half serves as the screen, the bottom half as the keyboard. It is made of a pliable titanium fabric. A projector function allows for increased screen size on any surface. The battery lasts 24 hours and [the device] is able to receive wireless signals from anywhere. It connects to the internet wirelessly using any network and can "talk" to any device either wirelessly or via USB connection. The device will be used as a phone, television, PDA, computer, and textbook.

KIPP ROGERS
Education speaker, author of *Mobile Learning Devices* (Solution Tree), director of secondary education, York County School Division
Yorktown, VA

dents who test well or require job-specific knowledge in subjects like math, science, or technology will receive more traditional training, allowing the system to be built and maintained.

MARK PETTIT
Systems administrator
Brophy College Preparatory
Phoenix

The mobile learning device of the future won't be a separate piece of equipment. Rather, mobile learning in the future will be an active part of the student's world. Smartphones, televisions, tablets, in-car telematics and even household appliances will always be connected to the student's academic life. Everything the student does, and everywhere the student interacts, will become a learning opportunity. The only examples given to a student will be real-world examples, because they will always be plugged in, always learning. The future of learning isn't bound to a mobile device; the future of learning is mobile. Learning will not begin at the schoolhouse door, and it won't end there either.

CALEB JONES
Student experience advocate
Florida Virtual School
Orlando, FL

The learning device of the future is not a device: It is the network; specifically, wireless networks. The FCC recently green-lighted the E-Rate Deployed Ubiquitously (EDU) 2011 Pilot Program. With EDU2011, the FCC authorized up to $10 million for E-Rate Funding Year 2011 for a pilot program in order for the FCC to assess "the merits and challenges of wireless off-premises connectivity services." The FCC is looking at how they can support wireless connectivity. In the future, more funding for these wireless networks may come from the E-Rate program.

JOHN HARRINGTON
CEO
Funds For Learning
Edmond, OK

Mobility has already changed the way we connect with information, resources, and each other. The question now is how schools and districts can best leverage mobile devices—whatever those devices may be—to instantly enhance all aspects of the educational experience and make learning more personal. Mobile technology customizes the learning experience to better fit students' preferred mode, media, and pace of learning. It helps students connect with courses, content, and each other. It helps share insight on academic progress between teachers, students, and parents, and allows students to create content for assignments directly from devices and more. The future of mobile learning is already here and waiting for us to take advantage—now it's just a matter of activating it.

PATRICK DEVLIN
Vice president of sales
Blackboard Mobile
Washington, DC

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Adam Bellow
Founder/President, eduTeacher

Mobile Technologies Enable Student-Centric Learning
Elliot Soloway
Arthur F. Thurnau Professor, University of Michigan

iPads, Android Tablets, Chrome Notebooks, and What's to Come
Rushton Hurley
Executive Director, Next Vista For Learning

Literacy in the Digital Age
Kathy Schrock
Educational Technologist

Enabled, Engaged, Empowered: The Student Vision for Digital Learning
Julie Evans
Chief Executive Officer, Project Tomorrow

Building the "Digital Classroom": Cloud Computing and K-12 Education
Howie DiBlasi
Chief Executive Officer, Digital Journey

See a complete list of featured speakers, as well as a full conference schedule, at FETC.org.

Conference Highlights

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See how educational professionals are solving real classroom challenges by integrating the best apps that help meet the needs of teachers and students.

