TRANSFORMING EDUCATION THROUGH TECHNOLOGY

the JOURNAL

WHERE JOCKS AND GEEKS BECOME FRIENDS

GIS TECHNOLOGY FUELS PROJECT-BASED LEARNING

URBAN LEGENDS

HOW TECHNOLOGY INNOVATION HAPPENED IN SIX BIG-CITY SCHOOL DISTRICTS

SWIMMING WITH DATA

Expert collaboration helps districts use their data to make decisions

September 2011 | Volume 38, No. 8 thejournal.com

1105 MEDIA

YOUR OLD-SCHOOL NETWORK MADE NEW AGAIN.

It's graduation time for your network. And we have everything you need to upgrade to a fast and reliable solution. Industry-leading products. Certified solution architects. Dedicated account managers. Not to mention, a host of services to support you, beginning to end. It's the new-school way to boost productivity for students and staff. All you have to do is call or click.

800.767.4239 | the21stcenturyclassroom.com

HP StorageWorks® P4300 G2 SAS Starter SAN Solution

CDWG 2002993

- 16 bays (SAS) x 450GB
- RAID 10, RAID 5, RAID 6
- Provides unique double-fault protection
- Easy to deploy, scale and maintain
- Simplifies management and reduces costs

Hard drives sold separately

HP ProLiant DL360 G7 Rack-mount Server

CDWG 2090704

- Quad-Core Intel® Xeon® processor E5640 (2.66GHz)
- Memory: 6GB std., 384GB max
- Hard drive: none ship std.; up to 7.2TB max
- Optimized for space-constrained installation

Cisco® 2811 Integrated Services Router Enhanced Security Bundle

CDWG 707662

- Allows businesses to synchronize routing and security policies and reduce their operational costs while raising the level of security throughout the network
- Expansion-ready performance and capacity

CDW·G® PEOPLE WHO GET IT™

the JOURNAL

thejournal.com

SEPTEMBER 2011 | Volume 38, No. 8

Cover photo by Mark Gervase/Getty Images

OurSpace

Therese Mageau, Editorial Director

Leadership Is Ownership

When district leadership truly owns technology, innovation is possible, no matter what the obstacles.

STEPHEN MARCUS, the late and much-missed director of the South Coast Writing Project in the 1990s, once said that it was easier to move a graveyard than change a school.

Anybody involved with urban education might elaborate on that metaphor and say that it's easier to move Arlington National Cemetery than to change a big-city school.

Yet this past spring, when I was reading applications for the Sylvia Charp Award (which honors a district that has "shown effectiveness and innovation in the application of technology districtwide"), I was struck by how many urban districts had overcome common obstacles to innovation in urban education to implement technology programs that were actually making a difference in teaching and learning.

My admiration for many of their efforts led to this month's cover story on urban-school technology success stories (see page 26). None of the districts profiled here took the same course as the other, but they all had one thing in common: They were blessed with extraordinary leadership.

Indeed, when I was reading the award applications, I could almost predict how innovative and successful the district initiative—urban or otherwise—was going to be by the quality of the superintendent's letter that accompanied the submission. Some superintendents wrote about their district's technology initiatives as if they had no connection to the efforts, as if they were an outsider looking in, praising the IT director or some other player who was in charge of the "project." Not surprisingly, the technology implementations in those districts were unsystemic, uninspired, and definitely not award-worthy. I found it fascinating—and disappointing—that there are district leaders who don't understand that in order for technology (or any innovation) to take hold, they need to be the chief owner of the vision and the implementation.

Which isn't to say that the superintendents shouldn't delegate or have strong teams. Clearly in a large urban district, the superintendent cannot possibly run the show (although I have to marvel at Miami-Dade's superintendent, Alberto Carvalho, who acts as principal of his district's iPrep Academy). Yet, to successfully infuse technology into the teaching and learning culture, an urban district must have a "strong, visionary leader" who, in the words of Ann Flynn, director of technology programs for the National School Boards Association, "recognizes changing student needs and instructional styles, is able to convey these changes in a way that inspires staff to follow, has aligned resources to deliver professional development, and has gotten buy-in and support from parents and voters."

These words should describe *any* school district leader, regardless of size. Fittingly, in next month's *T.H.E. Journal*, we are profiling innovative rural districts that have defied their own odds to achieve success in technology implementation. I haven't read the story yet, but I'm willing to bet that every one of the districts will have a leader who is also an owner.

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

the JOURNAL

thejournal.com

September 2011 : Volume 38 : No. 8

Editorial Staff
Editorial Director — Therese Mageau
Executive Editor — Michael Hart
Executive Producer, Web — Dave Nagel
Online Content Manager — Kanoe Namahoe
Editorial Intern — Joshua Bolkan

Senior Contributing Editors
LInda Briggs, Dian Schaffhauser, Matt Villano

Contributors
Jennifer Demski, Dan Gordon, Charlene O'Hanlon, Alva James-Johnson, Lisa Plummer

Art Staff
Creative Director — Scott Rovin
Graphic Designer — Erin Horlacher

Production Staff
Director, Print Production — Jenny Hernandez-Asandas
Senior Production Coordinator — Jennifer Shepard

Online/Digital Media Production
Executive Managing Editor — Judith Rajala
Web Designer — Brion Mills
Web Applications Specialist — Elliot McDonell
eMedia Project Coordinator — Mallory Bundy
E-media Assistant — Sarah Rajala

1105 MEDIA Education Group

President & Group Publisher — Wendy LaDuke
Marketing Director — Karen Barak
Marketing Manager — Michele Werner
Attendee Marketing Manager — Athene Kovacic
Attendee Marketing Manager — Annette Levee
Client Project Coordinator — Jenna Horton

1105 MEDIA

President & Chief Executive Officer — Neal Vitale
Senior Vice President & Chief Financial Officer — Richard Vitale
Executive Vice President — Michael J. Valenti

Senior Vice President, Audience Development & Digital Media — Abraham M. Langer
Vice President, Finance & Administration — Christopher M. Coates
Vice President, Information Technology & Application Development — Erik A. Lindgren
Vice President, Attendee Marketing — Carmel McDonagh
Vice President, Event Operations — David F. Myers

Chairman of the Board — Jeffrey S. Klein

REACHING THE STAFF
Staff may be reached via e-mail, telephone, fax, or mail. A list of editors and contact information is also available online at *thejournal.com*, or editors can be reached at *editorial@thejournal.com*.

E-mail: To e-mail any member of the staff, please use the following form: *FirstinitialLastname@1105media.com.*

Corporate Office
(weekdays 8:30 a.m.–5:30 p.m. PST)
Telephone (818) 814-5200; fax (818) 936-0496
9201 Oakdale Ave., Suite 101
Chatsworth, CA 91311

BPA WORLDWIDE · 100 AMERICAN BUSINESS MEDIA 1906 2006 · WPA Western Publications Association

MimioClassroom
interactive teaching tools

Easy to use for teachers, engaging for students, and won't break your school's budget.

MimioTeach
Interactive whiteboards, redefined.

MimioVote
Student assessment made better.

MimioView
The document camera, simplified.

MimioPad
Full control from anywhere.

MimioClassroom™ products bring lessons to life, so kids get excited about learning. They're easy to learn, so teachers get excited to use them. The powerful MimioStudio™ software controls everything, allowing teachers to use a single piece of intuitive software to get up and running quickly. And unique design means schools can pay less without getting less.

Request your free information kit:
Call 800.640.6951 or visit mimio.dymo.com/A89

//CODiE//
2011 SIIA CODiE WINNER

DYMO | Mimio®
Interactive Teaching Technologies

Report Calls for Tripling Investment in Ed Tech

CURRENT IT FUNDING levels in education are simply inadequate to make any kind of impact on student achievement, according to a new report, "Unleashing the Potential of Technology in Education."

Technology makes up a mere 1.6 percent of overall spending in K-12 education—including hardware, software, support, outsourcing, and salaries. By way of comparison, the figures for "comparable labor- and knowledge-intensive industries" like healthcare reach as high as 6 percent of overall spending.

"The education sector continues to devote a far smaller portion of its spending to technology than do other sectors. It should be no surprise, then, that the investment in technology has yielded little overall impact on student achievement," says J. Puckett, one of the report's authors and global leader of the Boston Consulting Group's (BCG) education practice.

The BCG report released earlier this summer calls not only for a greater financial commitment to education technology, but also for the adoption of a holistic, "closed loop" approach to its implementation in order to maximize its effectiveness.

That approach involves "a deeply aligned set of educational objectives, standards, curricula, assessments, interventions, and professional development," as well as the deep integration of technology "at every level to enable continuous improvement in both instruction and student outcomes."

The "closed-loop system" includes six core elements:

1) Establishment of clear learning objectives that focus heavily on 21st century skills;
2) Development of curriculum centered on open source resources;
3) Adoption of virtual learning technologies, such as lecture capture;
4) Use of frequent, ongoing formative assessments;
5) Adoption of technology-enabled interventions and online tutoring; and
6) Development of new data systems to track outcomes.

But in order to make such a system a reality, the report's authors urge, policymakers and education leaders will have to play their parts by removing arbitrary barriers to change (such as geographic teacher certification), promoting flexible funding, ramping up teacher professional development, promoting open digital resources, developing a body of research to determine the value of technology in education, and, of course, investing in IT infrastructure.

The complete report is free and available at *bcg.com*.

[industry update]

CoSN Schedules Webinar Series

The Consortium for School Networking will hold a series of six webinars beginning in October that will feature educational technology experts discussing issues relevant to K-12 professionals. Topic titles range from "Planning for the Shift From Print to Digital" to "Measuring Tech Readiness for 2014 Testing" and "Making the Connections in Mobile Learning."

"It's important that ed tech leaders are up to speed on all of the latest trends and best practices," says consortium CEO Keith Krueger.

The webinars will be held once a month beginning Oct. 11. For more information and to register, visit *cosn.org/webinars*.

Multimedia Center for the Underserved

The Adobe Foundation and the Black Eyed Peas' Peapod Foundation have designated a new Peapod Adobe Youth Voices music and multimedia academy, the latest one in San Jose, CA. This is the fifth such academy launched through the Youth Voices program, with three others in California and one in New York.

Adobe Youth Voices is a program designed to give disadvantaged students an opportunity to learn and use multimedia tools to express their social views through various digital forms of media: music, web design, video, and other forms of expression. Launched in 2006, the program has resulted so far in the creation of some 557 "sites, grantees, and organizations" serving students in 33 countries. For more information, visit *youthvoices.adobe.com*.

Common Core Toolkit for Standards

The Partnership for 21st Century Skills has released a new toolkit designed to help state and district education leaders implement Common Core State Standards within the P21 Framework for 21st Century Skills. The group provides the Framework for 21st Century Learning, a road map for education centered on technology and skills-focused learning.

The framework focuses largely on student outcomes in 21st century learning areas, including life and career skills, critical thinking, communication, collaboration, creativity, technology, information/media literacy, and core academic subjects. It also includes guidelines for the supports required for 21st century learning, including standards and assessments, curriculum and instruction, professional development, and learning environments. For more information, visit *p21.org*.

Smart investments for ***our future...***

...YOUR INVESTMENT TO EDUCATION BEGINS HERE.

Canon's Education Sales Department is your one stop solution for all of your school's imaging needs. From Digital Cameras for visual literacy & photojournalism to HD camcorders to record events & movie production, Canon has a diverse selection of quality, brand name products to fit any budget.

Multifunction Printers make it easy to Print, Copy & Scan documents, book pages, photos or negatives. Calculators, Image Stabilizer Binoculars and Multimedia projectors are also available.

From academics to administration, Canon has the equipment for your imaging needs.

School Purchasing information available at:
www.usa.canon.com/educationalsales *or*
email: canonsales@sedintl.com • phone: 800-344-9862

Canon
*image*ANYWARE

ON-DEMAND WEBCASTS

thejournal.com/pages/webinars.aspx

Implementing Better WiFi at School Without Going Broke or Crazy

New WiFi technology dramatically increases range and reliability, enabling large school districts to build a robust, stable wireless environment that their IT staff, students, and faculty can count on. **Sponsored by Ruckus Wireless.**

Virtualization Reduces the Cost and Complexity of IT

When a blizzard destroyed **Falcon (CO) School District 49**'s data center, they needed a new way to house servers, store applications, and prevent future disasters. The answer? Data center virtualization. **Sponsored by VMware**.

Print Management: Cut Costs, Boost Productivity

The **Park Hill School District** in Kansas City, MO, discovered a way to better control print and copy costs and reduce waste without compromising service to its students, faculty, and staff. See how. **Sponsored by Konica Minolta**.

{win big!}

DYMO/Mimio Launches Grants Program

Mountain View Elementary School of the **Adams 12 Five Star Schools** in Broomfield, CO, is the inaugural recipient of a DYMO/Mimio Science and Math Grant. The school will receive 10 MimioTeach interactive systems, 10 document cameras, 10 wireless tablets, and on-site training.

DYMO/Mimio's grant to Mountain View is expected to be the first of a series of grants that will focus on other subject areas and themes. Mountain View won the grant in a competitive process in which the schools were asked to detail how they would use the technology. DYMO/Mimio is now accepting applications for its Jump Start Grant, which will offer its interactive teaching technology. For more information, visit *mimio.com*.

[acquisition news]

Key Curriculum Press Drops Textbooks to Focus on Software

KEY CURRICULUM PRESS, which has developed math and science instructional materials for 40 years, has sold its textbook division to focus more attention on its digital products.

In a move effective Aug. 1, Kendall Hunt Publishing has acquired six high school mathematics textbooks from Key Curriculum. Company president and CEO Karen Coe says the move was intended to free up resources for a part of the business she believes is its strongest asset.

"Key's future is in the digital realm," Coe says. "With more student devices going into more hands, including very exciting developments in tablet computing, now is the time to thoroughly focus on our strengths in this area."

Coe said she hopes to expand Key's most popular software product, The Geometer's Sketchpad, a math program for grades 3 through 12, and to develop other software titles for math and science education. In August it released Sketchpad Explorer, an iPad app that allows users access to its geometry materials, including those in The Geometer's Sketchpad.

The sale to Kendall Hunt includes textbook programs *Discovering Algebra, Discovering Geometry, Discovering Advanced Algebra, Precalculus With Trigonometry, Calculus*, and *Statistics in Action*.

Kendall Hunt officials say the acquisition of the titles will allow them to round out the collection of textbooks they offer customers.

"The titles are a great fit with our mathematics curricula and align especially well our new Math Innovations middle-grades program," says Kendall Hunt President and COO Chad Chandlee, "and it broadens our commitment to the PreK-12 marketplace."

Along with its math and science instructional materials, Key Curriculum also offers professional development workshops, online courses, and webinars for educators.

Besides The Geometer's Sketchpad, Key Curriculum's most popular products are TinkerPlots Dynamic Data Exploration for grades 3 through 8 and Fathom Dynamic Data for grades 9 through 12.

Cengage Learning Completes National Geographic Acquisition

CENGAGE LEARNING has completed its acquisition of the National Geographic Society's digital and print school publishing unit. The move expands a partnership begun in 2007.

As part of the deal, Cengage now owns the National Geographic Science series, National Geographic Explorer, an elementary science curriculum, and the Hampton-Brown literacy and language programs. The company also gained expanded rights to distribute National Geographic Society resources, including images, maps, videos, and articles.

The new brand, National Geographic Learning, will eventually replace several brands in Cengage's English language learning business, according to information released by the company.

"The acquisition of National Geographic School Publishing and the creation of the new National Geographic Learning brand is very exciting for us and for our customers in the English language teaching and learning space," said Cengage Learning President and CEO Ron Dunn.

Texas, Virginia Make Statewide Technology Commitments

TWO OF THE largest states in the country have made commitments to statewide use of educational technology. The Texas Board of Education has approved the Discovery Education Science Techbook for all middle-school students. And the Virginia Department of Education has given Sublime Learning the go-ahead for a statewide pilot program to provide online professional development that is designed to help teachers throughout the state integrate technology into the classroom.

In Texas, Discovery's digital science textbook was designed to be aligned with the state's science education standards and its curriculum management system. It becomes the fifth—albeit the largest—state to adopt the "techbook," along with Florida, Indiana, Louisiana, and Oregon.

The digital textbook features virtual labs, video clips, e-book passages, and an interactive glossary of terms.

It also will include a real-time assessment component that measures student progress and recommends individualized resources in collaboration with traditional classroom instruction.

"This all-digital science adoption choice by Texas signals a systemic shift toward the acceptance of digital content as a textbook alternative," says Yolanda Rey, executive director of the Texas Association for Supervision and Curriculum Development. "It highlights how digital can bring the world of science alive for every type of learner."

Interestingly, Texas was the first state to adopt an electronic textbook—the videodisc "Windows on Science"—back in 1991.

Meanwhile, Virginia Superintendent of Public Instruction Patricia I. Wright picked Sublime Learning to offer a just-in-time professional development program to help teachers in the state apply strategies for stronger teaching with technology and to adopt inquiry-based learning techniques with the help of interactive whiteboards.

"We're committed to helping the Commonwealth of Virginia get the most out of their existing technology, so they can deliver transformational teaching that engages students," says Sublime Learning CEO Jonathan Mann.

Sublime Learning uses video with downloadable templates, flipcharts, and notebook files for classroom use that help teachers take advantage of existing software and interactive whiteboards.

intel Xeon inside™

Powerful. Intelligent.

Ready to Soar in the Clouds?

Before your data center takes flight, talk to GovConnection. Our Server Assessment provides a smooth transition into cloud computing. Gain valuable information about your infrastructure, and learn how best to implement cloud-supporting virtualization technologies. Our specialists will give you a customized report detailing:

- How your servers are performing today
- How your servers stack up against industry norms
- Specific ways to save money and lower your total cost of ownership

And be sure to ask us about the new HP Cloud System Matrix—the industry's first converged infrastructure and cloud platform. Featuring HP G7 servers and the Intel® Xeon® 5600 processor family, HP Cloud System Matrix supports your cloud initiatives in the data center by providing higher availability, better adaptability, and faster ROI through advanced power savings.

HP ProLiant BL460c G7 Server Blade

- Intel® Xeon® Processor E5649 ■ 12MB L3 cache, 2.53GHz
- Dual-processor capable ■ 12GB RAM (192GB max.)
- Fits up to (2) 2.5" SAS/SATA HDs ■ 2 mezzanine slots
- Dual 10GbE NIC ■ HP Smart Array P410i Controller
- RAID 0, 1 support ■ 3-year warranty

#12532506

Call your Account Manager to schedule a Server Assessment today.

1·800·800·0019

www.govconnection.com/serverassessment

Follow us on Twitter!

GovConnection®
no technology left behind™

Every Silver Lining Has a Cloud

Weather Any IT Storm with an Infrastructure that Outshines Any Forecast

intel Xeon inside™

Powerful. Intelligent.

hp

Look inside to learn more about gaining performance, efficiency, and reliability with HP CloudSystem Matrix and the Intel® Xeon® 5600 processor family.

gov is all you need™ | GovConnection® A PC CONNECTION COMPANY

Discover Value with Our Solutions Center

The IT solutions landscape is ever changing. To stay educated, you need a resource that updates as often as today's trends. GovConnection's Solutions Center offers podcasts, webinars, whitepapers, and case studies that provide insight into today's most pressing IT issues:

- Data Center • Lifecycle Solutions • Network Optimization
- Software Solutions • Storage Optimization • Cloud Computing

For more information on GovConnection's Solutions Center topics, visit
www.govconnection.com/solutions

1.800.800.0019

www.govconnection.com

gov is all you need™ | GovConnection® A PC CONNECTION COMPANY

Call today to see if you are eligible for special contract pricing or special government and education pricing.

Simplify Your Infrastructure with Cloud Computing

Increased bandwidth, storage, and on-site management demands are just a few of the complexities facing a growing virtualized infrastructure. To cope with these requirements, your data center must be both flexible and simplified.

HP CloudSystem Matrix is the industry's first converged infrastructure platform that combines the elasticity your data center needs for the daily grind with the benefits of shared cloud services. Consisting of an enclosure, software suite, and servers powered by the Intel® Xeon® 5600 processor family, HP CloudSystem Matrix can transform the economics of your data center:

- Reduce TCO by up to 56%* and shorten application provisioning times by up to 80%†.
- Install, deploy, and reconfigure server connections in 90%* less time than a traditional infrastructure
- Built-in HP Virtual Connect Flex-10 technology offers a 4:1 network consolidation ratio that reduces switching costs up to 75%*
- HP Thermal Logic technology reduces power and cooling requirements without impacting performance

Solutions for Your Growing Organization

HP ProLiant BL460c G7 Server Blade is the perfect addition to the HP CloudSystem Matrix enclosure. It provides enterprise-class features for high performance and reliability without compromising energy efficiency or density.

- Intel® Xeon® Processor E5649 ■ 12MB L3 cache, 2.53GHz
- Dual-processor capable ■ 12GB RAM (192GB max.)
- Fits up to (2) 2.5" SAS/SATA HDs
- 2 mezzanine slots ■ Dual 10GbE NIC
- HP Smart Array P410i Controller
- RAID 0, 1 support ■ 3-year warranty

#12532506

HP ProLiant BL460c G7 Server Blade

- With 6GB RAM (384GB max.)

#12532160

Build a Best-Run Infrastructure

HP CloudSystem Matrix Operating Environment Software creates pools of server, network, and storage capacity to be dynamically provisioned to run your applications on up to 1000 physical or virtual servers—all managed as one environment. This operating system suite unites the tools, processes, and architecture of your infrastructure to speed time-to-service delivery without chaos.

For 16 Servers and VCEM for c7000 Enclosure with 3-Year 24×7 Support ..... #12885205

HP CloudSystem Matrix FlexFabric Starter Kit with c7000 Enclosure and 3-Year 24×7 Support ..... #12150891

HP BladeSystem Matrix Starter Kit Implementation Service ..... #9997513

For more information on HP CloudSystem Matrix, contact your Account Manager today.

1.800.800.0019

www.govconnection.com/HPcloudmatrix

*Based on data from the HP BladeSystem and BladeSystem Matrix TCO Calculator

†Based in the IDC White Paper: The Business Value of HP Business Service Automation (BSA) Solutions

gov is all you need™ | GovConnection® A PC CONNECTION COMPANY

PROFILE

LARRY STEINKE, TECHNOLOGY DIRECTOR, SAINT FRANCIS HIGH SCHOOL, MOUNTAIN VIEW, CA

>> TECHIE TEACHER

Saint Francis is an independent Catholic school with 1,700 students, grades 9 through 12. I started here as a full-time physics teacher in 1997, and I would use technology in the classroom to engage students in doing activities that would lead them to conclusions. So in 1999, when there was a need, it was a natural fit for me to take on this administrative role where I was in charge of the technology. As a teacher I understood the clientele a little better than a traditional system administrator might, and I also had a larger vision for what technology should be able to do for students.

>> BEYOND BETA TESTING

For two years I participated in the Modeling Workshop for Physics, a National Science Foundation-sponsored educational workshop that had a profound effect on my instructional use of technology. It made me more focused on cognitive development than on simply creating activities in class to fill time or expose students to new equipment. It has helped influence me to think of computers as abstract tools and not the expensive, important, high-value items used in school marketing campaigns. It is how institutions use technology to influence student learning that interests me. I hope to see education finally benefit tangibly from the last 30 years of being in a "beta"-like state of using technology in schools.

>> BREAKTHROUGH TECHNOLOGY

There was a big jump when we got the internet into classrooms. Then things kind of plateaued until there were laptop carts that could go to every classroom, so that teachers could use computers whenever they needed to. And that was the status quo for close to 10 years. The ways in which most teachers were using those computers lacked innovation. With smartphones and iPads, teachers have a chance to reset their thinking. In the past, the network infrastructure has inhibited the use of the computers. The machines were a little heavier, there were a lot more cables, and one thing or another took the shine off. The iPad is much more of an end-user device—as easy to use as turning on your TV. The teachers don't have to wait for the kids to boot up or log in; they're realizing benefits almost instantly in the classroom.

>> ORGANIC GROWTH

We are seeing a revolution. Kids are coming to school with computers without us needing to force the issue. We need to inspire them and then get out of their way. Even teachers are starting to do things on their own. They are saying things to me like, "I can do this cool thing on my phone and was wondering if there was a way for me to get my students involved...." They are seeing past the technology and beginning to look at the core goals of their curriculum. Students and teachers are beginning to find out what works for them organically.

MY TOP 3...

WAYS TO IMPROVE COMMUNICATION AT A SCHOOL

Let People Try New Things "Provide high-level guidelines for appropriate usage and then let your teachers try new things."

Invest in the Web and Mobile Content "You don't know how many schools still treat their website as optional after printed publications are mailed out."

Put Account Management in the Hands of the Parents "Vendors need to embrace OpenID and mechanisms to allow parents to access information about their children. "

>> A NEW KIND OF CLASSROOM

One of the best courses I had in college was a solid-state physics class, and the reason it was so deep in terms of content was that the instructor structured his class around a model where the students were required to take charge of their learning if they wanted to survive his lectures. The time in class was treated as a special time, not to be wasted. Too often, in an effort to meet the needs of all students, teachers adjust their classroom strategies around those with the greatest needs, and classroom time for the ambitious student is often wasted. You can create tools using technology, recording lessons and developing tutorials for students to use as needed, so that class time is for the insightful discussions that require a teacher to be present. This isn't a new educational idea, but with technology we can bring it to a much broader audience. Classrooms can become gathering places where ideas are shared among those who have already participated in the learning process.

Daniel Hertzberg

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

Jennifer Demski

Map Quests

GIS technologies allow students to tackle real-world issues while developing critical thinking skills.

IMAGINE A HIGH SCHOOL SENIOR who could predict social uprisings in developing countries by mapping out data from the North African and Middle Eastern countries that recently experienced citizen revolts. Or offer recommendations for driver's ed and safe driver programs because of what he or she knew about the density of teen driving accidents over time in a specific region.

The technology that allows high school students to do these things—geographic information systems, or GIS—exists. And, as the work of the students and teachers in Virginia who participate in James Madison University's Geospatial Semester program seems to indicate, it might just revolutionize project-based learning in K-12 schools as students use critical thinking skills to examine real-world issues.

Robert Kolvoord, James Madison professor of integrated science and technology and cofounder of the Geospatial Semester program, describes GIS technology as the union of databases and maps. "Think of the map as the window into your database," explains Kolvoord. "Similar to how Google Earth organizes information geographically instead of textually, GIS allows you to do the same, but with a great deal more control."

JAMES MADISON UNIVERSITY'S Geospatial Semester introduces high school students and their teachers to using GIS technologies to solve real-world problems.