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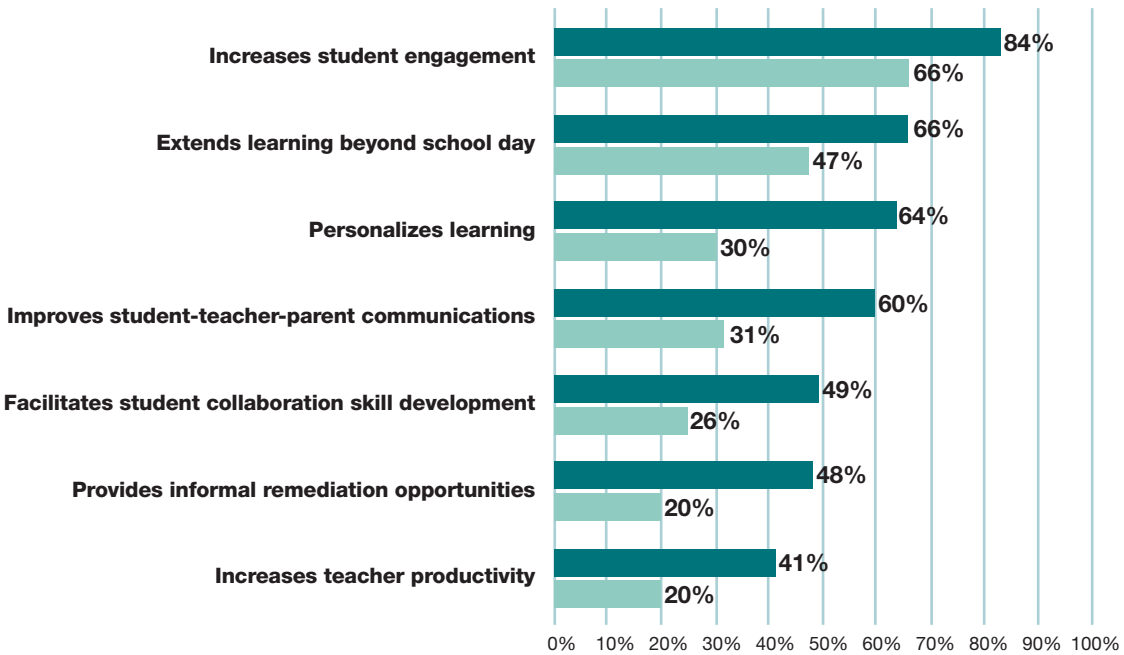
Administrators Sound Off on Mobile Learning

THINK BACK TO 2007. Did you have a smartphone? If you did, did you use it for more than simple phone calls or text messages? And way back in 2007, did you ever think that by 2011 we would be talking about the benefits of students using mobile devices in their classrooms for instructional purposes?

Given that mobile learning is one of this year's hot topics in education, it is insightful to see how perceptions of mobile technology as a learning tool have evolved since 2007 (incidentally the year the iPhone first made its debut). The chart below shows how the views of administrators on the potential benefits of mobile devices for instructional purposes have changed over the years, as measured by participant responses to Speak Up surveys.

For some context, over the past few years smartphone use among administrators has grown at a brisk clip. In 2009, 41 percent of administrators, or 1,618 out of a total 3,947 respondents, reported having a smartphone. A year later, the percentage of those wielding smartphones had increased to 58 percent, this time 2,075 out of 3,578 total respondents—a 17-percent jump. So, it probably should come as no surprise that, as administrators convert to smartphones themselves, their appreciation of the value of mobile devices is transforming the way they think about student and teacher use of the technology.

Administrators describe the benefits they see in using mobile technology in the classroom



Data courtesy of Speak Up 2010, an annual national research project produced by Project Tomorrow that surveys K-12 students, teachers, parents, and administrators (*tomorrow.org*).

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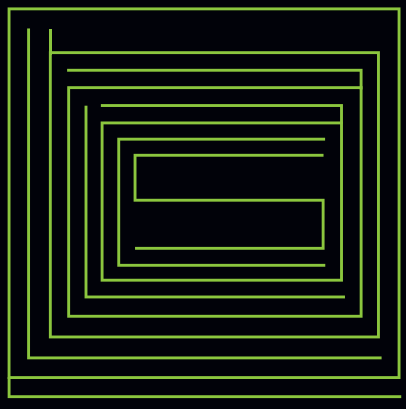