GIS users can input data on a particular subject into Esri's ArcGIS software, along with geographic information linked to that data. The data is then displayed as icons on a map, allowing the user to get a spatial understanding of the numbers represented in the data. Users can input and view data from multiple sources simultaneously on a single map, with each source appearing as an independent layer of information, which allows them to identify trends or patterns.

For instance, if students wanted to see the correlation between bicycle lanes and bicycle safety, they might find data on bicycle accidents, on bicycle citations, and then on bicycle lane locations. They then could select the parameters they want to study and create a map that demonstrates the density of incidents. With this visual representation of the data on a density map, they can easily see any patterns that might suggest a relationship between bike lanes and bike safety.

Kolvoord created James Madison's Geospatial Semester program in 2005 as a way to engage high school seniors in their final semester—a time when many seniors lose interest in school—by exposing them to the transformative aspects of geospatial technologies. Kolvoord says, "The Geospatial Semester is a way to offer these seniors a combination of geography, technology, and spatial analysis skills."

There's another incentive. Students who participate in the Geospatial Semester have the opportunity to earn three to six transferable college credits through James Madison. Depending on the student's final project, the credits can be applied to either science or humanities courses.

Widespread in Industry

GIS technology is already heavily used in a wide variety of industries. Business and marketing, advertising, insurance, healthcare, transportation, public safety—any field that relies on data to increase efficiency and effectiveness likely also relies on GIS technology to home in and pinpoint areas that require attention. Its use in education, particularly in K-12 schools, is relatively new, mainly because

Don't panic, interactive whiteboard.

I'm sure someone can still afford you.

Meet Mobi View™. Only $449.*

Mobi View™ mobile interactive whiteboard delivers maximum mobility and interactivity for a fraction of the cost of a fixed interactive whiteboard. Plus, with its touch screen you can easily launch, control, and interact with any application, website, or instructional resource from anywhere in the classroom. No wonder those other interactive whiteboards are worried.

100% interactive whiteboard.

And that's just the beginning...

eInstruction®
Simple Solutions. Real Results.

To learn more about Mobi View™ visit **www.einstruction.com/mobiview-tjrspt**.

* U.S. Education List Price in USD. Valid in the U.S. Only.

of the investment of time required to master the technology. That's why Kolvoord runs the Geospatial Semester as a "mentor dual enrollment" course rather than a typical dual enrollment course in which a high school teacher is anointed an adjunct teacher for a local community college, provided with a college syllabus, and then turns in his students' grades at the end of the semester.

With the mentor dual enrollment, Kolvoord and another university faculty member visit the participating classrooms throughout the semester and provide technical support, training manuals, and project mentoring. "In the GIS world, data is one of the biggest challenges," explains Kolvoord. "We help the students and teachers shape their projects and identify data sets, and find data that is available and appropriate."

Students draw data from any source that houses information applicable to their projects: the US Census, US Geological Survey, and records and reports created by local cities, towns, and counties. Students can even collect the data themselves, using handheld GPS units to compile data that will then be spatialized and connected to a map through ArcGIS. At **Western Albemarle High School** in Crozet, VA, earth science instructor Paul Rittenhouse had his students compile data on the strength of the school's WiFi signal throughout the building and create a coverage map similar to the maps provided by cell phone providers. "We were able to take this to the district IT department so they could see which areas had strong connectivity and which areas were dead zones," explains Rittenhouse.

Rittenhouse began incorporating GIS technology into his earth science curriculum in 2003, and immediately saw the value the technology could have across all disciplines. "It's a challenging piece of software," remarks Rittenhouse, "and once it engages you, you want to learn more about what it can do. As you expose yourself to different GIS projects, you see that there's a skill set that's enhanced by the software that isn't necessarily about science. It can be done in cooperation with whatever topics are being studied to take student engagement a step further and help students understand what's being taught on a deeper level."

Rittenhouse began teaching a standalone GIS course through James Madison's Geospatial Semester in 2006, and now works with teachers throughout his district to incorporate GIS units into their curricula. He adds, "The drive behind GIS isn't the software. It's about helping the students develop a process of thinking, based on inquiry, and being able to transfer that process of thinking to make better informed decisions."

Patterns Are the Real Issue

The ultimate goal of the Geospatial Semester is to have each student present findings on a topic of their choosing to their teacher and the James Madison staff, but teachers spend the first part of the course modeling and demonstrating projects to the students as they learn the capabilities and purpose of the technology. As Ryan Miller, a teacher at **Washington-Lee High School** in Arlington, VA, explains, "The biggest obstacle is making sure they can take the technology and the tools that we teach them, and use those to explore the topic that they're interested in studying. The focus of the program isn't the technology, it's the development of the pattern recognition and spatial thinking skills that the students gain through the application of the technology." Miller might have his students begin the course by looking at a city's crime data in relation to its demographic and socio-economic data.

After that introductory phase, students are encouraged to explore a topic of their choosing as the focus of their extended project. Topics in Miller's class have ranged from the influence of wealth on recycling to patterns in the recruitment of hockey players worldwide. One student analyzed historical flood data for the nearby Potomac River, and layered that with current property data to identify properties that could potentially be damaged in the event of a major flood. At the same time, the student estimated the monetary value of the potential property loss.

Another student created an index that evaluated which communities in the Washington, DC, area offered residents the highest quality of life. "He came up with his own metrics to evaluate and demonstrate the highest quality of life: access to transportation, pollution levels, and so on," remarks Miller.

Rittenhouse's students at Western Albemarle High School are responsible for the analyses of composite predictors of social upheaval and common factors of teen driving accidents mentioned above, among others. "This technology can be used to look for relationships and patterns in so many different topics," remarks Rittenhouse. "We've had students who've gone on to pursue degrees at four-year institutions come back and say they'd be upset if they'd gone through high school without being exposed to GIS."

In Rittenhouse's view, the biggest obstacle he and other GIS teachers face now is lack of awareness of the technology among students and educators. His superintendent, Pam Moran, is on board with helping him increase that awareness, and has even had students in Geospatial Semester courses throughout the district's high schools use it to assist in administrative matters. By feeding data gathered from GPS systems installed in the district's school buses into GIS software, students were able to reroute them and reduce bus transportation by 25 percent—a boon to a district that covers 726 square miles. (For more on the use of geospatial technology in school transportation, see "The Long [Green] Bus Ride Home" on page 22.)

With Moran's support, GIS technology is being incorporated into the curriculum all the way down to the elementary schools, where students work on basic mapping projects. "The GIS-based projects that are being tackled in the classrooms of teachers like Paul Rittenhouse are 21st century learning," Moran says. the

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

LINKS

- **Esri**
  esri.com
- **Google Earth**
  earth.google.com

THE PROBLEM: OUTDATED FRAME RELAY, ATM AND PRIVATE LINES

THE SOLUTION: COMCAST METRO ETHERNET

Don't let your business get stuck with legacy technologies. Comcast Metro Ethernet is completely scalable, allowing you to quickly and easily double your bandwidth without doubling your costs. So your total cost of ownership is low and your budget goes further. And the private network is operated by Comcast from the first mile to the last, giving your business reliability, security, and lightning-fast speed. Comcast Business Class Ethernet is the choice of companies that realize outdated technology just can't compare. Get it today for your business.

877-558-7852 | business.comcast.com/ethernet

Comcast BUSINESS CLASS

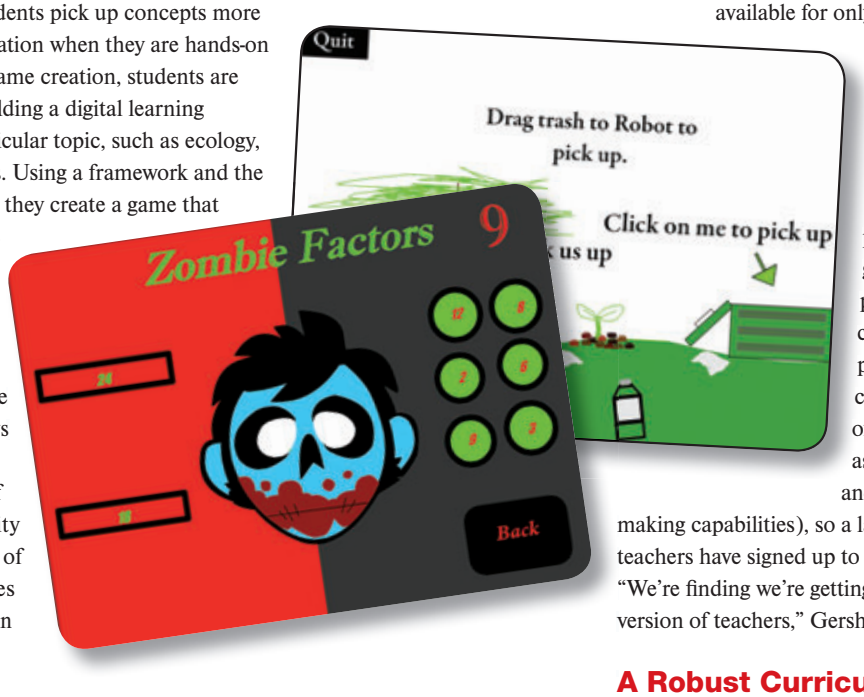
Charlene O'Hanlon

Don't Play It, Make It!

A new generation of gamers is not just picking up skills by playing video games—they're learning by designing and creating the games themselves.

USING GAMES AS A LEARNING TOOL is not new—research abounds to demonstrate the use of video games enhancing problem-solving skills and creativity. Pioneer educational games, like Carmen Sandiego and Oregon Trail, have given birth to online, multiuser, digital simulations that would make their forebears blush. Now, in what seems to be a natural evolution, a growing number of schools are taking the concept one step further and asking students to design the games themselves.

Game creation as a learning tool is really just a digital-age take on the old learning-by-doing approach to teaching: Students pick up concepts more easily and retain more information when they are hands-on with their subject matter. In game creation, students are presented with the task of building a digital learning activity that focuses on a particular topic, such as ecology, mathematics, or social studies. Using a framework and the fundamentals of game design, they create a game that demonstrates their knowledge of the topic.



"If you make the student the creator and have an interest-driven scaffolding around the program, you have a powerful learning tool," says David Samuelson, executive vice president and director of Games and Augmented Reality at Pearson and co-moderator of the working group that focuses on game-based learning within the Software & Information Industry Association (SIIA).

"When students make a game they have to model the system and have a deeper mastery of the subject. It's a deeper learning experience," says Alan Gershenfeld, president of E-Line Media, developer of the Gamestar Mechanic framework for game creation. "The process also incorporates 21st century skills—game design requires that. To succeed in the workplace, students will have to have those portable skills. Plus, kids love it."

Engage, Educate, Empower

Gershenfeld, who previously ran Games for Change, an organization dedicated to games for social impact, co-founded E-Line Media to create game-based learning products and services that "prepare youth for lives and careers in the 21st century," according to the company's website. In the fall of 2010, E-Line launched the online game-creation platform for kids, Gamestar Mechanic (originally developed by Gamelab, the Institute of Play, and the Academic Advanced Distributed Learning Co-Lab at the University of Wisconsin-Madison), targeting middle school students.

Gamestar Mechanic is built on a foundation of pedagogical research that takes into account systems thinking, digital literacy skills, and STEM learning. E-Line regularly works with learning scientists James Paul Gee and Katie Salen to develop the curriculum behind Gamestar Mechanic, and receives regular feedback from teachers on how to improve its learning impact and better reinforce skills. "We constantly optimize it," Gershenfeld says.

Although the program has been widely available for only a year, Gamestar Mechanic now is being used in 800 schools, which Gershenfeld says is "way more than we ever anticipated." The basic game is free (the premium version costs about $20 per month per classroom and offers features such as personalization and additional game-making capabilities), so a large number of teachers have signed up to see what it's about. "We're finding we're getting a very good conversion of teachers," Gershenfeld says.

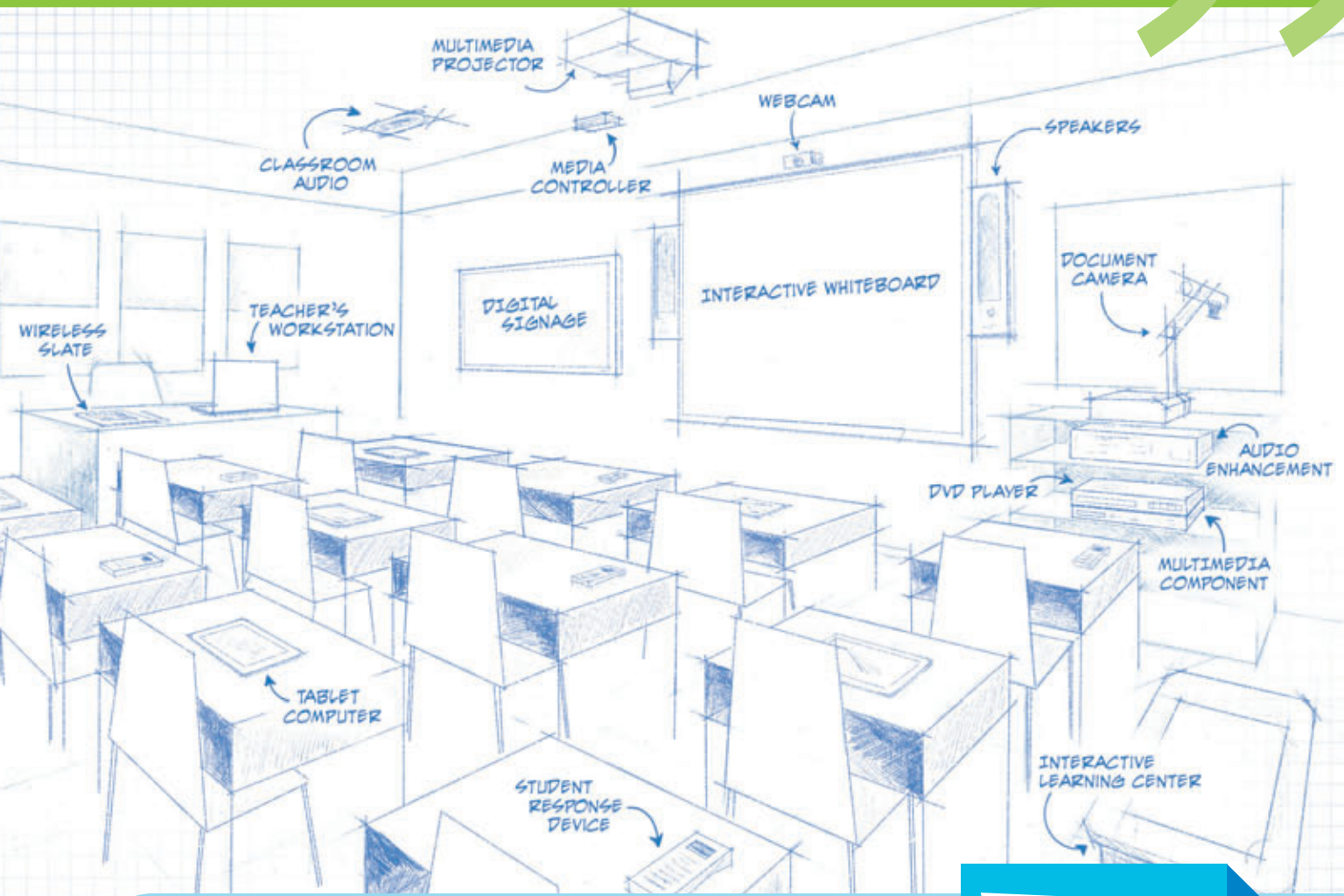
A Robust Curriculum

Scholastic's Level Up! uses Gamestar Mechanic and another online game-building engine, Activate!, to promote game creation as a learning tool in the classroom. Sponsored by the AMD Foundation, Level Up! offers teachers step-by-step lesson plans to integrate game creation into their classroom curricula.

"Gamestar Mechanic has a robust curriculum for teachers, more than 200 pages, so we pulled out simple lesson plans to make it more accessible to teachers," says Kerri

When our classrooms needed a technology facelift, we didn't know where to start. Teq mapped out which products were the best fit for our needs, taught us how to use them effectively, and provided the long-term tech support we needed.

– Bill, High School Principal, New York



Your classroom *powered by* Teq

For the past 12 years, educators have trusted Teq to provide top quality interactive classroom technology and support. From consultative services and product demos to professional development and technical support, we can help your school create a blueprint for success.

teq.com

*Call **877.243.7470** or visit **teq.com/blueprint** for the complete classroom solution.*

Schlottman, director of external relations at the Alliance for Young Artists & Writers, which runs the Level Up! site. "We try to keep it across the board so any teacher in any discipline can use it, although its sweet spot is grades 6 to 8."

Activate!, she says, is more systems- and programming-based, geared toward students interested in actual game programming. Like Gamestar Mechanic, it also is curriculum-based, but Activate! focuses more on math and science skills, while Level Up! focuses as much on the artistic aspect of gaming, giving students an outlet for their creativity.

"When you talk about game creation as a learning tool, there is always a lot of discussion around the STEM disciplines, but it's also important for art and writing because it involves a lot of imagination," Schlottman says. "These programs encourage kids to think of themselves as artists and writers. They're valuable in getting kids to think differently about their individual talents and they encourage [a] high level of collaboration, which mimics the real world."

When students make a game, they have to model the system and have a deeper mastery of the subject matter.

Opening Doors

Another gaming framework that appears to be successful in the classroom is Globaloria Games, developed by the World Wide Workshop, a foundation that supports development of social media technology and game production as learning tools in underserved communities. Several schools in West Virginia; one in Austin, TX; another in San Jose, CA; and two in New York City are now using Globaloria, embedding it into the school curriculum, says Shannon Sullivan, vice president of programs and production at the World Wide Workshop.

Globaloria has been around since 2006 and, like Gamestar Mechanic, uses game creation to teach and reinforce concepts. But, Schlottman explains, Globaloria specifically "strives to fill in the gap" for economically disadvantaged schools.

East Austin College Prep Academy (TX) serves a low-income population, and many of the students who attend don't have access to technology outside the classroom. "About 50 percent of the students are English-language learners," says Teresa Valdez, who uses Globaloria to teach her students mathematics and social issues. "About 90 percent receive free or reduced lunch, so they don't have computers at home."

Globaloria helps Valdez's students in other ways as well."Getting them into this technology field will open a lot of doors for them," Valdez says. "When you look at kids who have these technologies at their disposal, they are already so far ahead. If our kids didn't have this at school, they wouldn't know how to use the computer for anything constructive. Now they have more than a working knowledge of computers; they have skills they can take into the workforce."

Like Gamestar Mechanic, Globaloria strives to teach more than just the core STEM subjects; students also learn game design, programming, wiki formatting, writing, and multimedia production—all marketable real-world skills.

Additionally, these programs aim to have students practice communication, problem solving, collaboration, and teamwork—skills they can't obtain from a textbook.

"We are graduating through the stage where we've accepted that games are now a part of society, and we're looking for the best ways to incorporate them into the teaching environment," Pearson's Samuelson says. "It is a natural progression."

Gaming platforms can be used not just to create games. William Dorsey, biology instructor at **Capital High School** in Charleston, WV, last year used Globaloria to have his students create tutorials about the properties of water and the characteristics of living organisms—two areas Dorsey knows are difficult to master. Dorsey believes that the tutorial design process gave the students "a deeper, more long-lasting knowledge of the topic," than if he had given them a more traditional project, such as a research paper. "I found a lot of students became better problem solvers," he adds.

At East Austin College Prep, Valdez incorporated writing blogs, viewing documentaries, and researching various social issues into Globaloria projects. She organized students around topics and noticed that "many of the students ended up working with kids they didn't know very well," she says. "Because those groups were more self-directed, I gave them the freedom to put into the game whatever they wanted.

"I didn't teach them how to make buttons, for example, but I had one student who desperately wanted to add buttons to his game. I told him to figure out how to do it and, once he did, he had to teach everybody. They learned it faster and a lot better because they were learning from him."

Valdez also noticed a sense of determination emanate from these students, especially when their games wouldn't run correctly. "They wouldn't give up trying," she says.

Charlene O'Hanlon is a freelance writer based in New York City.

LINKS

- **E-Line Media**
  elinemedia.com
- **Gamestar Mechanic**
  gamestarmechanic.com
- **Globaloria**
  worldwideworkshop.org/programs/globaloria
- **Level Up!**
  scholastic.com/createvideogames
- **Pearson**
  pearson.com
- **Software & Information Industry Association**
  siia.net
- **World Wide Workshop**
  worldwideworkshop.org

CONTROLLING YOUR CLASSROOM DOESN'T HAVE TO BE

MISSION: IMPOSSIBLE

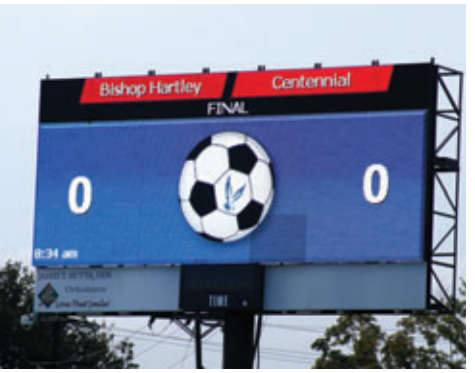
VIEW STUDENTS' SCREENS | PRINT / WEB / APP CONTROLS | TESTS & SURVEYS | INSTRUCTION TOOLS

With NetSupport School there 's no need to 'self destruct' worrying about monitoring and managing computer activity within your IT Classroom. NetSupport School is a single software solution for the instructor that delivers visual & audible monitoring of Student PC's, encourages group collaboration, reduces teacher workload, provides students with a unique digital reminder of vital lesson content and with a separate but included module, gives technicians the tools they need to manage and support computers across the campus to minimize equipment downtime.

Turn impossible into possible and download a free classroom trial at www.netsupportschool.com.
Contact our educational specialists by email at sales@netsupport-inc.com or call 1 888 665 0808.

NetSupport

Alva James-Johnson



A Win-Win Signage Solution

An Ohio high school finds that the digital signage it originally installed for sports provides benefits that reach beyond its athletics program.

THE TWO BASKETBALL SCOREBOARDS in the gymnasium at **Bishop Hartley High School** served the Columbus, OH, school well for 35 years. But over the past 3½ decades, the scoreboards became outdated eyesores, unable to accommodate the school's growing needs.

So in 2006, when officials at the small Catholic high school began making plans to renovate the gymnasium, upgrading the scoring system was close to the top of their list of priorities. They decided to install four projector screens and digital signage software that would allow the school to not only keep track of points for basketball games, but keep track of all the sports that used the gymnasium, as well as all the other school activities that take place there.

Because they had worked with Radiant Technology on projects in the past, school administrators chose the company to develop and install the new digital signage system. Using the Omnivex software platform, the company customized the system to meet the school's needs and dubbed it HawkVision, after the school mascot.

Even before the digital signs were installed, Bishop Hartley was known for its advanced technology program. It was one of the first high schools in the nation to provide an entire senior class with tablet PCs, according to Bishop Hartley Technology Director Kenneth Collura. The school has a media-rich lecture hall designed for innovative educational options, including videoconferencing and distance learning. In addition, Bishop Hartley has won state and national awards for technology innovation, and has been nationally recognized for integrating technologies such as Smart Boards, high-speed wireless access, mobile computer carts, and digital music and video studios into education.

Bishop Hartley, with 16 types of sports, is also known for its robust athletics program—so upgrading the technology in the gym was an easy choice to make. "We have been innovative for the past 20 years bringing technology into the classroom," Collura says. "When we were doing the gymnasium, we realized it was one of the main areas that we hadn't reached with technology."

Success With Adaptability

Douglas Freutel, director of business development at Radiant Technology, says the Omnivex software is designed for adaptability and allows digital signage to be used for a variety of sports and activities.

"In the gym, the old technology was designed for basketball," Freutel says. "The neat thing is [that with the new technology] we can actually create unique scoreboards for each sport. The volleyball team is able to [say], 'We're important too. We actually have something that's ours,' and it creates an atmosphere that caters to their particular needs."

The digital signage solution makes the gym feel more like a major league sports arena, displaying player statistics, video, cheers, and sponsors' advertisements at every game.

The gymnasium project was so successful that the school installed a 14-by-30-foot LED video digital sign on the football field in 2009, using the same digital technology to display images and energize the fans. It's also used for soccer, lacrosse, and track.

The football team became state champions this year for the first time since 1986, and the volleyball team has won six consecutive district championships. While other factors obviously contributed to the wins, the digital scoreboards certainly didn't hurt, says Dave Thompson, athletic director at Bishop Hartley. He says that the scoreboards are a

great way to energize a sports program, and they have had a big impact on morale. "The technology has made us more visible and created a sense of excitement, giving a unifying sense of purpose for our fans and students," Thompson says. "Football Friday Night is huge in Ohio and it just gives us another thing to get pumped up about."

Beyond Sports

The digital scoreboards have also had a big impact on student relations. In the five years the school has used the system, Collura says that the use of digital signage has helped to bridge the gap between athletes and student "techies," two previously often polarized groups.

Students in the school's advanced computer independent study program were responsible for developing the digital signage content and loading it into the system. "One student couldn't participate in a sport because he was physically challenged, but he ran the scoreboard, making him feel very much a part of the team," Collura explains. "This has turned out to be much more rewarding than I thought it would be. There's no large division between the jocks and the techies. There's a lot of crossover. It's been great."

The new technology has brought out the students' creativity, too, says Collura. During one season, students produced a video series that featured the school's mascot, and a different episode aired during each game. Students also designed a video that includes the national anthem, a waving flag, and a flying hawk to introduce sporting events. It has become a standard at every game.

The digital signage systems are used for more than just sports at Bishop Hartley too. They're used to display photos for graduation, videoconferencing at faculty meetings, and message boards during assemblies and open houses. Collura says the school has even started to use the digital signs to generate revenue, selling advertising space to colleges, local orthodontists, and general boosters and supporters. One local business donated a flagpole to the school in exchange for advertising.

But while the potential is there for fundraising, it has taken a while to materialize. "That's the next step everyone is looking for," Collura says. "Can we put some advertising on there to support the program? That's been done, but not as extensively as I would like because it's still very new. A lot of businesses don't understand it yet. We don't know how to price it, especially on a high school level."

Freutel says that the scoreboards are also good marketing tools for Bishop Hartley, and Collura says the school has received phone calls and letters from other schools wanting to learn more about the technology. "The fact that this little, economically diverse school is able to have this kind of technology makes it a very exciting place," comments Freutel. "It really helps with their recruiting efforts." the

Alva James-Johnson is a freelance writer based in Fort Lauderdale, FL.