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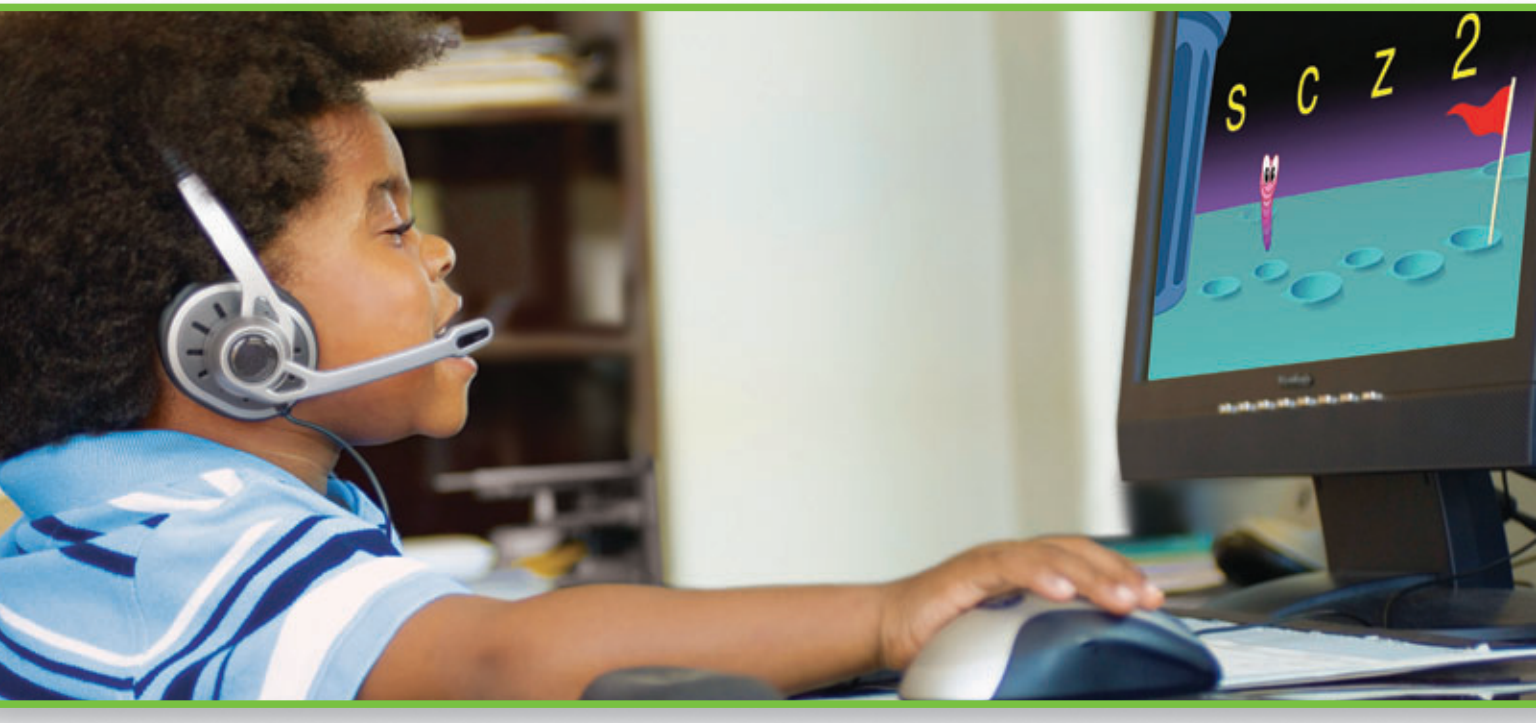

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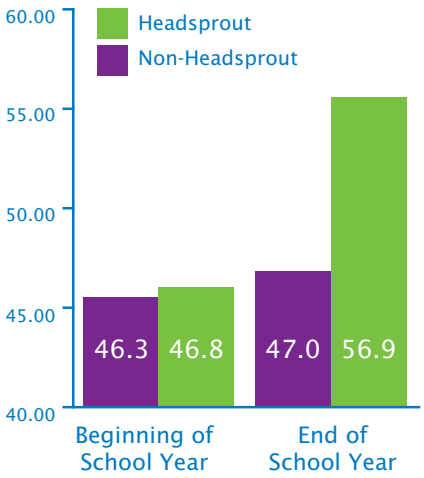

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