Lisa Plummer

The Long (Green) Bus Ride Home

In a challenging economic environment, school districts are looking for ways to manage their transportation costs, reduce carbon footprints, and maintain student safety.

THERE WAS A TIME WHEN creating school bus routes was a pretty simple routine: Stick a map on a wall, place pins in all the stops, use string to link the pins together, and form routes. But thanks to the evolution of routing software and its more recent partnership with global positioning systems (GPS), that routine is becoming archaic. And in a challenging economic environment—skyrocketing fuel prices, slashed budgets, and tremendous pressure to do more with less—a growing number of districts are re-examining their transportation services to leverage technology to manage costs, reduce their carbon footprints, and maintain student safety.

"Schools have always looked for ways to find efficiency, but at this point it's gone beyond efficiency," says Antonio Civitella, president and CEO of Transfinder, a computerized routing and GPS software developer. "Now it's about cutting as much as you can and making incremental changes without impacting the community. That's where you need software—you can't do it with paper and pen or pushpins in a map on a wall. It can't be done that way anymore."

Satellite-based GPS technology in particular is becoming an instrumental tool for school districts. Either through radio or cellular-enabled hardware, GPS systems collect and deliver real-time data about bus locations, speeds, travel times, distances, and lengths and times of stops. When used in tandem with routing systems, the technology provides an integrated visual view of the actual routes being driven versus planned routes, allowing transportation departments to recognize and resolve any differences to optimize efficiency and ensure route compliance. In addition, GPS technology can assist with fuel efficiency and bus maintenance by tracking when engines are turned on or off, are idling, or are experiencing mechanical issues.

"Anything that can be done to maximize efficiency, reduce the number of vehicles needed to meet transportation demand, as well as time and miles operated, is going to reduce costs and lower carbon footprints," says Scott Parker, senior director of First Planning Solutions, a division of First Student, a provider of school transportation services. "Routing systems and GPS technology can be essential."

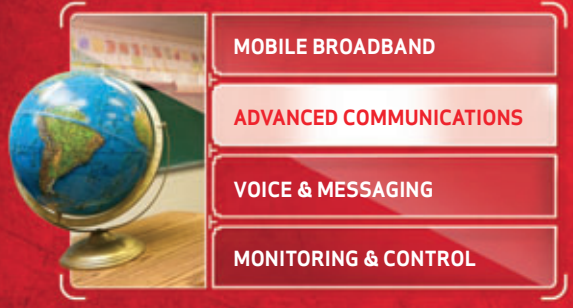
Tracking Efficiency and Students

The **Scottsdale Unified School District** (AZ) has relied on routing software for two decades to streamline its transportation operations and slash costs. But recently the district—with 33 schools, 27,000 students, and 220 buses transporting 8,000 students per day—upped its efficiency and cost-savings ante by investing in student tracking software and GPS technology.

Dan Shearer, the Scottsdale district's director of transportation, said the year-old GPS system has refined efficiency and given him the ability to track buses, communicate with drivers, manage and review routes, and control idling. Student tracking software—to be implemented in early 2012—will only maximize those capabilities by allowing transportation officials to monitor student ridership, increase load efficiency, consolidate buses, and ensure student safety and security.

"Now we'll be able to identify each student as they get on and off the bus, what

MAKE THE WORLD THEIR CLASSROOM.



From the chalkboard to the message board, Verizon technology enables students and teachers to enhance learning beyond the classroom door. Download assignments, upload projects, use video to collaborate with classmates and learn from more places than ever before. A suite of education solutions and unmatched network coverage and reliability from Verizon adds up to a better—and more expansive—learning environment.

verizonwireless.com/education

verizon

time they'll get to the school, and the daily loads on the buses," says Shearer. "Since we'll know the exact student counts on the loads, we'll be able to balance them out and deal with them more efficiently. I'm anticipating with the new Student Accountability system we could probably save $50,000 to $60,000 per year once we fully integrate with our student database."

Once the tracking hardware is installed on the buses and the software is integrated with the school's student management system, transportation-eligible students will be provided with RFID name tags they must tap on electronic readers when boarding or disembarking buses. The system will identify students, record when and where they got on and off buses, and allow the district to track and access this data quickly, especially in the case of a child not showing up at school or at home.

Both of Scottsdale's software solutions, Student Accountability and Routing and Scheduling, are made by Education Logistics, aka Edulog, one of the oldest routing and GPS software companies in North America, serving 70 percent of the nation's largest school districts.

Computerized routing systems have been around for more than three decades, but today's technology is more sophisticated and easier to use than ever before.

"People are buying products that save money right now," says Jason Corbally, Edulog director of sales. "All of our products are efficiency-driven, so the demand for our products goes up as the economy tightens. [Districts] can save their investment in six months."

Marrying Distinct Transportation Solutions

The **Liverpool Central School District** in suburban Syracuse, NY, does not have quite the same infrastructure demands as Scottsdale, with about half as many buses and schools (102 and 14, respectively). Still, it transports almost as many students every single day (7,700).

At the heart of Liverpool's efficiency efforts are Versatrans Routing & Planning and Onscreen GPS and routing integration software from Tyler Technologies. According to Robert Peters, Liverpool director of transportation, the year-old marriage of its transportation solutions has enabled the district to quickly and easily track and monitor more activities than ever before, including whether a bus has driven off-route, which kids are at which stops, if a bus is running late, or if a driver needs assistance.

As a consequence, the district is saving money on fuel, bus maintenance, and payroll. The more efficient the routes, the less time buses are on the road, the less fuel is consumed, and the fewer hours the drivers log.

"My estimated cost savings for what we've done with our routing changes is $325,000 in one year," says Peters. "We would not be able to run as efficiently as we have been running and save the money we've saved this year and in years past without this technology."

Growth and Cost Cutting Sometimes Do Mix

The **Round Rock Independent School District** (TX) is one of the fastest-growing school districts in the United States. This year it will have 48 schools, 250 buses, and 41,000 students under its wing. The district will transport 13,000 students twice daily and operate 157 routes generating 1,100 daily trips over approximately 17,000 miles. Round Rock has gradually implemented GPS technology while continuing to optimize its 13-year-old routing system to save the district millions of dollars in fuel, operations, and payroll costs.

According to Dan Roberts, Round Rock executive director of long range planning and business systems, these technologies have enabled the district to progressively refine its transportation efficiency. However, it also has managed to absorb an additional 2,000 students annually without adding many more buses to its fleet. In a state that has the kinds of financial problems Texas has had in recent years, increasing efficiency is a constant challenge that must be addressed.

"If you compare us to [other] districts our size, we're saving probably in the neighborhood of 150 buses a year," says Roberts. "At $95,000 a bus, we're saving millions. But we've been doing this a long time, so it's not like we just jumped in and [were successful overnight]. I think we save at least 10 bus routes a year. We're driving the routes as efficiently as we can. We also enforce a no-idle policy."

To achieve that high rate of efficiency, Roberts leverages Routefinder Pro software, a routing, planning, and scheduling solution made by Transfinder, allowing the district to practice the fine art of cost avoidance, a skill Round Rock continues to hone to this day.

For example, in 2008, Roberts used the software to create more linear bus routes and avoid the fuel-burning twists, turns, stops, and starts of neighborhood development, reducing the amount of time on the road, decreasing the environmental impact, and saving the district thousands of dollars each year. In the first year of its implementation alone, the routing system helped Round Rock cut 10 bus stops and save $460,000, Roberts says.

School districts like those in Liverpool, Scottsdale, and Round Rock appear to have a message for those that have not yet made the investment to marry GPS with routing systems: Perhaps it's time to invest in technology that may pay for itself over time and at the same time open up new levels of cost savings that can't be achieved through routing software alone. the

Lisa Plummer is a Las Vegas-based freelance writer.

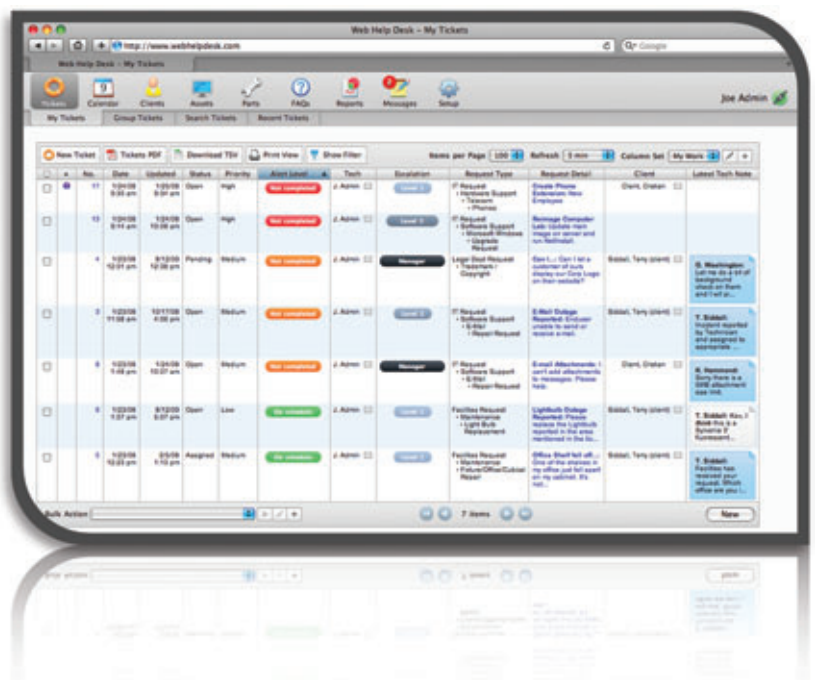
LINKS

- **Education Logistics**
  edulog.com
- **First Student**
  firststudentinc.com
- **Transfinder**
  transfinder.com
- **Tyler Technologies**
  tylertech.com

Help Has Arrived.

Web Help Desk

Powerful Software for Service Management



Web Help Desk is the leading cross platform service management solution for support professionals seeking to simplify and control their increasingly complex service management environments.

Contact us today to learn more.

www.WebHelpDesk.com

Thomas Barwick/Getty Images

When large urban school districts undertake technology implementation, things can get... well, a little bit complicated. But that doesn't mean that big-city schools can't find success.

BIG-C

CITY RULES

By Dan Gordon

IN 2007, BOSTON PUBLIC SCHOOLS did not have a sustainable model for providing its nearly 5,000 teachers and 56,000 students with access to technology. "Curricular materials were coming out with online components or electronic digital resources and yet, if you surveyed a room of teachers, they didn't all have access to the same tools," recalls Melissa Dodd, chief information officer for the district. What's more, the district's Technology Self-Assessment Tool found that 69 percent of the teachers didn't consider themselves to be technology-proficient, and only 54 percent said they were using technology as much as they would have liked to in instruction.

Those statistics come as little surprise to Ann Flynn, education technology director for the National School Boards Association. "An urban district, by the sheer number of students it serves, has concerns about scale that are typically not as much of an issue for smaller districts," she says.

When it comes to implementing innovative classroom technology programs, urban school districts such as Boston's face significant challenges stemming from their big-city status. These range from large bureaucracies, to scalability, to how to meet the needs of a more diverse group of students.

Because of their size, Flynn notes, urban districts tend to have greater distance between the chief technology officer and those who actually use instructional technology, with separate reporting hierarchies often leading to "silos" and insufficient communication—a problem that can be exacerbated because employees' offices are geographically dispersed rather than centrally located.

Despite these challenges, there are urban districts that have managed to implement bold technology initiatives. In looking at their stories, certain common themes—like buy-in, flexibility, professional development—emerge as essential elements to achieving success on the larger playing fields of big-city schools.

Everyone Gets Buy-in

The year after Boston Public Schools learned more than two-thirds of its teachers did not consider themselves tech-savvy enough, the district launched Laptops for Learning (L4L), a four-year strategic initiative that would provide every full-time classroom teacher with a state-of-the-art, dual-platform MacBook and a suite of educational software. District officials, however, laid some important groundwork before that.

In developing the plan, Dodd and her colleagues collaborated with key stakeholders, including the powerful Boston Teachers Union. "When we ask teachers to sign a laptop use agreement that outlines the terms and conditions of their participation, the support of the union is huge," Dodd says.

[keyword: big city visit thejournal.com]

As chief e-learning officer for **Chicago Public Schools**, Sharnell Jackson also became a strong believer in the importance of making sure everyone was operating from the same playbook in implementing the technology plan. "There has to be a vision and strategies for implementing technology in the district, and then you have to align budgets to those core strategies so that everyone is supporting them," says Jackson, who retired from the district in 2008 and is now president and CEO of Data-Driven Innovations Consulting, which works with school systems and business partners to promote 21st century teaching and learning.

iPrep Academy: Miami-Dade Superintendent Alberto Carvalho serves as principal of this technology-rich magnet high school, established by the district through an internal innovation competition.

In her position at Chicago Public Schools, Jackson says, her role was to find ways to bring staff from disparate district departments together in a way that supported the broader technology vision. She used the development of a district technology plan as an opportunity to promote such cross-departmental teamwork.

Jackson believes Chicago was also several years ahead of many districts in using data to inform its technology implementation. "Previously, teachers were just given laptops with minimal training and no evidence that would show what difference it made," she says.

As was the case in Boston, Jackson had the Chicago teachers complete an online assessment survey, which found that in 2004 only about one in seven were proficient in the use of the technology. That result made it much easier for her to sell the district on investing in more training, which ultimately brought proficiency up to nearly 100 percent.

Today, 24,000 Chicago Public Schools employees have undergone basic technology skills training, 10,000 administrators and teachers use an online registration and interaction tracking system, and 3,000 teachers use personal digital assistants to monitor student progress.

Ensuring that everyone operates from the same playbook was also a primary concern in the large **San Diego Unified School District** as it launched its ambitious i21 Interactive Classroom initiative in 2009. The initiative, which is being rolled out over five years, provides 1-to-1 computing access in grades 3 to 12 for every school in a district that has approximately 130,000 students and 7,500 teachers. The program also provides interactive whiteboards, document cameras, laptops, audiovisual systems, student response systems, and other tools for teachers, all as part of an effort to transform learning.

"The focus has to be there. You can't just go out and do this at schools in isolation," says Darryl LaGace, chief information and technology officer for the district. "It's important to work very closely with your curriculum and other support offices,

FETC 2012

Register Now and Save with Early Bird Pricing!

January 23 – 26, 2012

Orange County Convention Center, Orlando, FL

Explore the Technologies That Drive School Excellence!

Make plans now to attend FETC 2012, the country's premier K-12 education technology conference. This unique event has earned an international reputation for ground-breaking conference content, and unparalleled opportunities to meet, problem-solve and be inspired by education technology pioneers and innovators from around the world.

New This Year!

General Sessions featuring such respected ed tech leaders as:

MICHAEL WESCH

Associate Professor of Cultural Anthropology, Kansas State University. Dubbed "The Explainer" by *Wired*, his videos exploring the effects of new media on society and culture have been viewed by millions

HEIDI HAYES JACOBS

Author, lecturer, commentator and driving force behind the Curriculum 21 website that works to transform curriculum and school designs to match the needs of 21st century learners

PLUS: 80 workshops ■ 200 sessions ■ 22 Hot Topic Focus Areas ■ 500 Exhibitors
Latest Technologies ■ Expert Speakerss ■ Networking Opportunities ■ And More!

REGISTER ONLINE NOW and take advantage of special EARLY BIRD SAVINGS!

Please use priority code FTAD

fetc.org

such as special education and language acquisition, so that they know about the program and can begin to rethink how they tap into this immense resource that's going into the schools." More than is the case in smaller districts, urban districts tend to serve a wide range of communities and must address the diverse learning needs of their students, LaGace notes.

In San Diego, a decision was made to roll out i21 throughout the district, but by grade level rather than all at once. In the first year, the program touched grades 3 and 5, along with high school math; last year, i21 went into grades 4 and 7, along with high school language arts. By the end of the fifth year, every grade throughout the district will be included.

But that's not the only way to do it.

Out in the Country

While large urban school districts have their own unique challenges — and solutions — when it comes to implementing technology, the same is often true of smaller rural school districts. Only the challenges are different, and circumstances often lead to different solutions. In the October issue of *T.H.E. Journal*, contributing writer Dan Gordon takes a look at how successful rural districts are implementing technology.

One Size Doesn't Fit All

Jefferson County Public Schools, which covers Louisville, KY, decided to start small. "Trying to stay systemic as we're integrating technology is challenging when you have nearly 6,000 teachers," says Sharon Shrout, the district's director of computer education support. "If we create a project around technology integration, there's always the question of how we can replicate it in all of our schools in a way that benefits everybody."

One way Shrout's district has dealt with that concern is to adopt pilot projects to explore emerging technologies in a small number of classrooms as a way of learning about best practices before expanding them across the district. "We have worked with iPads in a math classroom, we have worked with 1-to-1 in writing classrooms," she says, "and we've created an elementary technology magnet program that has given us an opportunity to help a struggling school have a focus." After the initial pilot project with iPads in math classes, the district eventually distributed them to all 6,000 teachers.

Miami-Dade County Public Schools, which serves approximately 345,000 students in nearly 400 schools, has followed an "internal competition innovation" strategy, creating incentives for principals to innovate, for example, by rewarding schools that save on utility bills with dollars that they can use for technology investments. "When I was appointed three years ago, we were in a precarious financial position," says Superintendent Alberto Carvalho. "We leveraged the chaotic condition into an opportunity for innovation—not through a decision that every school needed to do something at the same time, but by fostering innovation based on autonomous control of programs."

The result, Carvalho notes, has been a variety of new technology-centered approaches popping up throughout the district. Carvalho himself helped to spearhead one such model, iPrep Academy. Based in the district's administration building—where space became available after a 52-percent reduction in administrative costs—the magnet high school features a technology-rich WiFi environment in which each student has a laptop for use at school and at home, and a curriculum that is a hybrid of online and face-to-face classes.

In another effort to save money, Carvalho appointed himself principal. Because of the enhanced reliance on technology, the teacher-to-student ratio was higher than usual, with those teachers who are on site serving more as knowledge facilitators than traditional instructors. The environment screams modern right down to the décor—comfortable and edgy furniture, bright colors—and the all-digital content allows students to choose from a wide range of subjects. Because of the success of the flagship, Miami-Dade is launching two more iPrep Academy schools this year.

At the same time it has been promoting pockets of innovation, Miami-Dade has leveraged its clout as a large district to bring together major content providers—including McGraw-Hill, Voyager, and Discovery—to build a seamless platform of software programs, called Links to Learning. The program provides supplemental online curriculum content to support individualized student learning beyond the end of the school day. Tools in reading, mathematics, and science are targeted to students based on needs.

Size Isn't Everything

Scalability is not the only issue when a big district attempts to implement a technology program. Access and equity are equally important, particularly in districts where there is great socio-economic diversity.

"Many districts worry, as they should, about issues of equity and access," says NSBA's Flynn. "You want to make sure that what you're offering can be fairly distributed to students across the district."

That concern, in part, drove Boston's L4L business model. The Laptops for Learning project's implementation began with a phase called Project Refresh. Through donations from seven Boston-area businesses, the district was able to provide barely used hardware to schools that had the oldest equipment as a way of leveling the playing field.

"That's how we approached it," Dodd says, "not only from a programmatic rationale, but also to address the economic impact on the district and make sure it was sustainable."

The equity concern is particularly acute in districts with large numbers of students from low-income families. In San Diego, LaGace says, as many as 38 percent of students are from homes with either no broadband access or no computer.

LaGace says he wanted to address the "digital divide" by ensuring that every students has equal access to digital learning

resources, regardless of their economic status. "If students and teachers begin to rely on these technologies and there are subgroups that don't have access, we're inserting another divide in the achievement gap," he says. "That's my biggest fear."

With that in mind, plans are currently underway to take i21 to the next level in its third year through Learning on the Go, which will provide students with 3G broadband connections for their mobile devices, ensuring that they have 24/7 high-speed access. The program is being made possible by a $1 million grant from the Federal Communications Commission—the largest such award in the nation.

Teach the Teacher First

Teacher training is critical to the success of any district's efforts to integrate new technology tools into classroom education, but finding the right professional development formula can be particularly challenging in a large urban environment. The 69 percent of Boston teachers who did not consider themselves technology-proficient is not an anomalous statistic among urban districts.

Feeling a sense of urgency, the district sought to reach all of its teachers within a two-month time frame so they could take the laptops home over the summer and use them in professional development and to plan the upcoming school year. To do so, the district established teams of trainers who went to the schools to work with the teachers. "We leveraged everyone we had on staff to make it happen," Dodd says. "It was an all-hands-on-deck approach."

Teachers were required to attend a two-hour orientation on the educational software that was installed on their laptops and ways it could be employed in the classroom. The district then provides ongoing professional development on the use of the technology in the classroom, and works with curriculum departments to include use of the technology in their own professional development efforts. After the first year, teachers reported a significantly increased frequency in the use of technology to deliver instruction, Dodd says.

In Jefferson County Public Schools, teacher training is at the core of the Technology Integration Project, in which all 6,000 teachers receive tablet PCs, digital projectors, content-specific professional development, and ongoing support from education technology teachers. The district follows a "lesson-study" approach: Before teachers even learn how to employ the tools, they observe a colleague putting them to use in the same content area and are able to discuss with the teacher, both before and after, how the technology supports curricular goals. "It allows them to understand why you would want to use it," says Shrout, "and it has led to cadres of teachers continuing to have conversations about what's working and how to overcome challenges as they're bringing these tools into the classroom."

Footing the Bill

It would be difficult to find an urban district where cost isn't at the forefront of any discussion of technology integration. In San Diego, the five-year, $385 million i21 initiative is funded by Proposition S, a $2.1 billion capital improvements bond measure passed by San Diego voters in 2008. "This was the first bond in our district where the focus wasn't just on new buildings or air conditioning, but on creating a 21st century learning environment," LaGace says.

Faced with a high up-front price tag for its Laptops for Learning initiative, Boston Public Schools pursued a lease model, in which it would pay a smaller amount each year for the technology. More important, notes Dodd, rather than having to come up with a lump sum once every few years and being at the whim of budgetary ups and downs, the leasing model ensured that a fixed amount was set aside each year for equipment.

Winning community support helps too. The **Northwest Independent School District**, located near Fort Worth and Dallas, TX, covers 234 square miles and serves 14 communities in three counties. It is one of the fastest-growing districts in the state, with its 15,000-student population expected to nearly double over the next five years.

To solidify support for its technology initiatives—including a program in which all secondary students are given laptops for use at home and school—the district last spring held a Techno Expo. "We invited parents, school board members, and others in the community to come see what our kids are doing with the technology that they have invested so heavily in," says Karla Burkholder, director of instructional technology for the district. "It was very successful, helping us to gain support for what we're doing."

In many urban districts, Miami-Dade's Carvalho says, "we know exactly the course we need to take to provide a schooling model to students that's more reflective of the way they live and access information—departing from a one-size-fits-all approach and utilizing technology to provide opportunity for acceleration, remediation, and empowerment—but it's costly, and the economic constraints are a big impediment."

So beyond lobbying for community support, districts such as Miami-Dade have pursued creative budgetary strategies to ensure technology funding. Among other things, Carvalho notes, Miami-Dade has restructured its capital debt, back-loading some of its liabilities. "Get your technology today, maximize interest-free bond opportunities to the federal government, and maximize E-Rate reimbursements to accomplish that," he explains.

Leadership such as Carvalho's is a common thread NSBA's Flynn sees in urban districts that have overcome the obstacles to institute successful technology programs. "You need to have a strong, visionary leader who recognizes changing student needs and instructional styles, is able to convey these changes in a way that inspires staff to follow, has aligned resources to deliver professional development, and has gotten buy-in and support from parents and voters," she says.

"Those are some of the same elements you need to nurture success in any district, but they're incredibly important in urban environments, because moving a large district in a certain direction is not easy." the

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

With an ocean of data available to a district, how much does it really need to make informed decisions about student achievement? Not that much, it turns out, but districts likely can't do it without some help.

by Dian Schaffhauser

swimming with data

IT'S NOT EXACTLY A WELL-KEPT SECRET: Despite the drumbeat for data that has echoed through the jungles of education for over a decade, its nuanced use to make decisions for students is rare. And even though state and national longitudinal data initiatives from the US Department of Education (ED) have increased the pressure, relatively few schools or districts are actually spending the time or resources to work with the available data to pinpoint areas for student improvement.

"Most other professions have it down," says Andrew Tolbert, longtime superintendent of **Warren School District** in southern Arkansas. "If I go to the doctor for a headache, he doesn't treat me for bronchitis. The data tells you what the problem is. [Yet] if Johnny can't read, why is he being taught the same stuff?"

The problem is not a lack of data, says Kathleen Barfield, chief information officer at Edvance Research. "There's a public perception that schools are swimming in an ocean of data," she says, "but the data isn't in formats or systems that make it easy for them to actually take it out and use it."

Furthermore, despite that ocean of data, there may be only a few key pieces of information that a district needs to really put data-driven decision-making to work. How does a district find and apply it?

James Steinberg

The simple answer is: not on its own.

Many districts in the Regional Educational Laboratory Southwest region have discovered the advantage of tapping the expertise of an organization like an REL that can collect and massage data, marry it to appropriate research practices, and help districts then apply it to their own needs.

In other words, with the help of REL Southwest, districts in Texas and Arkansas—and now Louisiana—are learning to swim with data.

One Indicator at a Time

Edvance Research, based in San Antonio, is one of 10 RELs funded by the ED's Institute of Education Sciences to serve educational needs within specific regions. Edvance has a five-year contract (ending this year) to run REL Southwest, serving the states of New Mexico, Texas, Oklahoma, Arkansas, and Louisiana.

Barfield says the focus at REL Southwest, and "just about every large education organization in the country," is to figure out how to make available data—whether in state or local systems—understandable to districts and schools. "It's not just about longitudinal data," she says, referring to multiyear collections of data accumulated within state data reporting systems. "It's about all the data that districts and states have available, and how to make the best use of that in trying to address the problems schools are facing."

REL Southwest's challenge is to give districts an opening into the data analysis process that would help them find a way to move forward with it. The agency found one leverage point in a 2005 report from the Consortium on Chicago School Research at the University of Chicago. CCSR identified a key indicator for on-track high school graduation: Students who graduate on time have enough credits by the end of the ninth grade to be promoted to the 10th grade, and have not failed more than one semester of a core subject area.

This one indicator, says the Chicago group, "is a better predictor of high school graduation than eighth-grade test scores or students' background characteristics."

[keyword: longitudinal visit thejournal.com]

After reading REL Southwest's January 2011 report on the Chicago findings, several Texas districts asked the agency to see if the research had any relevance to their own students.

A team of Edvance researchers examined five districts' historical data and confirmed that on-time graduation rates were indeed higher for students who met the on-track requirements at the end of the ninth grade than for students who were off track. This applied to students across all racial and ethnic groups, suggesting that if school personnel intervened in that crucial year, they could make a difference in whether a student graduated on time.

"There's a public perception that districts are swimming in an ocean of data, but that data isn't in formats or systems that make it easy for them to actually use it." - Kathleen Barfield, REL Southwest

REL Southwest prepared the data and then trained cross-functional teams in the participating Texas districts on how to apply those indicators to their own data. It was this work that attracted the attention of educators in Arkansas.

A Capacity-building Model

The Warren School District is an average-sized district for Arkansas, with 1,530 students in five schools separated out by grades. As members of the REL Southwest board, Superintendent Tolbert and Luke Gordy, executive director of the Arkansans for Education Reform Foundation, learned about the on-track graduate work being done in the specific Texas districts at a meeting held in that state.

"That was a flag for me," Tolbert says. "We had some of the same issues—kids not getting out on time, or not finishing at all and dropping out."

The dropout problem was especially acute in the Delta region, which abuts the Mississippi River in the eastern part of the state. Tolbert and Gordy approached their REL Southwest peers and suggested the organization do the same kind of training for its Delta districts as it had in Texas.

Edvance turned to the Southeast Arkansas Education Service Cooperative, a regional service provider, to make contact with Arkansas districts that might have an interest in being included in the new project. Nine signed on for the training, sending superintendents, data analysts, and others charged with district reporting work.

With their work in Texas and now in Arkansas taking place across a consortium of districts, the analysts at Edvance realized that they were not just disseminating research, but creating a capacity-building model to help district personnel strengthen their understanding of performance management and their use of indicator data to make better decisions.

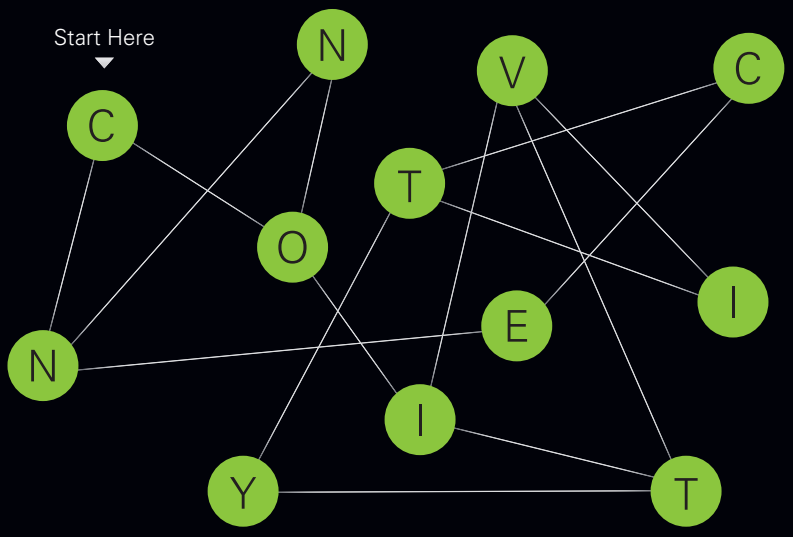
REL Southwest is still writing up documents to describe the On Track Indicator (OTI) model, says Barfield, but she can point to three tools developed along the way that can help people make effective use of OTI and other early warning indicators.

The first is a data analysis tool that allows users to examine their data in the form of indicators on a screen, drill down into the data, and create reports.

The second is a clearinghouse that links the indicators to interventions. For example, if a school is having problems with students failing ninth-grade algebra, the clearinghouse offers a list of interventions appropriate to that subject area.

The third tool brings the data together with the intervention to establish an implementation plan.

SOLVE *the* PROBLEM



CONNECTIVITY

Staying connected and secure is a problem. Unless you work with CenturyLink. Our advanced network solutions for school districts, colleges and universities are protected by multilayered security solutions. So your data stays safe, no matter where your students or teachers go. The solution to this problem is your password at ultimateproblemsolver.com.

Qwest CenturyLink™

Qwest is now CenturyLink.

Getting Usable Data

The toolkit is clearly valuable, but it doesn't address a persistent problem in most districts: How do you get the right data in a form that you can use? Like other states, Arkansas has a website—APSCN, or the Arkansas Public School Computer Network—where users can download a multitude of education-related statistics. But those statistics didn't necessarily come in a form that could be used by districts.

That's where the value of an organization like REL Southwest really shines. REL worked directly with the state agency in charge of data to come up with the information needed to create an on-track indicator that would help those Delta participants.

Trying this on their own probably would have paralyzed many of the districts. REL, for instance, had to provide the agency with the field layout for the project. Then it had to clarify in a follow-up meeting the agency's understanding of what it needed. Once REL received the data, it had many subsequent conversations with the people in Arkansas to assure they understood the data they had received. REL worked with the districts in making modifications to the analysis, which required still more data from the state. Finally, the agency could do its calculations on the data, share the results with the districts and state agencies, and come up with a template approach to enable the districts to do their own work.

GETTING INVOLVED IN A DATA INITIATIVE

THE TAKEAWAY FROM EDUCATORS who have worked with REL Southwest is that it's very hard for districts to make the best use of data on their own. They need the guidance of an organization that has a capacity to work with data and to share the data analysis efforts with other districts. "[Districts] need a lot of support and tools from vendors and the state and RELs and whoever else can help them, to help them pull that data, organize it, and make sense of it," says Kathleen Barfield, chief information officer at Edvance Research.

If you're sitting in your district office and are not yet part of a data analysis consortium, here are some concrete steps to take:

1) Contact your regional educational service center to see what it may or may not be doing in the data realm. ESCs can act as communication vehicles to bring districts together and find appropriate training resources.

2) Every district resides in one of the 10 Regional Educational Laboratory areas. Find out if yours has a data project that you can join. Keep in mind that although the RELs deliver services for free to districts, the districts have to cover the expenses related to training their personnel.

3) The Data Quality Campaign (*dataqualitycampaign.org*) has begun directing some of its work at the district level. Sign up for e-mail alerts to stay informed about what that national collaboration is doing.

4) Talk to your SIS vendor. If it doesn't already have a cross-district training and analysis initiative that you can join, perhaps you can persuade it to start one.

districts in the state, not just those in the Delta region. "To me that's one of the best outcomes of the effort," Barfield states. "We built the capacity at the state level to understand what [districts] needed for this on-track indicator, as well as the capacity to provide that report now statewide."

That capacity building included getting districts together to share practices for using data, something Tolbert says hadn't happened before in his region. "We haven't asked for it," he says. "We all know there's a problem with graduation rates, but sometimes you have some best kept secrets."

"I don't [usually] get to deal with hands-on data. It gave me the opportunity to see exactly what a counselor or teacher would need to look at and do to help kids." - Andrew Tolbert, Warren SD Superintendent

Barfield says that's par for the course in a data project like this. "Because you have to get down to the real nitty-gritty, the exact data elements you need, sometimes it takes a fair amount of communication back and forth to get the right data," she says.

Now that this has been sorted out, however, the state can take the formulas set up by the REL and dish it up to all the

The meetings REL held in Arkansas allowed the researchers to walk district personnel through a hands-on exercise to use on-track indicators to identify those ninth-grade students who would be at greatest risk of not graduating on time.

While a hands-on exercise with a couple of variables may sound simple enough, the step-by-step process was a bit of a revelation to Tolbert. "I don't get to deal with that hands-on stuff," he confesses. "It gave me the opportunity to see what exactly a counselor or teacher would need to look at and do to help kids. That was really a big deal. I think it's going to help our district."

The Last Mile

Clearly this kind of knowledge is invaluable for district leaders, but if the information and analysis skills aren't extended to their staffs, the effort dies. Tolbert has every intention to share what he learned about on-track indicators with his high school principal and counselor, but, at the time of this writing, that handoff hadn't taken place, pointing out a gap in the model: The RELs may not be the best operatives for handling that "last mile" effort—making sure all the data practitioners at individual schools get the information they need to keep the momentum going.

As one participant points out, "When you get back to the district, there are other things to be done." As an example, John Hoy attended the first Arkansas consortium meeting of Delta districts as a representa-

tive of the **Monticello School District**. Subsequently, he accepted a position at the state level. Before his departure for the new job, Hoy says he discussed what he'd learned from the REL Southwest session with a person at the high school, but "not to the extent that they could utilize it."

"I was gung-ho to get to it, but I didn't because there were other things that were priority," Hoy says. "We didn't have the personnel to do all the things that needed to be done. The smaller the district, the more likely it is for you to run into that situation."

Barfield acknowledges, "The 'last mile' of data analysis is the hard part. When individuals go to any kind of event that inspires their thinking, they come back to their own organizations to face the realities of daily operations," she observes. "For the inspiration to be transformed into action, it requires: 1) leadership on the part of the individual in a change agent role; 2) combined leadership and action on the part of a like-minded team; or 3) scaffolding of leadership learning over time through the aid of external friends, colleagues, and/or consultants who can further empower a site leader to take the right action."

Meanwhile, REL Southwest is exporting the model developed in Texas and Arkansas to Louisiana, where several districts have expressed interest in creating a consortium comparable to the ones in the other two states. "We got something like 34 districts and 10 charter schools telling us they had interest in being part of this," says Gail Ribalta, REL Southwest executive vice president of dissemination, "which speaks to the local desire to have that kind of interaction and coming together around a specific need. They want to find solutions that actually work."

Ribalta says she believes district profiles may differ, but "the solutions and the processes are the same." That's why bringing district people together to learn some basic techniques for working with relevant data points packs such power. "They call it a safe environment. They have the opportunity to work back and forth. You see people sharing and having this open, safe dialogue."

Hoy, now the state assistant commissioner for academic accountability, adds, "You'll get a consistent way of doing things, so we're all doing it the same way with the same understanding. When we start to measure out things and put numbers on the table, we're comparing apples to apples."

A math teacher-turned-administrator, Hoy says he has spent a lot of time evaluating the efficacy of the investments schools make to improve student outcomes, such as figuring out whether a given software package delivered what the vendor had promised. "You spent $100,000; what positive gain did you get from it? Do we have evidence that it worked? Did it make a difference?" In doing those calculations, he recalls, "I got an answer that I thought worked for me. But I didn't know if it was statistically valid. It was a 'John Hoy' algorithm. If I go to the regional provider working with somebody like REL Southwest, I'll get a standard that will help me put something more solid in place." the

Dian Schaffhauser is a freelance writer based in Nevada City, CA.

LINKS

- **Arkansans for Education Reform Foundation**
  educatearkansas.com
- **Arkansas Public School Computer Network**
  apscn.org
- **Edvance Research/REL Southwest**
  edvanceresearch.com
- **Institute of Education Sciences**
  ies.ed.gov
- **REL Southwest study of Texas students**
  ies.ed.gov/ncee/edlabs/projects/project.asp?ProjectID=264
- **Southeast Arkansas Education Service Cooperative**
  se.sesc.k12.ar.us
- **"The On-Track Indicator as a Predictor of High School Graduation," Consortium on Chicago School Research**
  ccsr.uchicago.edu

Michelle Fredette

Wireless to the nth Degree

Wireless access points that utilize the 802.11n standard offer superfast speeds and can simultaneously support a multitude of bandwidth-hogging devices.

WHEN WASHINGTON'S Bremerton School District considered running an iPad-based reading pilot in one of its elementary schools, the IT department was forced to confront the grim reality of its wireless network—and it wasn't a very pretty picture.

"We did have a wireless network, but it was kind of a means to an end—an early solution that we had had problems with," says Steve Bartlett, technology supervisor for the district. "For example, we couldn't connect more than 10 to 12 devices to an access point before we had problems with authentication, latency, and speed."

For many schools, the benefits offered by enhanced technology in the classroom are balanced by an equivalent number of hurdles, from budget to buy-in to technical issues. Bartlett and his IT department of five overcame the budget and backing hurdles when the district hired a new school superintendent with a strong focus on technology. "With the superintendent's expectations clearly communicated, it was very easy for us to move forward, rearrange budget priorities, and make it happen," Bartlett says.

As for concerns about technical issues such as support, coverage, and security, they learned that a new wireless technology—specifically 802.11n-capable wireless access point technology—would have many of the solutions.

Faster Speeds, Increased Coverage

With a data rate of up to 600 megabits per second, 802.11n-standard access points (APs) achieve speeds up to six times that of their predecessors, 802.11a, b, or g, and they can support 50 to 100 client connections at once, even if those clients are using bandwidth-intensive applications that stream video or deliver voice over wireless LAN. They also incorporate MIMO (multiple-input, multiple-output) antenna systems that can bounce radio waves off walls and other obstacles, reaching the desired receiving device from various different paths, or spatial streams. Among other things, MIMO enables faster transmission and wireless access in places that previously were hard to penetrate with earlier wireless technology.

The 802.11n technology also incorporates a new, third spatial stream, which Kevin Secino, global product marketing manager for mobility at HP, compared to the opening of a third lane on a highway. "You get more traffic through three lanes than two," he explains. "You can think of this technology in a similar fashion. We're automatically able to transmit more data through three streams than two." The three-stream technology is also completely compatible with one and two spatial streams, as well as a, b, and g technology.

Band steering, a common feature of most access-point devices, helps to keep traffic flowing smoothly on all three spatial streams. Band steering is the process by which an AP detects when a client device is n capable and steers that device onto the 802.11n streams so legacy devices can use the 802.11a, b, and g streams.

Also included in many vendors' 802.11n AP technology is beamforming, which optimizes the link between clients and APs by reducing power usage and interference, enabling APs to operate at stronger signal strengths. "Beamforming helps you get higher throughput for further distances, because it's concentrating the energy toward your device, rather than sending the energy everywhere," explains Jeff Schwartz, HP's global product manager for mobility.

Beamforming enables the access points, which usually contain three transmitters, to time transmissions so packets arrive at their destination at exactly the same time. With previous technology, Schwartz says, the three radios would transmit, and traffic from one would arrive slightly before traffic from another because they took different paths.

There can be a downside, however. Beamforming relies on a signal exchange between the access point and the receiving device, which can be less effective if a device is moving around and the signal has to be repeatedly reset.

The Best Solution—for Now

Most access points utilizing 802.11n standards have comparable speeds and performance. "When it came down to it, the technical aspects—can we get the coverage we need, can we get the right kind of security, can we segment the traffic—all these were present in all the solutions,"

says Bartlett regarding Bremerton School District's process of testing and selecting a wireless solution.

Bartlett adds that, because he was open about his process and the available budget, the four vendors he tested came up with comparable costs. "They came to within hundreds of dollars of each other," he says.

Ease of use was eventually the deciding factor for Bartlett and his team, which chose Meraki for the district's wireless technology. Contributing to that sense of ease is a cloud-based control solution that hosts functions customarily managed by a controller, a device that sits on the network and connects to the access points.

"It's all done through a secure web browser, so an IT administrator can deploy the network with the appropriate security and guest access policy and access control without having any particular specialized training and wireless certifications," explains Kiren Sekar, director of marketing at Meraki. While it's common practice for wireless companies to offer a web interface, most of them generally still require a controller.

Bartlett says the department couldn't afford the time and cost of sending an employee to a five-day course to learn how to deploy and manage the network, nor could it "open up the manual and relearn the interface" every time a change to the wireless network was required. The new solution allows IT staff to access the wireless network to make changes and find answers to questions on the fly, even when they are out of the office at meetings and conferences, using whatever devices are available.

The Meraki access point/cloud-based control solution incorporates a couple of security features that are especially useful in a school setting. One of these is network access control, a feature that checks devices for working antivirus software before they are allowed to connect to the network. Another feature is traffic shaping, which "can limit how devices are used, when they are used, and what types of applications can be used over them," Sekar says.

That means access points can be set to allow specific educational applications but prohibit students from accessing websites like Netflix, game sites, or YouTube. Bartlett says that this feature is especially useful in high-traffic areas near meeting rooms and classrooms where students are not able to stream video, suck up the bandwidth, or interfere with instruction.

Bartlett says teachers who are excited by the new technology continually find new ways to use it. He makes note of an iPad reading program that would never have taken place without a better wireless infrastructure. The program's results have been phenomenal, according to Bartlett. In a matter of weeks, students moved from being low-level readers to reading above benchmarks, and classes are now seeing fewer discipline problems.

The n-standard access points achieve speeds up to six times that of their predecessors and can support 50 to 100 client connections at once.

ONLINE EXCLUSIVE:
Buyer's Guide to Wireless Access Points. *Sponsored by GovConnection.*

Visit *thejournal.com/wireless* for a complete buyer's guide to the latest 802.11n wireless access points, sortable by features, price, and more.

With exponential growth in the number of wireless devices on campus, schools are forced to quickly adjust to these more complex networking challenges, often by employing sophisticated options for managing their networks. At this point, there's no doubt that 802.11n represents the best wireless technology on the market in terms of bandwidth, speed, security, and network management—at least for now. the

Michelle Fredette is a writer and editor who splits her time between Portland, OR, and Seattle.

index

ADVERTISER/URLs **PAGE**

SCHOOL INDEX

COMPANY INDEX

This index is provided as a service. The publisher assumes no liability for errors or omissions.

NOTE: *Advertisers with * are regional ads and may not appear in this issue.*

SALES CONTACT INFORMATION

PRESIDENT AND GROUP PUBLISHER
Wendy LaDuke
949-265-1596 phone
949-265-1528 fax
714-743-4011 cell
wladuke@1105media.com

EASTERN REGION SALES MANAGER MF Harmon
207-883-2477 phone
207-883-7173 fax
207-650-6981 cell
mfharmon@1105media.com

CENTRAL REGION SALES MANAGER Tom Creevy
847-358-7272 phone
847-358-7433 fax
847-971-5621 cell
tcreevy@1105media.com

WESTERN REGION SALES MANAGER Mark Buchholz
949-265-1540 phone
949-265-1528 fax
714-504-4015 cell
mbuchholz@1105media.com

SALES ACCOUNT EXECUTIVE Jean Dellarobba
949-265-1568 phone
949-357-7564 cell
jdellarobba@1105media.com

EVENT SALES MANAGER Stephanie Chiavaras
508-532-1424 phone
617-784-3577 cell
schiavaras@1105media.com

EVENT SALES MANAGER Patrick Gallagher
508-634-3525 phone
617-512-6656 cell
pgallagher@1105media.com

EVENT SALES REPRESENTATIVE
Deborah Carroll
203-331-0571 phone
203-331-0572 fax
203-814-7408 cell
dcarroll@1105media.com

CORPORATE HEADQUARTERS
1105 Media
9201 Oakdale Avenue, Ste. 101
Chatsworth, CA 91311
1105media.com

MEDIA KITS
Direct your Media Kit requests to Michele Werner, 949-265-1558 (phone), 949-265-1528 (fax), mwerner@1105media.com

REPRINTS
For single article reprints (in minimum quantities of 250-500), e-prints, plaques, and posters contact:
PARS International
Phone: 212-221-9595
E-mail: 1105reprints@parsintl.com
Web: magreprints.com/QuickQuote.asp

LIST RENTALS
This publication's subscriber list, as well as other lists from 1105 Media, Inc., is available for rental. For more information, please contact our list manager, Merit Direct.
Phone: 914-368-1000
E-mail: 1105media@meritdirect.com
Web: meritdirect.com/1105

*t*h*e JOURNAL* (ISSN 0192-592x) is published 10 times a year, monthly except for Jul and Dec by 1105 Media, Inc., 9201 Oakdale Avenue, Ste. 101, Chatsworth, CA 91311-9998. Periodicals postage paid at Chatsworth, CA 91311-9998, and at additional mailing offices. Complimentary subscriptions are sent to qualifying subscribers. Annual subscription rates payable in U.S. funds for non-qualified subscribers are: U.S. $29.00, International $44.00. **Subscription inquiries, back issue requests, and address changes**: Mail to: *t*h*e JOURNAL*, P.O. Box 2166, Skokie, IL 60076-7866, email T.H.E Journal@1105service.com or call (866) 293-3194 for U.S. & Canada; (847) 763-9560 for International, fax (847) 763-9564. **POSTMASTER:** Send address changes to *t*h*e JOURNAL*, P.O. Box 2166, Skokie, IL 60076-7866. Canada Publications Mail Agreement No: 40612608. Return Undeliverable Canadian Addresses to XPO Returns: P.O. Box 201, Richmond Hill, ON L4B 4R5, Canada.

FETC

VIRTUAL CONFERENCE & EXPO FALL '11

virtual.fetc.org

October 27, 2011 • 10:30 am - 6:00 pm ET

Register for a Free Virtual Conference!

Plan to attend the ALL FREE, ALL ONLINE conference covering the most compelling technologies and topics, presented by ed tech visionaries—plus demonstrations of the latest technology, and real-time networking with school leaders like you.

Join Us for Outstanding Sessions On Hot Topics Including:

- **Virtual Manipulatives: What Are the Advantages for Teaching Math Concepts**
  Ted Hasselbring, Professor, Peabody College of Vanderbilt University
- **Tech for Tots: Using Technologies to Enhance Early Learning**
  Gail Lovely, Independent Educator, LovelyLearning.com
- **Playing School or Preparing for Life**
  Meg Ormiston, Professional Development Specialist, Tech Teachers
- **Hands Around the World: Projects to Explore, Engage, Enrich, and Empower**
  Howie DiBlasi, CEO, Digital Journey

For the latest information or to register, visit the website.

virtual.fetc.org

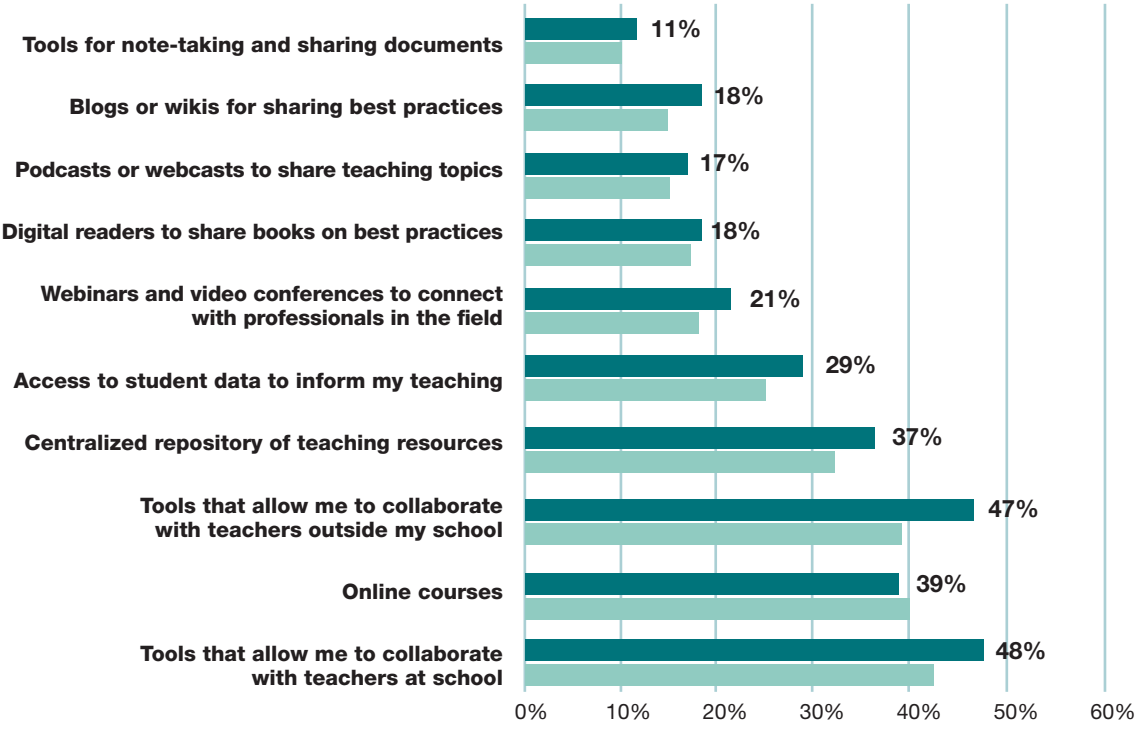
Please Register Using Priority Code FVAD

Professional Learning Communities Need Tools for Collaboration

FACE-TO-FACE is still the preferred method of professional development for most of the 22,000 teachers who participated in the Speak Up 2010 survey. Sixty-three percent said they favored conferences and 40 percent liked workshops provided by their school districts. However, there is a sizable segment of teachers (36 percent) who use technology regularly for professional development through online courses or participation in professional learning communities.

Information in the chart below could provide administrators with insights regarding potential strategies for using technology to provide long-term embedded professional development. Not surprisingly, teachers who already participate in online PLCs are more likely than their counterparts to understand how technology empowers such a community, and particularly likely to identify a range of technology tools as a means for their districts to create and support professional learning communities. Online PLC teachers are especially likely to see the advantage of collaboration tools for supporting PLCs over tools like wikis, blogs, or podcasts. This suggests that districts that want to create and promote PLCs should focus on providing tools to increase collegial collaboration, where their value is more clearly established.

Teachers describe how they would like their districts to use technology to create professional learning communities



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*).

WHATEVER THE ASSIGNMENT, THE PROFESSIONAL PRINTING EXPERTS AT THE UPS STORE® WILL WORK WITH YOU TOWARD THE BEST SOLUTION.

It's an assignment we complete every day: help teachers and schools create handouts, flyers and great-looking reports. For us, it's easy. After all, we are the printing experts. At The UPS Store, we offer professional printing and finishing services. Just bring us your work or send it in online at theupsstore.com/print and let us show you what we can do. It's fast. It's easy. It's Logistics. For information, visit **theupsstore.com/logistics**

The UPS Store

WE ♡ LOGISTICS™

FLYERS • SCHOOL DIRECTORIES • POSTERS • CALENDARS • NEWSLETTERS • AND MORE

Nspired Learning

Explore wherever learning takes you

Math and science concepts are best understood by seeing their real-world relevance – in full color.

NEW! Full-color TI-Nspire™ CX handheld.

- » Backlit LCD screen
- » Full-color display
- » Import images
- » Overlay graphs, points and regressions
- » 3D graphing
- » Sleek, stylish design
- » Built-in TI-Nspire Rechargeable Battery

education.ti.com/nspire.

Math Nspired lesson: *Algebra – Elliptical Orbits*
Real-world experience: *Orbit of planet around the sun*

TEXAS INSTRUMENTS

Your Passion. Our Technology. Student Success.™

 AD10794